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**Department of Defense  
Fiscal Year (FY) 2024 Budget Estimates**

March 2023



**Air Force**

*Justification Book Volume 2 of 4*

***Research, Development, Test & Evaluation, Air Force***

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Air Force • Budget Estimates FY 2024 • RDT&E Program

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## Fiscal Year (FY) 2024 President's Budget RDT&E Descriptive Summaries Budget Activities March 2023

### INTRODUCTION AND EXPLANATION OF CONTENTS

#### GENERAL

- This document has been prepared to provide information on the United States Air Force (USAF) Research, Development, Test and Evaluation (RDT&E) program elements and projects in the FY24 President's Budget (PB).
  - All exhibits in this document have been assembled in accordance with DoD 7000.14R, Financial Management Regulation, Volume 2B, Chapter 5.
  - Other comments on exhibit contents in this document:
    - Exhibits R-2/2a and R-3 provide narrative information for all RDT&E program elements and projects within the USAF FY 2024 RDT&E program with the exception of classified program elements. The format and contents of this document are in accordance to the guidelines and requirements of the Congressional committees in so far as possible.
    - The "Other Program Funding Summary" portion of the R-2 includes, in addition to RDT&E funds, Procurement funds and quantities, Military Construction appropriation funds on specific development programs, Operations and Maintenance appropriation funds where they are essential to the development effort described, and where appropriate, Department of Energy (DOE) costs.

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### CLASSIFICATION

- All exhibits contained in Volumes I, II, and III are unclassified. Classified exhibits are not included in the submission due to the level of security classification and necessity of special security clearances.

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Department of the Air Force  
 FY 2024 resident's Budget  
 Exhibit R-1 FY 2024 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

Mar 2023

| Line No | Program Element Number  | Item   | Act | Se c | FY 2022 Actuals  | FY 2023 Less Supplementals Enactment | FY 2023 Supplementals Enactment* | FY 2023 Total Enactment |
|---------|-------------------------|--|-----|------|------------------|--------------------------------------|----------------------------------|-------------------------|
| 1       | 0601102F                | Defense Research Sciences  | 01  | U    | 331,118          | 406,125                              |                                  | 406,125                 |
| 2       | 0601103F                | University Research Initiatives  | 01  | U    | 174,048          | 206,192                              |                                  | 206,192                 |
|         | <b>Basic Research</b>   |  |     |      | <b>505,166</b>   | <b>612,317</b>                       |                                  | <b>612,317</b>          |
| 3       | 0602020F                | Future AF Capabilities Applied Research<br>University Affiliated Research Center (UARC) - Tactical               | 02  | U    | 74,393           | 99,901                               |                                  | 99,901                  |
| 4       | 0602022F                | Autonomy   | 02  | U    |                  |                                      |                                  |                         |
| 5       | 0602102F                | Materials  | 02  | U    | 214,878          | 275,945                              |                                  | 275,945                 |
| 6       | 0602201F                | Aerospace Vehicle Technologies   | 02  | U    | 173,628          | 199,453                              |                                  | 199,453                 |
| 7       | 0602202F                | Human Effectiveness Applied Research   | 02  | U    | 139,287          | 150,771                              |                                  | 150,771                 |
| 8       | 0602203F                | Aerospace Propulsion   | 02  | U    | 173,665          | 212,361                              |                                  | 212,361                 |
| 9       | 0602204F                | Aerospace Sensors  | 02  | U    | 244,612          | 260,833                              |                                  | 260,833                 |
| 10      | 0602212F                | Defense Laboratories R&D Projects (10 U.S.C, Sec 2358)<br>Science and Technology Management - Major Headquarters | 02  | U    | 98,862           |                                      |                                  |                         |
| 11      | 0602298F                | Activities   | 02  | U    | 8,891            | 8,856                                |                                  | 8,856                   |
| 12      | 0602602F                | Conventional Munitions   | 02  | U    | 142,906          | 144,303                              |                                  | 144,303                 |
| 13      | 0602605F                | Directed Energy Technology   | 02  | U    | 109,529          | 120,947                              |                                  | 120,947                 |
| 14      | 0602788F                | Dominant Information Sciences and Methods  | 02  | U    | 209,892          | 271,005                              |                                  | 271,005                 |
|         | <b>Applied Research</b> |  |     |      | <b>1,590,543</b> | <b>1,744,375</b>                     |                                  | <b>1,744,375</b>        |
| 15      | 0603032F                | Future AF Integrated Technology Demos  | 03  | U    | 103,886          | 163,887                              |                                  | 163,887                 |
| 16      | 0603112F                | Advanced Materials for Weapon Systems  | 03  | U    | 60,566           | 49,765                               |                                  | 49,765                  |
| 17      | 0603199F                | Sustainment Science and Technology (S&T)   | 03  | U    | 17,598           | 10,662                               |                                  | 10,662                  |

\*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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| Line<br>No | Program<br>Element<br>Number | Item   | Act | Se<br>c | FY 2024<br>Request |
|------------|------------------------------|--|-----|---------|--------------------|
| 1          | 0601102F                     | Defense Research Sciences  | 01  | U       | 401,486            |
| 2          | 0601103F                     | University Research Initiatives  | 01  | U       | 182,372            |
|            | <b>Basic Research</b>        |  |     |         | <b>583,858</b>     |
| 3          | 0602020F                     | Future AF Capabilities Applied Research<br>University Affiliated Research Center (UARC) - Tactical               | 02  | U       | 90,713             |
| 4          | 0602022F                     | Autonomy   | 02  | U       | 8,018              |
| 5          | 0602102F                     | Materials  | 02  | U       | 142,325            |
| 6          | 0602201F                     | Aerospace Vehicle Technologies   | 02  | U       | 161,268            |
| 7          | 0602202F                     | Human Effectiveness Applied Research   | 02  | U       | 146,921            |
| 8          | 0602203F                     | Aerospace Propulsion   | 02  | U       | 184,867            |
| 9          | 0602204F                     | Aerospace Sensors  | 02  | U       | 216,269            |
| 10         | 0602212F                     | Defense Laboratories R&D Projects (10 U.S.C, Sec 2358)<br>Science and Technology Management - Major Headquarters | 02  | U       |                    |
| 11         | 0602298F                     | Activities   | 02  | U       | 10,303             |
| 12         | 0602602F                     | Conventional Munitions   | 02  | U       | 160,599            |
| 13         | 0602605F                     | Directed Energy Technology   | 02  | U       | 129,961            |
| 14         | 0602788F                     | Dominant Information Sciences and Methods  | 02  | U       | 182,076            |
|            | <b>Applied Research</b>      |  |     |         | <b>1,433,320</b>   |
| 15         | 0603032F                     | Future AF Integrated Technology Demos  | 03  | U       | 255,855            |
| 16         | 0603112F                     | Advanced Materials for Weapon Systems  | 03  | U       | 30,372             |
| 17         | 0603199F                     | Sustainment Science and Technology (S&T)   | 03  | U       | 10,478             |

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| Line No | Program Element Number                 | Item  | Act | Se c | FY 2022        | FY 2023 Less            | FY 2023                  | FY 2023 Total    |
|---------|--|---|-----|------|----------------|-------------------------|--------------------------|------------------|
|         |  |   |     |      | Actuals        | Supplementals Enactment | Supplementals Enactment* | Enactment        |
| 18      | 0603203F                               | Advanced Aerospace Sensors                          | 03  | U    | 50,326         | 37,917                  |                          | 37,917           |
| 19      | 0603211F                               | Aerospace Technology Dev/Demo                       | 03  | U    | 98,806         | 95,267                  |                          | 95,267           |
| 20      | 0603216F                               | Aerospace Propulsion and Power Technology           | 03  | U    | 103,219        | 94,540                  |                          | 94,540           |
| 21      | 0603270F                               | Electronic Combat Technology                        | 03  | U    | 41,869         | 31,037                  |                          | 31,037           |
| 22      | 0603273F                               | Science & Technology for Nuclear Re-entry Systems   | 03  | U    |                | 27,031                  |                          | 27,031           |
| 23      | 0603444F                               | Maui Space Surveillance System (MSSS)               | 03  | U    |                |                         |                          |                  |
| 24      | 0603456F                               | Human Effectiveness Advanced Technology Development | 03  | U    | 31,135         | 15,440                  |                          | 15,440           |
| 25      | 0603601F                               | Conventional Weapons Technology                     | 03  | U    | 144,116        | 154,618                 |                          | 154,618          |
| 26      | 0603605F                               | Advanced Weapons Technology                         | 03  | U    | 29,585         | 89,024                  |                          | 89,024           |
| 27      | 0603680F                               | Manufacturing Technology Program                    | 03  | U    | 169,459        | 270,959                 |                          | 270,959          |
| 28      | 0603788F                               | Battlespace Knowledge Development and Demonstration | 03  | U    | 67,753         | 55,919                  |                          | 55,919           |
| 29      | 0207412F                               | Control and Reporting Center (CRC)                  | 03  | U    |                |                         |                          |                  |
|         | <b>Advanced Technology Development</b> |   |     |      | <b>918,318</b> | <b>1,096,066</b>        |                          | <b>1,096,066</b> |
| 30      | 0603036F                               | Modular Advanced Missile                            | 04  | U    |                | 75,688                  |                          | 75,688           |
| 31      | 0603260F                               | Intelligence Advanced Development                   | 04  | U    | 5,795          | 6,101                   | 1,300                    | 7,401            |
| 32      | 0603742F                               | Combat Identification Technology                    | 04  | U    | 17,536         | 13,718                  |                          | 13,718           |
| 33      | 0603790F                               | NATO Research and Development                       | 04  | U    | 4,114          | 4,295                   |                          | 4,295            |
| 34      | 0603851F                               | Intercontinental Ballistic Missile - Dem/Val        | 04  | U    | 73,897         | 46,100                  |                          | 46,100           |
| 35      | 0604001F                               | NC3 Advanced Concepts                               | 04  | U    | 6,900          | 5,098                   |                          | 5,098            |
| 36      | 0604002F                               | Air Force Weather Services Research                 | 04  | U    | 3,714          |                         |                          |                  |
| 37      | 0604003F                               | Advanced Battle Management System (ABMS)            | 04  | U    | 262,452        | 237,332                 |                          | 237,332          |

\*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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| Line<br><u>No</u> | Program<br>Element<br><u>Number</u>    | <u>Item</u>   | <u>Act</u> | <u>Se</u><br><u>c</u> | FY 2024<br><u>Request</u> |
|-------------------|--|---|------------|-----------------------|---------------------------|
| 18                | 0603203F                               | Advanced Aerospace Sensors                          | 03         | U                     | 48,046                    |
| 19                | 0603211F                               | Aerospace Technology Dev/Demo                       | 03         | U                     | 51,896                    |
| 20                | 0603216F                               | Aerospace Propulsion and Power Technology           | 03         | U                     | 56,789                    |
| 21                | 0603270F                               | Electronic Combat Technology                        | 03         | U                     | 32,510                    |
| 22                | 0603273F                               | Science & Technology for Nuclear Re-entry Systems   | 03         | U                     | 70,321                    |
| 23                | 0603444F                               | Maui Space Surveillance System (MSSS)               | 03         | U                     | 2                         |
| 24                | 0603456F                               | Human Effectiveness Advanced Technology Development | 03         | U                     | 15,593                    |
| 25                | 0603601F                               | Conventional Weapons Technology                     | 03         | U                     | 132,311                   |
| 26                | 0603605F                               | Advanced Weapons Technology                         | 03         | U                     | 102,997                   |
| 27                | 0603680F                               | Manufacturing Technology Program                    | 03         | U                     | 44,422                    |
| 28                | 0603788F                               | Battlespace Knowledge Development and Demonstration | 03         | U                     | 37,779                    |
| 29                | 0207412F                               | Control and Reporting Center (CRC)                  | 03         | U                     | 2,005                     |
|                   | <b>Advanced Technology Development</b> |   |            |                       | <b>891,376</b>            |
| 30                | 0603036F                               | Modular Advanced Missile                            | 04         | U                     | 105,238                   |
| 31                | 0603260F                               | Intelligence Advanced Development                   | 04         | U                     | 6,237                     |
| 32                | 0603742F                               | Combat Identification Technology                    | 04         | U                     | 21,298                    |
| 33                | 0603790F                               | NATO Research and Development                       | 04         | U                     | 2,208                     |
| 34                | 0603851F                               | Intercontinental Ballistic Missile - Dem/Val        | 04         | U                     | 45,319                    |
| 35                | 0604001F                               | NC3 Advanced Concepts                               | 04         | U                     | 10,011                    |
| 36                | 0604002F                               | Air Force Weather Services Research                 | 04         | U                     |                           |
| 37                | 0604003F                               | Advanced Battle Management System (ABMS)            | 04         | U                     | 500,575                   |

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|---------|------------------------|---|-----|------|-----------|-------------------------|--------------------------|---------------|
|         |                        |   |     |      | Actuals   | Supplementals Enactment | Supplementals Enactment* | Enactment     |
| 38      | 0604004F               | Advanced Engine Development                                       | 04  | U    | 562,717   | 220,363                 |                          | 220,363       |
| 39      | 0604005F               | NC3 Commercial Development & Prototyping                          | 04  | U    |           | 97,000                  |                          | 97,000        |
| 40      | 0604006F               | Dept of the Air Force Tech Architecture                           | 04  | U    | 24,407    | 50,000                  |                          | 50,000        |
| 41      | 0604007F               | E-7   | 04  | U    |           | 426,776                 |                          | 426,776       |
| 42      | 0604009F               | AFWERX Prime  | 04  | U    |           | 170,860                 |                          | 170,860       |
| 43      | 0604015F               | Long Range Strike - Bomber  | 04  | U    | 2,775,581 | 3,143,584               |                          | 3,143,584     |
| 44      | 0604025F               | Rapid Defense Experimentation Reserve (RDER)                      | 04  | U    |           |                         |                          |               |
| 45      | 0604032F               | Directed Energy Prototyping                                       | 04  | U    | 15,498    | 4,269                   |                          | 4,269         |
| 46      | 0604033F               | Hypersonics Prototyping   | 04  | U    | 308,089   | 114,981                 |                          | 114,981       |
| 47      | 0604183F               | Hypersonics Prototyping - Hypersonic Attack Cruise Missile (HACM) | 04  | U    | 183,889   | 423,359                 |                          | 423,359       |
| 48      | 0604201F               | PNT Resiliency, Mods, and Improvements                            | 04  | U    | 46,022    | 12,010                  |                          | 12,010        |
| 49      | 0604257F               | Advanced Technology and Sensors                                   | 04  | U    | 23,745    | 12,311                  |                          | 12,311        |
| 50      | 0604288F               | Survivable Airborne Operations Center (SAOC)                      | 04  | U    | 91,378    | 98,213                  |                          | 98,213        |
| 51      | 0604317F               | Technology Transfer   | 04  | U    | 36,574    | 35,430                  |                          | 35,430        |
| 52      | 0604327F               | Hard and Deeply Buried Target Defeat System (HDBTDS) Program      | 04  | U    | 12,826    | 141,826                 |                          | 141,826       |
| 53      | 0604414F               | Cyber Resiliency of Weapon Systems-ACS                            | 04  | U    | 69,143    | 43,372                  |                          | 43,372        |
| 54      | 0604534F               | Adaptive Engine Transition Program (AETP)                         | 04  | U    |           | 286,096                 |                          | 286,096       |
| 55      | 0604668F               | Joint Transportation Management System (JTMS)                     | 04  | U    |           | 27,758                  |                          | 27,758        |
| 56      | 0604776F               | Deployment & Distribution Enterprise R&D                          | 04  | U    | 39,311    | 27,586                  |                          | 27,586        |
| 57      | 0604858F               | Tech Transition Program   | 04  | U    | 348,134   | 370,810                 |                          | 370,810       |

\*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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|------------|------------------------------|--|-----|---------|--------------------|
| 38         | 0604004F                     | Advanced Engine Development  | 04  | U       | 595,352            |
| 39         | 0604005F                     | NC3 Commercial Development & Prototyping                             | 04  | U       | 78,799             |
| 40         | 0604006F                     | Dept of the Air Force Tech Architecture                              | 04  | U       | 2,620              |
| 41         | 0604007F                     | E-7  | 04  | U       | 681,039            |
| 42         | 0604009F                     | AFWERX Prime   | 04  | U       | 83,336             |
| 43         | 0604015F                     | Long Range Strike - Bomber   | 04  | U       | 2,984,143          |
| 44         | 0604025F                     | Rapid Defense Experimentation Reserve (RDER)                         | 04  | U       | 154,300            |
| 45         | 0604032F                     | Directed Energy Prototyping  | 04  | U       | 1,246              |
| 46         | 0604033F                     | Hypersonics Prototyping  | 04  | U       | 150,340            |
| 47         | 0604183F                     | Hypersonics Prototyping - Hypersonic Attack Cruise Missile<br>(HACM) | 04  | U       | 381,528            |
| 48         | 0604201F                     | PNT Resiliency, Mods, and Improvements                               | 04  | U       | 18,041             |
| 49         | 0604257F                     | Advanced Technology and Sensors                                      | 04  | U       | 27,650             |
| 50         | 0604288F                     | Survivable Airborne Operations Center (SAOC)                         | 04  | U       | 888,829            |
| 51         | 0604317F                     | Technology Transfer  | 04  | U       | 26,638             |
| 52         | 0604327F                     | Hard and Deeply Buried Target Defeat System (HDBTDS) Program         | 04  | U       | 19,266             |
| 53         | 0604414F                     | Cyber Resiliency of Weapon Systems-ACS                               | 04  | U       | 37,121             |
| 54         | 0604534F                     | Adaptive Engine Transition Program (AETP)                            | 04  | U       |                    |
| 55         | 0604668F                     | Joint Transportation Management System (JTMS)                        | 04  | U       | 37,026             |
| 56         | 0604776F                     | Deployment & Distribution Enterprise R&D                             | 04  | U       | 31,833             |
| 57         | 0604858F                     | Tech Transition Program  | 04  | U       | 210,806            |

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|--|------------------------|---|-----|------|------------------|-------------------------|--------------------------|------------------|
|  |                        |   |     |      | Actuals          | Supplementals Enactment | Supplementals Enactment* | Enactment        |
| 58   | 0604860F               | Operational Energy and Installation Resilience      | 04  | U    | 100,839          | 25,500                  |                          | 25,500           |
| 59   | 0605164F               | Air Refueling Capability Modernization              | 04  | U    |                  | 11,281                  |                          | 11,281           |
| 60   | 0605230F               | Ground Based Strategic Deterrent                    | 04  | U    | 2,464,875        |                         |                          |                  |
| 61   | 0207110F               | Next Generation Air Dominance                       | 04  | U    | 1,452,934        | 1,657,635               |                          | 1,657,635        |
| 62   | 0207179F               | Autonomous Collaborative Platforms                  | 04  | U    |                  | 51,747                  |                          | 51,747           |
| 63   | 0207420F               | Combat Identification                               | 04  | U    |                  | 1,866                   |                          | 1,866            |
| 64   | 0207455F               | Three Dimensional Long-Range Radar (3DELRR)         | 04  | U    |                  | 14,490                  |                          | 14,490           |
| 65   | 0207522F               | Airbase Air Defense Systems (ABADS)                 | 04  | U    | 10,526           | 47,465                  |                          | 47,465           |
| 66   | 0208030F               | War Reserve Materiel - Ammunition                   | 04  | U    | 3,943            | 10,288                  |                          | 10,288           |
| 67   | 0304369F               | Cyber Capabilities Support Office (CCSO)            | 04  | U    | 16,949           |                         |                          |                  |
| 68   | 0305236F               | Common Data Link Executive Agent (CDL EA)           | 04  | U    | 43,881           | 37,460                  |                          | 37,460           |
| 69   | 0305601F               | Mission Partner Environments                        | 04  | U    | 15,819           | 17,378                  |                          | 17,378           |
| 70   | 0306250F               | Cyber Operations Technology Support                 | 04  | U    | 272,404          | 272,583                 |                          | 272,583          |
| 71   | 0306415F               | Enabled Cyber Activities                            | 04  | U    | 23,511           | 16,728                  |                          | 16,728           |
| 72   | 0708051F               | Rapid Sustainment Modernization (RSM)               | 04  | U    | 90,117           | 69,000                  |                          | 69,000           |
| 73   | 0808737F               | Integrated Primary Prevention                       | 04  | U    |                  | 9,315                   |                          | 9,315            |
| 74   | 0901410F               | Contracting Information Technology System           | 04  | U    | 19,733           | 14,050                  |                          | 14,050           |
| 75   | 1206415F               | U.S. Space Command Research and Development Support | 04  | U    |                  | 8,350                   |                          | 8,350            |
| <b>Advanced Component Development &amp; Prototypes</b> |                        |   |     |      | <b>9,427,253</b> | <b>8,360,072</b>        | <b>1,300</b>             | <b>8,361,372</b> |
| 76   | 0604200F               | Future Advanced Weapon Analysis & Programs          | 05  | U    | 18,180           | 9,879                   |                          | 9,879            |
| 77   | 0604201F               | PNT Resiliency, Mods, and Improvements              | 05  | U    | 158,193          | 176,335                 |                          | 176,335          |

\*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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|------------|--|---|-----|---------|--------------------|
| 58         | 0604860F   | Operational Energy and Installation Resilience      | 04  | U       | 46,305             |
| 59         | 0605164F   | Air Refueling Capability Modernization              | 04  | U       | 19,400             |
| 60         | 0605230F   | Ground Based Strategic Deterrent                    | 04  | U       |                    |
| 61         | 0207110F   | Next Generation Air Dominance                       | 04  | U       | 2,326,128          |
| 62         | 0207179F   | Autonomous Collaborative Platforms                  | 04  | U       | 118,826            |
| 63         | 0207420F   | Combat Identification                               | 04  | U       | 1,902              |
| 64         | 0207455F   | Three Dimensional Long-Range Radar (3DELRR)         | 04  | U       | 19,763             |
| 65         | 0207522F   | Airbase Air Defense Systems (ABADS)                 | 04  | U       | 78,867             |
| 66         | 0208030F   | War Reserve Materiel - Ammunition                   | 04  | U       | 8,175              |
| 67         | 0304369F   | Cyber Capabilities Support Office (CCSO)            | 04  | U       |                    |
| 68         | 0305236F   | Common Data Link Executive Agent (CDL EA)           | 04  | U       | 25,157             |
| 69         | 0305601F   | Mission Partner Environments                        | 04  | U       | 17,727             |
| 70         | 0306250F   | Cyber Operations Technology Support                 | 04  | U       |                    |
| 71         | 0306415F   | Enabled Cyber Activities                            | 04  | U       |                    |
| 72         | 0708051F   | Rapid Sustainment Modernization (RSM)               | 04  | U       | 43,431             |
| 73         | 0808737F   | Integrated Primary Prevention                       | 04  | U       | 9,364              |
| 74         | 0901410F   | Contracting Information Technology System           | 04  | U       | 28,294             |
| 75         | 1206415F   | U.S. Space Command Research and Development Support | 04  | U       | 14,892             |
|            | <b>Advanced Component Development &amp; Prototypes</b> |   |     |         | <b>9,859,030</b>   |
| 76         | 0604200F   | Future Advanced Weapon Analysis & Programs          | 05  | U       | 9,757              |
| 77         | 0604201F   | PNT Resiliency, Mods, and Improvements              | 05  | U       | 163,156            |



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| Line No | Program Element Number | Item  | Act | Se c | FY 2022 | FY 2023 Less            | FY 2023                  | FY 2023 Total |
|---------|------------------------|---|-----|------|---------|-------------------------|--------------------------|---------------|
|         |                        |   |     |      | Actuals | Supplementals Enactment | Supplementals Enactment* | Enactment     |
| 78      | 0604222F               | Nuclear Weapons Support                       | 05  | U    | 29,215  | 63,906                  |                          | 63,906        |
| 79      | 0604270F               | Electronic Warfare Development                | 05  | U    | 6,849   | 7,222                   |                          | 7,222         |
| 80      | 0604281F               | Tactical Data Networks Enterprise             | 05  | U    | 122,940 | 129,941                 |                          | 129,941       |
| 81      | 0604287F               | Physical Security Equipment                   | 05  | U    | 8,302   | 6,897                   |                          | 6,897         |
| 82      | 0604602F               | Armament/Ordnance Development                 | 05  | U    | 8,821   | 5,279                   |                          | 5,279         |
| 83      | 0604604F               | Submunitions                                  | 05  | U    | 2,954   | 3,273                   |                          | 3,273         |
| 84      | 0604617F               | Agile Combat Support                          | 05  | U    | 26,972  | 19,252                  |                          | 19,252        |
| 85      | 0604706F               | Life Support Systems                          | 05  | U    | 22,335  | 50,042                  |                          | 50,042        |
| 86      | 0604735F               | Combat Training Ranges                        | 05  | U    | 23,218  | 103,784                 |                          | 103,784       |
| 87      | 0604932F               | Long Range Standoff Weapon                    | 05  | U    | 580,365 | 928,850                 |                          | 928,850       |
| 88      | 0604933F               | ICBM Fuze Modernization                       | 05  | U    | 115,200 | 98,376                  |                          | 98,376        |
| 89      | 0605030F               | Joint Tactical Network Center (JTNC)          | 05  | U    |         | 2,222                   |                          | 2,222         |
| 90      | 0605031F               | Joint Tactical Network (JTN)                  | 05  | U    |         |                         |                          |               |
| 91      | 0605056F               | Open Architecture Management                  | 05  | U    | 36,157  | 38,201                  |                          | 38,201        |
| 92      | 0605057F               | Next Generation Air-refueling System          | 05  | U    |         |                         |                          |               |
| 93      | 0605223F               | Advanced Pilot Training                       | 05  | U    | 182,330 | 33,621                  |                          | 33,621        |
| 94      | 0605229F               | HH-60W  | 05  | U    | 53,363  | 58,974                  |                          | 58,974        |
| 95      | 0605238F               | Ground Based Strategic Deterrent EMD          | 05  | U    |         | 3,614,290               |                          | 3,614,290     |
| 96      | 0207171F               | F-15 EPAWSS                                   | 05  | U    | 100,232 | 67,956                  |                          | 67,956        |
| 97      | 0207279F               | Isolated Personnel Survivability and Recovery | 05  | U    |         | 27,881                  |                          | 27,881        |
| 98      | 0207328F               | Stand In Attack Weapon                        | 05  | U    | 161,199 | 263,152                 |                          | 263,152       |

\*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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| Line<br>No | Program<br>Element<br>Number | Item  | Act | Se<br>c | FY 2024<br>Request |
|------------|------------------------------|---|-----|---------|--------------------|
| 78         | 0604222F                     | Nuclear Weapons Support                       | 05  | U       | 45,884             |
| 79         | 0604270F                     | Electronic Warfare Development                | 05  | U       | 13,804             |
| 80         | 0604281F                     | Tactical Data Networks Enterprise             | 05  | U       | 74,023             |
| 81         | 0604287F                     | Physical Security Equipment                   | 05  | U       | 10,605             |
| 82         | 0604602F                     | Armament/Ordnance Development                 | 05  | U       | 5,918              |
| 83         | 0604604F                     | Submunitions                                  | 05  | U       | 3,345              |
| 84         | 0604617F                     | Agile Combat Support                          | 05  | U       | 21,967             |
| 85         | 0604706F                     | Life Support Systems                          | 05  | U       | 39,301             |
| 86         | 0604735F                     | Combat Training Ranges                        | 05  | U       | 152,569            |
| 87         | 0604932F                     | Long Range Standoff Weapon                    | 05  | U       | 911,406            |
| 88         | 0604933F                     | ICBM Fuze Modernization                       | 05  | U       | 71,732             |
| 89         | 0605030F                     | Joint Tactical Network Center (JTNC)          | 05  | U       | 2,256              |
| 90         | 0605031F                     | Joint Tactical Network (JTN)                  | 05  | U       | 452                |
| 91         | 0605056F                     | Open Architecture Management                  | 05  | U       | 36,582             |
| 92         | 0605057F                     | Next Generation Air-refueling System          | 05  | U       | 7,928              |
| 93         | 0605223F                     | Advanced Pilot Training                       | 05  | U       | 77,252             |
| 94         | 0605229F                     | HH-60W  | 05  | U       | 48,268             |
| 95         | 0605238F                     | Ground Based Strategic Deterrent EMD          | 05  | U       | 3,746,935          |
| 96         | 0207171F                     | F-15 EPAWSS                                   | 05  | U       | 13,982             |
| 97         | 0207279F                     | Isolated Personnel Survivability and Recovery | 05  | U       | 56,225             |
| 98         | 0207328F                     | Stand In Attack Weapon                        | 05  | U       | 298,585            |

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| Line No                                       | Program Element Number | Item                                     | Act | Se c | FY 2022          | FY 2023 Less            | FY 2023                  | FY 2023 Total    |
|---|------------------------|--|-----|------|------------------|-------------------------|--------------------------|------------------|
|   |                        |  |     |      | Actuals          | Supplementals Enactment | Supplementals Enactment* | Enactment        |
| 99  | 0207701F               | Full Combat Mission Training             | 05  | U    | 12,064           | 12,528                  |                          | 12,528           |
| 100   | 0208036F               | Medical C-CBRNE Programs                 | 05  | U    |                  |                         |                          |                  |
| 101   | 0303267F               | Auctioned Spectrum Relocation Fund       | 05  | U    | 28,186           |                         |                          |                  |
| 102   | 0305205F               | Endurance Unmanned Aerial Vehicles       | 05  | U    |                  |                         |                          |                  |
| 103   | 0401221F               | KC-46A Tanker Squadrons                  | 05  | U    | 54,145           | 177,529                 |                          | 177,529          |
| 104   | 0401319F               | VC-25B                                   | 05  | U    | 407,147          | 147,932                 |                          | 147,932          |
| 105   | 0701212F               | Automated Test Systems                   | 05  | U    | 15,445           | 16,664                  |                          | 16,664           |
| 106   | 0804772F               | Training Developments                    | 05  | U    | 2,482            | 10,838                  |                          | 10,838           |
| <b>System Development &amp; Demonstration</b> |                        |  |     |      | <b>2,176,294</b> | <b>6,074,824</b>        |                          | <b>6,074,824</b> |
| 107   | 0604256F               | Threat Simulator Development             | 06  | U    | 46,393           | 21,067                  |                          | 21,067           |
| 108   | 0604759F               | Major T&E Investment                     | 06  | U    | 128,708          | 171,314                 |                          | 171,314          |
| 109   | 0605101F               | RAND Project Air Force                   | 06  | U    | 34,698           | 32,767                  |                          | 32,767           |
| 110   | 0605502F               | Small Business Innovation Research       | 06  | U    | 780,381          |                         |                          |                  |
| 111   | 0605712F               | Initial Operational Test & Evaluation    | 06  | U    | 12,582           | 13,926                  |                          | 13,926           |
| 112   | 0605807F               | Test and Evaluation Support              | 06  | U    | 811,032          | 841,854                 |                          | 841,854          |
| 113   | 0605827F               | Acq Workforce- Global Vig & Combat Sys   | 06  | U    | 271,819          | 283,995                 |                          | 283,995          |
| 114   | 0605828F               | Acq Workforce- Global Reach              | 06  | U    | 439,459          | 457,589                 |                          | 457,589          |
| 115   | 0605829F               | Acq Workforce- Cyber, Network, & Bus Sys | 06  | U    | 432,971          | 479,423                 |                          | 479,423          |
| 116   | 0605830F               | Acq Workforce- Global Battle Mgmt        | 06  | U    |                  | 3,696                   |                          | 3,696            |
| 117   | 0605831F               | Acq Workforce- Capability Integration    | 06  | U    | 255,914          | 253,568                 |                          | 253,568          |
| 118   | 0605832F               | Acq Workforce- Advanced Prgm Technology  | 06  | U    | 61,648           | 67,361                  |                          | 67,361           |

\*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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| Line<br>No | Program<br>Element<br>Number                  | Item                                     | Act | Se<br>c | FY 2024<br>Request |
|------------|---|--|-----|---------|--------------------|
| 99         | 0207701F                                      | Full Combat Mission Training             | 05  | U       | 7,597              |
| 100        | 0208036F                                      | Medical C-CBRNE Programs                 | 05  | U       | 2,006              |
| 101        | 0303267F                                      | Auctioned Spectrum Relocation Fund       | 05  | U       |                    |
| 102        | 0305205F                                      | Endurance Unmanned Aerial Vehicles       | 05  | U       | 30,000             |
| 103        | 0401221F                                      | KC-46A Tanker Squadrons                  | 05  | U       | 124,662            |
| 104        | 0401319F                                      | VC-25B                                   | 05  | U       | 490,701            |
| 105        | 0701212F                                      | Automated Test Systems                   | 05  | U       | 12,911             |
| 106        | 0804772F                                      | Training Developments                    | 05  | U       | 1,922              |
|            | <b>System Development &amp; Demonstration</b> |  |     |         | <b>6,481,731</b>   |
| 107        | 0604256F                                      | Threat Simulator Development             | 06  | U       | 16,626             |
| 108        | 0604759F                                      | Major T&E Investment                     | 06  | U       | 31,143             |
| 109        | 0605101F                                      | RAND Project Air Force                   | 06  | U       | 38,398             |
| 110        | 0605502F                                      | Small Business Innovation Research       | 06  | U       | 1,466              |
| 111        | 0605712F                                      | Initial Operational Test & Evaluation    | 06  | U       | 13,736             |
| 112        | 0605807F                                      | Test and Evaluation Support              | 06  | U       | 913,213            |
| 113        | 0605827F                                      | Acq Workforce- Global Vig & Combat Sys   | 06  | U       | 317,901            |
| 114        | 0605828F                                      | Acq Workforce- Global Reach              | 06  | U       | 541,677            |
| 115        | 0605829F                                      | Acq Workforce- Cyber, Network, & Bus Sys | 06  | U       | 551,213            |
| 116        | 0605830F                                      | Acq Workforce- Global Battle Mgmt        | 06  | U       |                    |
| 117        | 0605831F                                      | Acq Workforce- Capability Integration    | 06  | U       | 243,780            |
| 118        | 0605832F                                      | Acq Workforce- Advanced Prgm Technology  | 06  | U       | 109,030            |

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| Line No | Program Element Number | Item   | Act | Se c | FY 2022          | FY 2023 Less            | FY 2023                  | FY 2023 Total    |
|---------|------------------------|--|-----|------|------------------|-------------------------|--------------------------|------------------|
|         |                        |  |     |      | Actuals          | Supplementals Enactment | Supplementals Enactment* | Enactment        |
| 119     | 0605833F               | Acq Workforce- Nuclear Systems   | 06  | U    | 227,425          | 236,382                 |                          | 236,382          |
| 120     | 0605898F               | Management HQ - R&D  | 06  | U    | 6,644            | 5,624                   |                          | 5,624            |
| 121     | 0605976F               | Facilities Restoration and Modernization - Test and Evaluation Support | 06  | U    | 70,788           | 133,420                 |                          | 133,420          |
| 122     | 0605978F               | Facilities Sustainment - Test and Evaluation Support                   | 06  | U    | 30,057           | 31,561                  |                          | 31,561           |
| 123     | 0606017F               | Requirements Analysis and Maturation                                   | 06  | U    | 88,259           | 109,513                 |                          | 109,513          |
| 124     | 0606398F               | Management HQ - T&E  | 06  | U    | 7,263            | 6,285                   |                          | 6,285            |
| 125     | 0303166F               | Support to Information Operations (IO) Capabilities                    | 06  | U    | 537              | 556                     |                          | 556              |
| 126     | 0303255F               | Command, Control, Communication, and Computers (C4) -                  | 06  | U    | 35,340           | 29,092                  |                          | 29,092           |
| 127     | 0308602F               | ENTEPRISE INFORMATION SERVICES (EIS)                                   | 06  | U    | 26,004           | 73,100                  |                          | 73,100           |
| 128     | 0702806F               | Acquisition and Management Support                                     | 06  | U    | 36,317           | 49,152                  |                          | 49,152           |
| 129     | 0804731F               | General Skill Training   | 06  | U    | 1,506            | 871                     |                          | 871              |
| 130     | 0804772F               | Training Developments  | 06  | U    | 2,957            |                         |                          |                  |
| 131     | 0909999F               | Financing for Cancelled Account Adjustments                            | 06  | U    | 17,055           |                         |                          |                  |
| 132     | 1001004F               | International Activities   | 06  | U    | 2,420            | 2,593                   |                          | 2,593            |
| 133     | 1206864F               | Space Test Program (STP)   | 06  | U    | 2                |                         |                          |                  |
|         |                        | <b>Management Support</b>  |     |      | <b>3,828,179</b> | <b>3,304,709</b>        |                          | <b>3,304,709</b> |
| 134     | 0604233F               | Specialized Undergraduate Flight Training                              | 07  | U    | 8,333            | 17,267                  |                          | 17,267           |
| 135     | 0604283F               | Battle Mgmt Com & Ctrl Sensor Development                              | 07  | U    |                  |                         |                          |                  |
| 136     | 0604445F               | Wide Area Surveillance   | 07  | U    | 2,687            |                         |                          |                  |
| 137     | 0604617F               | Agile Combat Support   | 07  | U    |                  | 8,199                   |                          | 8,199            |

\*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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| Line<br>No | Program<br>Element<br>Number | Item   | Act | Se<br>c | FY 2024<br>Request |
|------------|------------------------------|--|-----|---------|--------------------|
| 119        | 0605833F                     | Acq Workforce- Nuclear Systems   | 06  | U       | 336,788            |
| 120        | 0605898F                     | Management HQ - R&D  | 06  | U       | 5,005              |
| 121        | 0605976F                     | Facilities Restoration and Modernization - Test and Evaluation Support | 06  | U       | 87,889             |
| 122        | 0605978F                     | Facilities Sustainment - Test and Evaluation Support                   | 06  | U       | 35,065             |
| 123        | 0606017F                     | Requirements Analysis and Maturation                                   | 06  | U       | 89,956             |
| 124        | 0606398F                     | Management HQ - T&E  | 06  | U       | 7,453              |
| 125        | 0303166F                     | Support to Information Operations (IO) Capabilities                    | 06  | U       |                    |
| 126        | 0303255F                     | Command, Control, Communication, and Computers (C4) - STRATCOM         | 06  | U       | 20,871             |
| 127        | 0308602F                     | ENTEPRISE INFORMATION SERVICES (EIS)                                   | 06  | U       | 100,357            |
| 128        | 0702806F                     | Acquisition and Management Support                                     | 06  | U       | 20,478             |
| 129        | 0804731F                     | General Skill Training   | 06  | U       | 796                |
| 130        | 0804772F                     | Training Developments  | 06  | U       |                    |
| 131        | 0909999F                     | Financing for Cancelled Account Adjustments                            | 06  | U       |                    |
| 132        | 1001004F                     | International Activities   | 06  | U       | 3,917              |
| 133        | 1206864F                     | Space Test Program (STP)   | 06  | U       |                    |
|            | <b>Management Support</b>    |  |     |         | <b>3,486,758</b>   |
| 134        | 0604233F                     | Specialized Undergraduate Flight Training                              | 07  | U       | 41,464             |
| 135        | 0604283F                     | Battle Mgmt Com & Ctrl Sensor Development                              | 07  | U       | 40,000             |
| 136        | 0604445F                     | Wide Area Surveillance   | 07  | U       | 8,018              |
| 137        | 0604617F                     | Agile Combat Support   | 07  | U       | 5,645              |

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|---------|------------------------|--|-----|------|-----------|-------------------------|--------------------------|---------------|
|         |                        |  |     |      | Actuals   | Supplementals Enactment | Supplementals Enactment* | Enactment     |
| 138     | 0604776F               | Deployment & Distribution Enterprise R&D                     | 07  | U    | 193       | 156                     |                          | 156           |
| 139     | 0604840F               | F-35 C2D2  | 07  | U    | 1,085,909 | 1,032,528               |                          | 1,032,528     |
| 140     | 0605018F               | AF Integrated Personnel and Pay System (AF-IPPS)             | 07  | U    | 25,582    | 37,901                  |                          | 37,901        |
| 141     | 0605024F               | Anti-Tamper Technology Executive Agency                      | 07  | U    | 50,669    | 50,066                  |                          | 50,066        |
| 142     | 0605117F               | Foreign Materiel Acquisition and Exploitation                | 07  | U    | 109,249   | 80,338                  | 37,500                   | 117,838       |
| 143     | 0605278F               | HC/MC-130 Recap RDT&E  | 07  | U    | 43,095    | 52,940                  |                          | 52,940        |
| 144     | 0606018F               | NC3 Integration  | 07  | U    | 30,077    | 22,743                  |                          | 22,743        |
| 145     | 0101113F               | B-52 Squadrons   | 07  | U    | 620,115   | 723,107                 |                          | 723,107       |
| 146     | 0101122F               | Air-Launched Cruise Missile (ALCM)                           | 07  | U    | 436       | 571                     |                          | 571           |
| 147     | 0101126F               | B-1B Squadrons   | 07  | U    | 37,951    | 20,044                  |                          | 20,044        |
| 148     | 0101127F               | B-2 Squadrons  | 07  | U    | 123,749   | 101,790                 |                          | 101,790       |
| 149     | 0101213F               | Minuteman Squadrons  | 07  | U    | 111,754   | 73,650                  |                          | 73,650        |
| 150     | 0101316F               | Worldwide Joint Strategic Communications                     | 07  | U    | 11,712    | 22,708                  |                          | 22,708        |
| 151     | 0101318F               | Service Support to STRATCOM - Global Strike                  | 07  | U    |           |                         |                          |               |
| 152     | 0101324F               | Integrated Strategic Planning & Analysis Network             | 07  | U    | 28,895    | 32,062                  |                          | 32,062        |
| 153     | 0101328F               | ICBM Reentry Vehicles  | 07  | U    | 100,463   | 115,616                 |                          | 115,616       |
| 155     | 0102110F               | MH-139A  | 07  | U    | 15,913    | 15,922                  |                          | 15,922        |
| 156     | 0102326F               | Region/Sector Operation Control Center Modernization Program | 07  | U    | 756       | 406                     |                          | 406           |
| 157     | 0102412F               | North Warning System (NWS)                                   | 07  | U    | 95        | 240,159                 |                          | 240,159       |
| 158     | 0102417F               | Over-the-Horizon Backscatter Radar                           | 07  | U    | 66,022    | 12,210                  |                          | 12,210        |

\*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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| Line<br>No | Program<br>Element<br>Number | Item   | Act | Se<br>c | FY 2024<br>Request |
|------------|------------------------------|--|-----|---------|--------------------|
| 138        | 0604776F                     | Deployment & Distribution Enterprise R&D                     | 07  | U       |                    |
| 139        | 0604840F                     | F-35 C2D2  | 07  | U       | 1,275,268          |
| 140        | 0605018F                     | AF Integrated Personnel and Pay System (AF-IPPS)             | 07  | U       | 40,203             |
| 141        | 0605024F                     | Anti-Tamper Technology Executive Agency                      | 07  | U       | 49,613             |
| 142        | 0605117F                     | Foreign Materiel Acquisition and Exploitation                | 07  | U       | 93,881             |
| 143        | 0605278F                     | HC/MC-130 Recap RDT&E  | 07  | U       | 36,536             |
| 144        | 0606018F                     | NC3 Integration  | 07  | U       | 22,910             |
| 145        | 0101113F                     | B-52 Squadrons   | 07  | U       | 950,815            |
| 146        | 0101122F                     | Air-Launched Cruise Missile (ALCM)                           | 07  | U       | 290                |
| 147        | 0101126F                     | B-1B Squadrons   | 07  | U       | 12,619             |
| 148        | 0101127F                     | B-2 Squadrons  | 07  | U       | 87,623             |
| 149        | 0101213F                     | Minuteman Squadrons  | 07  | U       | 33,237             |
| 150        | 0101316F                     | Worldwide Joint Strategic Communications                     | 07  | U       | 24,653             |
| 151        | 0101318F                     | Service Support to STRATCOM - Global Strike                  | 07  | U       | 7,562              |
| 152        | 0101324F                     | Integrated Strategic Planning & Analysis Network             | 07  | U       |                    |
| 153        | 0101328F                     | ICBM Reentry Vehicles  | 07  | U       | 475,415            |
| 155        | 0102110F                     | MH-139A  | 07  | U       | 25,737             |
| 156        | 0102326F                     | Region/Sector Operation Control Center Modernization Program | 07  | U       | 831                |
| 157        | 0102412F                     | North Warning System (NWS)                                   | 07  | U       | 102                |
| 158        | 0102417F                     | Over-the-Horizon Backscatter Radar                           | 07  | U       | 428,754            |



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| Line No | Program Element Number | Item  | Act | Se c | FY 2022 | FY 2023 Less            | FY 2023                  | FY 2023 Total |
|---------|------------------------|---|-----|------|---------|-------------------------|--------------------------|---------------|
|         |                        |   |     |      | Actuals | Supplementals Enactment | Supplementals Enactment* | Enactment     |
| 159     | 0202834F               | Vehicles and Support Equipment - General          | 07  | U    | 2,909   | 14,483                  |                          | 14,483        |
| 160     | 0205219F               | MQ-9 UAV  | 07  | U    | 76,847  | 145,499                 |                          | 145,499       |
| 161     | 0205671F               | Joint Counter RCIED Electronic Warfare            | 07  | U    | 3,733   | 1,747                   |                          | 1,747         |
| 162     | 0207040F               | Multi-Platform Electronic Warfare Equipment       | 07  | U    | 27,063  | 45,895                  |                          | 45,895        |
| 163     | 0207131F               | A-10 Squadrons                                    | 07  | U    | 33,434  | 64,593                  |                          | 64,593        |
| 164     | 0207133F               | F-16 Squadrons                                    | 07  | U    | 221,838 | 247,536                 |                          | 247,536       |
| 165     | 0207134F               | F-15E Squadrons                                   | 07  | U    | 231,898 | 200,139                 |                          | 200,139       |
| 166     | 0207136F               | Manned Destructive Suppression                    | 07  | U    | 14,222  | 16,695                  |                          | 16,695        |
| 167     | 0207138F               | F-22A Squadrons                                   | 07  | U    | 626,329 | 559,709                 |                          | 559,709       |
| 168     | 0207142F               | F-35 Squadrons                                    | 07  | U    | 58,374  | 65,730                  |                          | 65,730        |
| 169     | 0207146F               | F-15EX  | 07  | U    | 103,950 | 83,830                  |                          | 83,830        |
| 170     | 0207161F               | Tactical AIM Missiles                             | 07  | U    | 31,863  | 34,536                  |                          | 34,536        |
| 171     | 0207163F               | Advanced Medium Range Air-to-Air Missile (AMRAAM) | 07  | U    | 49,686  | 52,704                  |                          | 52,704        |
| 172     | 0207227F               | Combat Rescue - Pararescue                        | 07  | U    | 845     | 863                     |                          | 863           |
| 173     | 0207238F               | E-11A   | 07  | U    |         |                         |                          |               |
| 174     | 0207247F               | AF TENCAP   | 07  | U    | 23,685  | 23,309                  | 2,250                    | 25,559        |
| 175     | 0207249F               | Precision Attack Systems Procurement              | 07  | U    | 14,016  | 12,722                  |                          | 12,722        |
| 176     | 0207253F               | Compass Call                                      | 07  | U    | 87,925  | 50,000                  |                          | 50,000        |
| 177     | 0207268F               | Aircraft Engine Component Improvement Program     | 07  | U    | 111,566 | 136,087                 |                          | 136,087       |
| 178     | 0207325F               | Joint Air-to-Surface Standoff Missile (JASSM)     | 07  | U    | 114,018 | 117,198                 |                          | 117,198       |
| 179     | 0207327F               | Small Diameter Bomb (SDB)                         | 07  | U    | 31,003  | 32,713                  |                          | 32,713        |

\*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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| Line<br>No | Program<br>Element<br>Number | Item  | Act | Se<br>c | FY 2024<br>Request |
|------------|------------------------------|---|-----|---------|--------------------|
| 159        | 0202834F                     | Vehicles and Support Equipment - General          | 07  | U       | 15,498             |
| 160        | 0205219F                     | MQ-9 UAV  | 07  | U       | 81,123             |
| 161        | 0205671F                     | Joint Counter RCIED Electronic Warfare            | 07  | U       | 2,303              |
| 162        | 0207040F                     | Multi-Platform Electronic Warfare Equipment       | 07  | U       | 7,312              |
| 163        | 0207131F                     | A-10 Squadrons                                    | 07  | U       |                    |
| 164        | 0207133F                     | F-16 Squadrons                                    | 07  | U       | 98,633             |
| 165        | 0207134F                     | F-15E Squadrons                                   | 07  | U       | 50,965             |
| 166        | 0207136F                     | Manned Destructive Suppression                    | 07  | U       | 16,543             |
| 167        | 0207138F                     | F-22A Squadrons                                   | 07  | U       | 725,889            |
| 168        | 0207142F                     | F-35 Squadrons                                    | 07  | U       | 97,231             |
| 169        | 0207146F                     | F-15EX  | 07  | U       | 100,006            |
| 170        | 0207161F                     | Tactical AIM Missiles                             | 07  | U       | 41,958             |
| 171        | 0207163F                     | Advanced Medium Range Air-to-Air Missile (AMRAAM) | 07  | U       | 53,679             |
| 172        | 0207227F                     | Combat Rescue - Pararescue                        | 07  | U       | 726                |
| 173        | 0207238F                     | E-11A   | 07  | U       | 64,888             |
| 174        | 0207247F                     | AF TENCAP   | 07  | U       | 25,749             |
| 175        | 0207249F                     | Precision Attack Systems Procurement              | 07  | U       | 11,872             |
| 176        | 0207253F                     | Compass Call                                      | 07  | U       | 66,932             |
| 177        | 0207268F                     | Aircraft Engine Component Improvement Program     | 07  | U       | 55,223             |
| 178        | 0207325F                     | Joint Air-to-Surface Standoff Missile (JASSM)     | 07  | U       | 132,937            |
| 179        | 0207327F                     | Small Diameter Bomb (SDB)                         | 07  | U       | 37,518             |

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| Line No | Program Element Number | Item   | Act | Se c | FY 2022 | FY 2023 Less            | FY 2023                  | FY 2023 Total |
|---------|------------------------|--|-----|------|---------|-------------------------|--------------------------|---------------|
|         |                        |  |     |      | Actuals | Supplementals Enactment | Supplementals Enactment* | Enactment     |
| 180     | 0207410F               | Air & Space Operations Center (AOC)                | 07  | U    | 87,873  | 78,889                  |                          | 78,889        |
| 181     | 0207412F               | Control and Reporting Center (CRC)                 | 07  | U    | 9,565   | 6,615                   |                          | 6,615         |
| 182     | 0207417F               | Airborne Warning and Control System (AWACS)        | 07  | U    | 167,956 | 11,598                  |                          | 11,598        |
| 183     | 0207418F               | AFSPECPWAR - TACP                                  | 07  | U    | 3,678   | 5,982                   |                          | 5,982         |
| 185     | 0207431F               | Combat Air Intelligence System Activities          | 07  | U    | 17,863  | 29,704                  | 7,750                    | 37,454        |
| 186     | 0207438F               | Theater Battle Management (TBM) C4I                | 07  | U    | 7,716   | 5,851                   |                          | 5,851         |
| 187     | 0207439F               | Electronic Warfare Integrated Reprogramming (EWIR) | 07  | U    | 15,000  | 15,990                  |                          | 15,990        |
| 188     | 0207444F               | Tactical Air Control Party-Mod                     | 07  | U    | 12,779  | 10,304                  |                          | 10,304        |
| 189     | 0207452F               | DCAPES   | 07  | U    | 4,147   | 8,049                   |                          | 8,049         |
| 190     | 0207521F               | Air Force Calibration Programs                     | 07  | U    | 2,256   | 2,123                   |                          | 2,123         |
| 191     | 0207522F               | Airbase Air Defense Systems (ABADS)                | 07  | U    | 7,177   |                         |                          |               |
| 192     | 0207573F               | National Technical Nuclear Forensics               | 07  | U    | 1,971   | 2,039                   |                          | 2,039         |
| 193     | 0207590F               | Seek Eagle   | 07  | U    | 30,484  | 32,853                  |                          | 32,853        |
| 194     | 0207601F               | USAF Modeling and Simulation                       | 07  | U    | 16,838  | 19,283                  |                          | 19,283        |
| 195     | 0207605F               | Wargaming and Simulation Centers                   | 07  | U    | 7,535   | 7,004                   |                          | 7,004         |
| 196     | 0207610F               | Battlefield Abn Comm Node (BACN)                   | 07  | U    | 30,953  |                         |                          |               |
| 197     | 0207697F               | Distributed Training and Exercises                 | 07  | U    | 3,860   | 4,624                   |                          | 4,624         |
| 198     | 0208006F               | Mission Planning Systems                           | 07  | U    | 92,956  | 98,807                  |                          | 98,807        |
| 199     | 0208007F               | Tactical Deception                                 | 07  | U    | 13,812  | 34,574                  |                          | 34,574        |
| 200     | 0208064F               | OPERATIONAL HQ - CYBER                             | 07  | U    | 2,037   | 14,347                  |                          | 14,347        |
| 201     | 0208087F               | Distributed Cyber Warfare Operations               | 07  | U    | 68,152  | 76,425                  |                          | 76,425        |

\*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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| Line<br>No | Program<br>Element<br>Number | Item   | Act | Se<br>c | FY 2024<br>Request |
|------------|------------------------------|--|-----|---------|--------------------|
| 180        | 0207410F                     | Air & Space Operations Center (AOC)                | 07  | U       | 72,059             |
| 181        | 0207412F                     | Control and Reporting Center (CRC)                 | 07  | U       | 17,498             |
| 182        | 0207417F                     | Airborne Warning and Control System (AWACS)        | 07  | U       |                    |
| 183        | 0207418F                     | AFSPECPWAR - TACP                                  | 07  | U       | 2,106              |
| 185        | 0207431F                     | Combat Air Intelligence System Activities          | 07  | U       | 72,010             |
| 186        | 0207438F                     | Theater Battle Management (TBM) C4I                | 07  | U       | 6,467              |
| 187        | 0207439F                     | Electronic Warfare Integrated Reprogramming (EWIR) | 07  | U       | 10,388             |
| 188        | 0207444F                     | Tactical Air Control Party-Mod                     | 07  | U       | 10,060             |
| 189        | 0207452F                     | DCAPES   | 07  | U       | 8,233              |
| 190        | 0207521F                     | Air Force Calibration Programs                     | 07  | U       | 2,172              |
| 191        | 0207522F                     | Airbase Air Defense Systems (ABADS)                | 07  | U       |                    |
| 192        | 0207573F                     | National Technical Nuclear Forensics               | 07  | U       | 2,049              |
| 193        | 0207590F                     | Seek Eagle   | 07  | U       | 33,478             |
| 194        | 0207601F                     | USAF Modeling and Simulation                       | 07  | U       |                    |
| 195        | 0207605F                     | Wargaming and Simulation Centers                   | 07  | U       | 11,894             |
| 196        | 0207610F                     | Battlefield Abn Comm Node (BACN)                   | 07  | U       |                    |
| 197        | 0207697F                     | Distributed Training and Exercises                 | 07  | U       | 3,811              |
| 198        | 0208006F                     | Mission Planning Systems                           | 07  | U       | 96,272             |
| 199        | 0208007F                     | Tactical Deception                                 | 07  | U       | 26,533             |
| 200        | 0208064F                     | OPERATIONAL HQ - CYBER                             | 07  | U       |                    |
| 201        | 0208087F                     | Distributed Cyber Warfare Operations               | 07  | U       | 50,122             |

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| Line No | Program Element Number | Item   | Act | Se c | FY 2022 | FY 2023 Less            | FY 2023                  | FY 2023 Total |
|---------|------------------------|--|-----|------|---------|-------------------------|--------------------------|---------------|
|         |                        |  |     |      | Actuals | Supplementals Enactment | Supplementals Enactment* | Enactment     |
| 202     | 0208088F               | AF Defensive Cyberspace Operations                         | 07  | U    | 21,950  | 16,809                  |                          | 16,809        |
| 203     | 0208097F               | Joint Cyber Command and Control (JCC2)                     | 07  | U    | 78,592  | 79,955                  |                          | 79,955        |
| 204     | 0208099F               | Unified Platform (UP)                                      | 07  | U    | 89,135  | 106,916                 |                          | 106,916       |
| 208     | 0208288F               | Intel Data Applications                                    | 07  | U    | 474     | 2,130                   |                          | 2,130         |
| 209     | 0301025F               | GeoBase  | 07  | U    | 2,680   | 2,928                   |                          | 2,928         |
| 210     | 0301112F               | Nuclear Planning and Execution System (NPES)               | 07  | U    | 14,738  | 16,158                  |                          | 16,158        |
| 211     | 0301113F               | Cyber Security Intelligence Support                        | 07  | U    | 5,224   | 8,972                   |                          | 8,972         |
| 218     | 0301401F               | AF Multi-Domain Non-Traditional ISR Battlespace Awareness  | 07  | U    | 2,463   | 3,069                   |                          | 3,069         |
| 219     | 0302015F               | E-4B National Airborne Operations Center (NAOC)            | 07  | U    | 22,798  | 25,701                  |                          | 25,701        |
| 220     | 0303004F               | EIT CONNECT  | 07  | U    |         |                         |                          |               |
| 221     | 0303089F               | Cyberspace Operations Systems                              | 07  | U    |         |                         |                          |               |
| 222     | 0303131F               | Minimum Essential Emergency Communications Network (MEECN) | 07  | U    | 51,681  | 35,548                  |                          | 35,548        |
| 223     | 0303133F               | High Frequency Radio Systems                               | 07  | U    |         |                         |                          |               |
| 224     | 0303140F               | Information Systems Security Program                       | 07  | U    | 12,795  | 70,263                  |                          | 70,263        |
| 225     | 0303142F               | Global Force Management - Data Initiative                  | 07  | U    | 435     |                         |                          |               |
| 226     | 0303248F               | All Domain Common Platform                                 | 07  | U    | 60,894  | 46,540                  |                          | 46,540        |
| 227     | 0303260F               | Joint Military Deception Initiative                        | 07  | U    |         | 2,588                   |                          | 2,588         |
| 228     | 0304100F               | Strategic Mission Planning & Execution System (SMPES)      | 07  | U    |         |                         |                          |               |
| 230     | 0304260F               | Airborne SIGINT Enterprise                                 | 07  | U    | 88,645  | 109,528                 |                          | 109,528       |
| 231     | 0304310F               | Commercial Economic Analysis                               | 07  | U    | 3,632   | 4,221                   |                          | 4,221         |

\*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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| Line<br>No | Program<br>Element<br>Number | Item   | Act | Se<br>c | FY 2024<br>Request |
|------------|------------------------------|--|-----|---------|--------------------|
| 202        | 0208088F                     | AF Defensive Cyberspace Operations                         | 07  | U       | 113,064            |
| 203        | 0208097F                     | Joint Cyber Command and Control (JCC2)                     | 07  | U       |                    |
| 204        | 0208099F                     | Unified Platform (UP)                                      | 07  | U       |                    |
| 208        | 0208288F                     | Intel Data Applications                                    | 07  | U       | 967                |
| 209        | 0301025F                     | GeoBase  | 07  | U       | 1,514              |
| 210        | 0301112F                     | Nuclear Planning and Execution System (NPES)               | 07  | U       |                    |
| 211        | 0301113F                     | Cyber Security Intelligence Support                        | 07  | U       | 8,476              |
| 218        | 0301401F                     | AF Multi-Domain Non-Traditional ISR Battlespace Awareness  | 07  | U       | 2,890              |
| 219        | 0302015F                     | E-4B National Airborne Operations Center (NAOC)            | 07  | U       | 39,868             |
| 220        | 0303004F                     | EIT CONNECT  | 07  | U       | 32,900             |
| 221        | 0303089F                     | Cyberspace Operations Systems                              | 07  | U       | 4,881              |
| 222        | 0303131F                     | Minimum Essential Emergency Communications Network (MEECN) | 07  | U       | 33,567             |
| 223        | 0303133F                     | High Frequency Radio Systems                               | 07  | U       | 40,000             |
| 224        | 0303140F                     | Information Systems Security Program                       | 07  | U       | 95,523             |
| 225        | 0303142F                     | Global Force Management - Data Initiative                  | 07  | U       |                    |
| 226        | 0303248F                     | All Domain Common Platform                                 | 07  | U       | 71,296             |
| 227        | 0303260F                     | Joint Military Deception Initiative                        | 07  | U       | 4,682              |
| 228        | 0304100F                     | Strategic Mission Planning & Execution System (SMPES)      | 07  | U       | 64,944             |
| 230        | 0304260F                     | Airborne SIGINT Enterprise                                 | 07  | U       | 108,947            |
| 231        | 0304310F                     | Commercial Economic Analysis                               | 07  | U       | 4,635              |

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| Line No | Program Element Number | Item   | Act | Se c | FY 2022 | FY 2023 Less            | FY 2023                  | FY 2023 Total |
|---------|------------------------|--|-----|------|---------|-------------------------|--------------------------|---------------|
|         |                        |  |     |      | Actuals | Supplementals Enactment | Supplementals Enactment* | Enactment     |
| 234     | 0305015F               | C2 Air Operations Suite - C2 Info Services                 | 07  | U    |         | 7,708                   |                          | 7,708         |
| 235     | 0305020F               | CCMD Intelligence Information Technology                   | 07  | U    | 1,663   | 1,751                   |                          | 1,751         |
| 236     | 0305022F               | ISR Modernization & Automation Dvmt (IMAD)                 | 07  | U    | 15,888  | 13,138                  |                          | 13,138        |
| 237     | 0305099F               | Global Air Traffic Management (GATM)                       | 07  | U    | 4,658   | 4,533                   |                          | 4,533         |
| 238     | 0305103F               | Cyber Security Initiative                                  | 07  | U    | 279     | 91                      |                          | 91            |
| 239     | 0305111F               | Weather Service  | 07  | U    | 36,524  | 56,457                  |                          | 56,457        |
| 240     | 0305114F               | Air Traffic Control, Approach, and Landing System (ATCALs) | 07  | U    | 15,266  | 8,367                   |                          | 8,367         |
| 241     | 0305116F               | Aerial Targets   | 07  | U    | 1,488   | 1,365                   |                          | 1,365         |
| 244     | 0305128F               | Security and Investigative Activities                      | 07  | U    | 214     | 223                     |                          | 223           |
| 245     | 0305146F               | Defense Joint Counterintelligence Activities               | 07  | U    | 8,733   | 8,328                   |                          | 8,328         |
| 246     | 0305179F               | Integrated Broadcast Service (IBS)                         | 07  | U    | 21,335  | 14,123                  |                          | 14,123        |
| 247     | 0305202F               | Dragon U-2   | 07  | U    | 40,713  | 20,170                  |                          | 20,170        |
| 248     | 0305206F               | Airborne Reconnaissance Systems                            | 07  | U    | 108,291 | 70,048                  |                          | 70,048        |
| 249     | 0305207F               | Manned Reconnaissance Systems                              | 07  | U    | 14,799  | 14,590                  |                          | 14,590        |
| 250     | 0305208F               | Distributed Common Ground/Surface Systems                  | 07  | U    | 24,558  | 26,901                  |                          | 26,901        |
| 251     | 0305220F               | RQ-4 UAV   | 07  | U    | 82,355  | 68,801                  |                          | 68,801        |
| 252     | 0305221F               | Network-Centric Collaborative Targeting                    | 07  | U    | 17,224  | 17,564                  |                          | 17,564        |
| 253     | 0305238F               | NATO AGS   | 07  | U    | 19,473  | 826                     |                          | 826           |
| 254     | 0305240F               | Support to DCGS Enterprise                                 | 07  | U    | 40,421  | 28,774                  |                          | 28,774        |
| 255     | 0305600F               | International Intelligence Technology and Architectures    | 07  | U    | 14,473  | 25,036                  |                          | 25,036        |

\*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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| Line<br>No | Program<br>Element<br>Number | Item   | Act | Se<br>c | FY 2024<br>Request |
|------------|------------------------------|--|-----|---------|--------------------|
| 234        | 0305015F                     | C2 Air Operations Suite - C2 Info Services                 | 07  | U       | 13,751             |
| 235        | 0305020F                     | CCMD Intelligence Information Technology                   | 07  | U       | 1,660              |
| 236        | 0305022F                     | ISR Modernization & Automation Dvmt (IMAD)                 | 07  | U       | 18,680             |
| 237        | 0305099F                     | Global Air Traffic Management (GATM)                       | 07  | U       | 5,031              |
| 238        | 0305103F                     | Cyber Security Initiative                                  | 07  | U       | 301                |
| 239        | 0305111F                     | Weather Service  | 07  | U       | 26,329             |
| 240        | 0305114F                     | Air Traffic Control, Approach, and Landing System (ATCALs) | 07  | U       | 8,751              |
| 241        | 0305116F                     | Aerial Targets   | 07  | U       | 6,915              |
| 244        | 0305128F                     | Security and Investigative Activities                      | 07  | U       | 352                |
| 245        | 0305146F                     | Defense Joint Counterintelligence Activities               | 07  | U       | 6,930              |
| 246        | 0305179F                     | Integrated Broadcast Service (IBS)                         | 07  | U       | 21,588             |
| 247        | 0305202F                     | Dragon U-2   | 07  | U       | 16,842             |
| 248        | 0305206F                     | Airborne Reconnaissance Systems                            | 07  | U       | 43,158             |
| 249        | 0305207F                     | Manned Reconnaissance Systems                              | 07  | U       | 14,330             |
| 250        | 0305208F                     | Distributed Common Ground/Surface Systems                  | 07  | U       | 88,854             |
| 251        | 0305220F                     | RQ-4 UAV   | 07  | U       | 1,242              |
| 252        | 0305221F                     | Network-Centric Collaborative Targeting                    | 07  | U       | 12,496             |
| 253        | 0305238F                     | NATO AGS   | 07  | U       | 2                  |
| 254        | 0305240F                     | Support to DCGS Enterprise                                 | 07  | U       | 31,589             |
| 255        | 0305600F                     | International Intelligence Technology and Architectures    | 07  | U       | 15,322             |



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| Line No | Program Element Number | Item   | Act | Se c | FY 2022 | FY 2023 Less            | FY 2023                  | FY 2023 Total |
|---------|------------------------|--|-----|------|---------|-------------------------|--------------------------|---------------|
|         |                        |  |     |      | Actuals | Supplementals Enactment | Supplementals Enactment* | Enactment     |
| 256     | 0305881F               | Rapid Cyber Acquisition                              | 07  | U    | 4,193   | 3,739                   |                          | 3,739         |
| 257     | 0305984F               | Personnel Recovery Command & Ctrl (PRC2)             | 07  | U    | 2,473   | 2,702                   |                          | 2,702         |
| 258     | 0307577F               | Intelligence Mission Data (IMD)                      | 07  | U    | 6,169   | 6,332                   |                          | 6,332         |
| 259     | 0401115F               | C-130 Airlift Squadron                               | 07  | U    | 12,383  | 407                     |                          | 407           |
| 260     | 0401119F               | C-5 Airlift Squadrons (IF)                           | 07  | U    | 16,998  | 3,100                   |                          | 3,100         |
| 261     | 0401130F               | C-17 Aircraft (IF)                                   | 07  | U    | 15,779  | 25,387                  |                          | 25,387        |
| 262     | 0401132F               | C-130J Program                                       | 07  | U    | 18,392  | 10,060                  |                          | 10,060        |
| 263     | 0401134F               | Large Aircraft IR Countermeasures (LAIRCM)           | 07  | U    | 6,429   | 2,909                   |                          | 2,909         |
| 264     | 0401218F               | KC-135s  | 07  | U    | 3,461   | 12,955                  |                          | 12,955        |
| 265     | 0401318F               | CV-22  | 07  | U    | 16,663  | 10,121                  |                          | 10,121        |
| 266     | 0408011F               | Special Tactics / Combat Control                     | 07  | U    | 6,467   | 6,297                   |                          | 6,297         |
| 267     | 0708055F               | Maintenance, Repair & Overhaul System                | 07  | U    | 26,211  | 19,892                  |                          | 19,892        |
| 268     | 0708610F               | Logistics Information Technology (LOGIT)             | 07  | U    | 6,870   | 17,271                  |                          | 17,271        |
| 269     | 0801380F               | AF LVC Operational Training (LVC-OT)                 | 07  | U    |         |                         |                          |               |
| 270     | 0804743F               | Other Flight Training                                | 07  | U    | 5,778   | 2,214                   |                          | 2,214         |
| 271     | 0808716F               | Other Personnel Activities                           | 07  | U    | 4,817   |                         |                          |               |
| 272     | 0901202F               | Joint Personnel Recovery Agency                      | 07  | U    | 1,759   | 1,885                   |                          | 1,885         |
| 273     | 0901218F               | Civilian Compensation Program                        | 07  | U    | 3,560   | 4,098                   |                          | 4,098         |
| 274     | 0901220F               | Personnel Administration                             | 07  | U    | 3,267   | 3,191                   |                          | 3,191         |
| 275     | 0901226F               | Air Force Studies and Analysis Agency                | 07  | U    | 1,202   | 899                     |                          | 899           |
| 276     | 0901538F               | Financial Management Information Systems Development | 07  | U    | 4,675   | 5,121                   |                          | 5,121         |

\*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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| Line<br>No | Program<br>Element<br>Number | Item   | Act | Se<br>c | FY 2024<br>Request |
|------------|------------------------------|--|-----|---------|--------------------|
| 256        | 0305881F                     | Rapid Cyber Acquisition                              | 07  | U       | 8,830              |
| 257        | 0305984F                     | Personnel Recovery Command & Ctrl (PRC2)             | 07  | U       | 2,764              |
| 258        | 0307577F                     | Intelligence Mission Data (IMD)                      | 07  | U       | 7,090              |
| 259        | 0401115F                     | C-130 Airlift Squadron                               | 07  | U       | 5,427              |
| 260        | 0401119F                     | C-5 Airlift Squadrons (IF)                           | 07  | U       | 29,502             |
| 261        | 0401130F                     | C-17 Aircraft (IF)                                   | 07  | U       | 2,753              |
| 262        | 0401132F                     | C-130J Program                                       | 07  | U       | 19,100             |
| 263        | 0401134F                     | Large Aircraft IR Countermeasures (LAIRCM)           | 07  | U       | 5,982              |
| 264        | 0401218F                     | KC-135s  | 07  | U       | 51,105             |
| 265        | 0401318F                     | CV-22  | 07  | U       | 18,127             |
| 266        | 0408011F                     | Special Tactics / Combat Control                     | 07  | U       | 9,198              |
| 267        | 0708055F                     | Maintenance, Repair & Overhaul System                | 07  | U       |                    |
| 268        | 0708610F                     | Logistics Information Technology (LOGIT)             | 07  | U       | 17,520             |
| 269        | 0801380F                     | AF LVC Operational Training (LVC-OT)                 | 07  | U       | 25,144             |
| 270        | 0804743F                     | Other Flight Training                                | 07  | U       | 2,265              |
| 271        | 0808716F                     | Other Personnel Activities                           | 07  | U       |                    |
| 272        | 0901202F                     | Joint Personnel Recovery Agency                      | 07  | U       | 2,266              |
| 273        | 0901218F                     | Civilian Compensation Program                        | 07  | U       | 4,006              |
| 274        | 0901220F                     | Personnel Administration                             | 07  | U       | 3,078              |
| 275        | 0901226F                     | Air Force Studies and Analysis Agency                | 07  | U       | 5,309              |
| 276        | 0901538F                     | Financial Management Information Systems Development | 07  | U       | 4,279              |

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|--|--|---|-----|------|-------------------|--------------------------------------|----------------------------------|-------------------------|
| 277  | 0901554F                               | Defense Enterprise Acntng and Mgt Sys (DEAMS) | 07  | U    | 52,707            | 48,199                               |                                  | 48,199                  |
| 278  | 1202140F                               | Service Support to SPACECOM Activities        | 07  | U    | 6,549             | 13,418                               |                                  | 13,418                  |
| 999  | 999999999                              | Classified Programs                           | 07  | U    | 16,966,755        | 17,653,475                           | 236,046                          | 17,889,521              |
|  | <b>Operational Systems Development</b> |   |     |      | <b>23,061,515</b> | <b>23,805,224</b>                    | <b>283,546</b>                   | <b>24,088,770</b>       |
| <b>Total Research, Development, Test and Evaluation, Air Force</b> |  |   |     |      | <b>41,507,268</b> | <b>44,997,587</b>                    | <b>284,846</b>                   | <b>45,282,433</b>       |

\*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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|--|--|---|------------|-----------------------|---------------------------|
| 277  | 0901554F                               | Defense Enterprise Acntng and Mgt Sys (DEAMS) | 07         | U                     | 45,925                    |
| 278  | 1202140F                               | Service Support to SPACECOM Activities        | 07         | U                     | 9,778                     |
| 999  | 999999999                              | Classified Programs                           | 07         | U                     | 16,814,245                |
|  | <b>Operational Systems Development</b> |   |            |                       | <b>23,829,283</b>         |
| <b>Total Research, Development, Test and Evaluation, Air Force</b> |  |   |            |                       | <b>46,565,356</b>         |



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| Electronic Warfare Integrated Reprogramming (EWIR) | 0207439F                      | 187           | 07.....   | Volume 4 - 23  |
| Enabled Cyber Activities                           | 0306415F                      | 71            | 04.....   | Volume 2 - 513 |
| Endurance Unmanned Aerial Vehicles                 | 0305205F                      | 102           | 05.....   | Volume 2 - 847 |
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| F-15E Squadrons                                    | 0207134F                      | 165           | 07.....   | Volume 3 - 647 |

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| F-15EX   | 0207146F                      | 169           | 07.....   | Volume 3 - 715 |
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| F-35 C2D2  | 0604840F                      | 139           | 07.....   | Volume 3 - 193 |
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| Future AF Capabilities Applied Research                                | 0602020F                      | 3             | 02.....   | Volume 1 - 23  |
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| GeoBase  | 0301025F                      | 209           | 07.....   | Volume 4 - 215 |
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| Human Effectiveness Applied Research                              | 0602202F                      | 7             | 02.....   | Volume 1 - 69  |
| Hypersonics Prototyping   | 0604033F                      | 46            | 04.....   | Volume 2 - 185 |
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| ICBM Fuze Modernization   | 0604933F                      | 88            | 05.....   | Volume 2 - 717 |
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| Integrated Broadcast Service (IBS)                                | 0305179F                      | 246           | 07.....   | Volume 4 - 475 |
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| International Activities                                | 1001004F                      | 132           | 06.....   | Volume 3 - 131 |
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| Joint Cyber Command and Control (JCC2)                  | 0208097F                      | 203           | 07.....   | Volume 4 - 193 |
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| Joint Tactical Network (JTN)                            | 0605031F                      | 90            | 05.....   | Volume 2 - 735 |
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| Joint Transportation Management System (JTMS)           | 0604668F                      | 55            | 04.....   | Volume 2 - 289 |
| KC-135s   | 0401218F                      | 264           | 07.....   | Volume 4 - 681 |
| KC-46A Tanker Squadrons                                 | 0401221F                      | 103           | 05.....   | Volume 2 - 853 |
| Large Aircraft IR Countermeasures (LAIRCM)              | 0401134F                      | 263           | 07.....   | Volume 4 - 673 |
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| Logistics Information Technology (LOGIT)                | 0708610F                      | 268           | 07.....   | Volume 4 - 723 |
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| Maintenance, Repair & Overhaul System                      | 0708055F                      | 267           | 07.....   | Volume 4 - 713 |
| Major T&E Investment                                       | 0604759F                      | 108           | 06.....   | Volume 3 - 9   |
| Management HQ - R&D  | 0605898F                      | 120           | 06.....   | Volume 3 - 75  |
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| Mission Partner Environments                               | 0305601F                      | 69            | 04.....   | Volume 2 - 499 |
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| National Technical Nuclear Forensics           | 0207573F                      | 192           | 07.....   | Volume 4 - 65  |
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| Other Flight Training                          | 0804743F                      | 270           | 07.....   | Volume 4 - 755 |
| Other Personnel Activities                     | 0808716F                      | 271           | 07.....   | Volume 4 - 763 |
| Over-the-Horizon Backscatter Radar             | 0102417F                      | 158           | 07.....   | Volume 3 - 559 |
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| RQ-4 UAV  | 0305220F                      | 251           | 07.....   | Volume 4 - 559 |
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| Science and Technology Management - Major Headquarters Activities | 0602298F                      | 11            | 02.....   | Volume 1 - 143 |
| Security and Investigative Activities                             | 0305128F                      | 244           | 07.....   | Volume 4 - 463 |
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| Special Tactics / Combat Control                      | 0408011F                      | 266           | 07.....   | Volume 4 - 703 |
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| Support to DCGS Enterprise                            | 0305240F                      | 254           | 07.....   | Volume 4 - 585 |
| Support to Information Operations (IO) Capabilities   | 0303166F                      | 125           | 06.....   | Volume 3 - 99  |
| Survivable Airborne Operations Center (SAOC)          | 0604288F                      | 50            | 04.....   | Volume 2 - 229 |
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| Tactical Air Control Party-Mod                        | 0207444F                      | 188           | 07.....   | Volume 4 - 31  |
| Tactical Data Networks Enterprise                     | 0604281F                      | 80            | 05.....   | Volume 2 - 609 |
| Tactical Deception                                    | 0208007F                      | 199           | 07.....   | Volume 4 - 141 |
| Tech Transition Program                               | 0604858F                      | 57            | 04.....   | Volume 2 - 341 |
| Technology Transfer                                   | 0604317F                      | 51            | 04.....   | Volume 2 - 237 |
| Test and Evaluation Support                           | 0605807F                      | 112           | 06.....   | Volume 3 - 31  |
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| Threat Simulator Development                                     | 0604256F                      | 107           | 06.....   | Volume 3 - 1   |
| Three Dimensional Long-Range Radar (3DELRR)                      | 0207455F                      | 64            | 04.....   | Volume 2 - 451 |
| Training Developments  | 0804772F                      | 106           | 05.....   | Volume 2 - 893 |
| Training Developments  | 0804772F                      | 130           | 06.....   | Volume 3 - 127 |
| U.S. Space Command Research and Development Support              | 1206415F                      | 75            | 04.....   | Volume 2 - 547 |
| USAF Modeling and Simulation                                     | 0207601F                      | 194           | 07.....   | Volume 4 - 81  |
| Unified Platform (UP)  | 0208099F                      | 204           | 07.....   | Volume 4 - 201 |
| University Affiliated Research Center (UARC) - Tactical Autonomy | 0602022F                      | 4             | 02.....   | Volume 1 - 29  |
| University Research Initiatives                                  | 0601103F                      | 2             | 01.....   | Volume 1 - 17  |
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| Vehicles and Support Equipment - General                         | 0202834F                      | 159           | 07.....   | Volume 3 - 577 |
| War Reserve Materiel - Ammunition                                | 0208030F                      | 66            | 04.....   | Volume 2 - 469 |
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Department of the Air Force  
 FY 2024 President's Budget  
 Exhibit R-1 FY 2024 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

Mar 2023

|  | FY 2022<br>Actuals | FY 2023 Less<br>Supplementals<br>Enactment | FY 2023<br>Supplementals<br>Enactment* | FY 2023 Total<br>Enactment | FY 2024<br>Request |
|--|--------------------|--|--|----------------------------|--------------------|
| <b><u>Summary Recap of Budget Activities</u></b>           |                    |  |  |                            |                    |
| Basic Research   | 505,166            | 612,317                                    |  | 612,317                    | 583,858            |
| Applied Research   | 1,590,543          | 1,744,375                                  |  | 1,744,375                  | 1,433,320          |
| Advanced Technology Development                            | 918,318            | 1,096,066                                  |  | 1,096,066                  | 891,376            |
| Advanced Component Development & Prototypes                | 9,427,253          | 8,360,072                                  | 1,300                                  | 8,361,372                  | 9,859,030          |
| System Development & Demonstration                         | 2,176,294          | 6,074,824                                  |  | 6,074,824                  | 6,481,731          |
| Management Support   | 3,828,179          | 3,304,709                                  |  | 3,304,709                  | 3,486,758          |
| Operational Systems Development                            | 23,061,515         | 23,805,224                                 | 283,546                                | 24,088,770                 | 23,829,283         |
| <b>Total Research, Development, Test, &amp; Evaluation</b> | <b>41,507,268</b>  | <b>44,997,587</b>                          | <b>284,846</b>                         | <b>45,282,433</b>          | <b>46,565,356</b>  |
| <b><u>Summary Recap of FYDP Programs</u></b>               |                    |  |  |                            |                    |
| Strategic Forces   | 1,117,861          | 1,358,245                                  |  | 1,358,245                  | 2,047,638          |
| General Purpose Forces                                     | 4,400,861          | 4,731,867                                  | 10,000                                 | 4,741,867                  | 5,160,229          |
| Intelligence and Communications                            | 1,209,806          | 1,173,980                                  |  | 1,173,980                  | 1,061,042          |
| Mobility Forces  | 557,864            | 396,697                                    |  | 396,697                    | 756,557            |
| Research and Development                                   | 16,948,692         | 19,386,302                                 | 38,800                                 | 19,425,102                 | 20,470,070         |
| Central Supply and Maintenance                             | 174,960            | 171,979                                    |  | 171,979                    | 94,340             |
| Training Medical and Other                                 | 17,540             | 23,238                                     |  | 23,238                     | 39,491             |
| Administration and Associated Activities                   | 103,958            | 77,443                                     |  | 77,443                     | 93,157             |
| Support of Other Nations                                   | 2,420              | 2,593                                      |  | 2,593                      | 3,917              |
| Space  | 6,551              | 21,768                                     |  | 21,768                     | 24,670             |
| Classified Programs  | 16,966,755         | 17,653,475                                 | 236,046                                | 17,889,521                 | 16,814,245         |

\*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328).

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Department of the Air Force  
FY 2024 President's Budget  
Exhibit R-1 FY 2024 President's Budget  
Total Obligational Authority  
(Dollars in Thousands)

Mar 2023

|  | FY 2022<br>Actuals | FY 2023 Less<br>Supplementals<br>Enactment | FY 2023<br>Supplementals<br>Enactment* | FY 2023 Total<br>Enactment | FY 2024<br>Request |
|--|--------------------|--|--|----------------------------|--------------------|
| <b>Total Research, Development, Test, &amp; Evaluation</b> | <b>41,507,268</b>  | <b>44,997,587</b>                          | <b>284,846</b>                         | <b>45,282,433</b>          | <b>46,565,356</b>  |

\*Includes enacted funding in the Ukraine Supplemental Appropriation Act, 2023 (Division B of Public Law 117-180) and Additional Ukraine Supplemental Appropriation Act, 2023 (Division M of Public Law 117-328)



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## ACRONYMS

### *GENERAL ACRONYMS*

|        |  |
|--------|--|
| A&AS   | - Advisory & Assistance Services                           |
| ABIDES | - Automated Budget Interactive Data Environment System     |
| ACAT   | - Acquisition Category                                     |
| ACTD   | - Advanced Concept Technology Demonstration                |
| AGM    | - Air-to-Ground Missile                                    |
| AIM    | - Air Intercept Missile                                    |
| AIS    | - Avionics Intermediate Shop                               |
| ACMI   | - Aircraft Combat Maneuvering Instrumentation              |
| AMRAAM | - Advanced Medium-Range Air-to-Air Missile                 |
| APPN   | - Appropriation  |
| ATD    | - Advanced Technology Development                          |
| BA     | - Budget Activity  |
| BES    | - Budget Estimate Submission                               |
| BY     | - Budget Year  |
| C3     | - Command, Control, and Communication System               |
| CFE    | - Contractor Furnished Equipment                           |
| CONOPS | - Concept of Operation                                     |
| CONUS  | - Continental United States                                |
| CPMS   | - Comprehensive Power Management System                    |
| CPT    | - Cockpit Procedures Trainer                               |
| CRA    | - Continuing Resolution Authority                          |
| CTS    | - Countermeasures Test Set                                 |
| CY     | - Current Year   |
| ECCM   | - Electronic Counter Counter-Measures                      |
| ECM    | - Electronic Counter Measures                              |
| ECO    | - Engineering Change Orders                                |
| EOQ    | - Economic Order Quantity                                  |
| ECP    | - Engineering Change Proposal                              |
| EPA    | - Economic Price Adjustment                                |
| EW     | - Electronic Warfare                                       |
| EWAISP | - Electronic Warfare Avionics Integration Support Facility |
| FLIR   | - Forward Looking Infra Red                                |

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|          |   |
|----------|---|
| FOT&E    | - Follow-on Test and Evaluation                 |
| FOC      | - Fully Operational Capability                  |
| FLTS     | - Flight Line Test Set                          |
| FPIF     | - Fixed Price Incentive Firm                    |
| FPIS     | - Fixed Price Incentive Fee, Successive Targets |
| FY       | - Fiscal Year                                   |
| GANS     | - Global Access Navigation & Safety             |
| GATM     | - Global Air Traffic Management                 |
| GFE      | - Government Furnished Equipment                |
| GFP      | - Government Furnished Property                 |
| GPS      | - Global Positioning System                     |
| GSE      | - Ground Support Equipment                      |
| ICS      | - Interim Contractor Support                    |
| IOC      | - Initial Operating Capability                  |
| IT       | - Information Technology                        |
| JUON     | - Joint Urgent Operational Need                 |
| MAIS     | - Major Automated Information System Program    |
| MDAP     | - Major Defense Acquisition Program             |
| METS     | - Mobile Electronic Test Stations               |
| MYP      | - Multiyear Procurement                         |
| NAVWAR   | - Navigation Warfare                            |
| NMC Rate | - Not Mission Capable Rate                      |
| OCO      | - Overseas Contingency Operations               |
| OOC      | - Overseas Operations Costs                     |
| OT&E     | - Operational Test and Evaluation               |
| OWRM     | - Other War Reserve Material                    |
| PAGEL    | - Priced Aerospace Ground Equipment List        |
| PB       | - President's Budget                            |
| PBR      | - Program Budget Review                         |
| PMA      | - Program Management Administration             |
| PMC      | - Procurement Method Code                       |
| PNO      | - Acquisition Program Number (MDAP Codes)       |
| PR       | - Purchase Request                              |
| PRCP     | - Program Resource Collection Process           |
| PTT      | - Part Task Trainer                             |
| PY       | - Prior Year                                    |

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|       |  |
|-------|--|
| R&M   | - Reliability and Maintainability              |
| RAA   | - Rapid Acquisition Authority                  |
| RDT&E | - Research, Development, Test and Evaluation   |
| RWR   | - Radar Warning Receiver                       |
| ROM   | - Rough Order of Magnitude                     |
| SS    | - Sole Source                                  |
| SOF   | - Special Operation Force                      |
| TAF   | - Tactical Air Force                           |
| TCAS  | - Traffic Collision Alert and Avoidance System |
| TEWS  | - Tactical Electronic Warfare System           |
| TISS  | - TEWS Intermediate Support System             |
| TOA   | - Total Obligation Authority                   |
| WCF   | - Working Capital Fund                         |
| WRM   | - War Reserve Material                         |
| WST   | - Weapon System Trainer                        |
| UAV   | - Unmanned Aerial Vehicle                      |
| XML   | - Extensible Markup Language                   |

### ***BASE / ORGANIZATIONAL ACRONYMS***

|          |  |
|----------|--|
| ACC      | - Air Combat Command                             |
| AETC     | - Air Education & Training Command               |
| AFCAO    | - Air Force Computer Acquisition Office          |
| AFCESA   | - Air Force Civil Engineering Support Agency     |
| AFCIC    | - AF Communications & Information Center         |
| AFCSC    | - Air Force Cryptologic Service Center           |
| AFESC    | - Air Force Engineering Services Center          |
| AFGWC    | - Air Force Global Weather Central               |
| AFIT     | - Air Force Institute of Technology              |
| AFLCMC   | - Air Force Life Cycle Management Center         |
| AFMC     | - Air Force Materiel Command                     |
| AFMETCAL | - Air Force Metrology and Calibration Office     |
| AFMLO    | - Air Force Medical Logistics Office             |
| AFOSI    | - Air Force Office of Special Investigation      |
| AFOTEC   | - Air Force Operational Test & Evaluation Center |
| AFPC     | - Air Force Personnel Center                     |

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|------------|--|
| AFPSL      | - AF Primary Standards Lab             |
| AFR        | - Air Force Reserve                    |
| AFSOC      | - AF Special Operations Command        |
| AFSPC      | - Air Force Space Command              |
| AIA        | - Air Intelligence Agency              |
| ALC        | - Air Logistics Center                 |
| AMC        | - Air Mobility Command                 |
| ANG        | - Air National Guard                   |
| ASC        | - Aeronautical Systems Center          |
| AETC       | - Air Education Training Command       |
| AU         | - Air University                       |
| AWS        | - Air Weather Service                  |
| CIA        | - Central Intelligence Agency          |
| DGSC       | - Defense General Support Center       |
| DLA        | - Defense Logistics Center             |
| DOE        | - Department of Energy                 |
| DPSC       | - Defense Personnel Support Center     |
| DSCC       | - Defense Supply Center, Columbus      |
| DTIC       | - Defense Technical Information Center |
| ER         | - Eastern Range                        |
| ESC        | - Electronic Systems Center            |
| FAA        | - Federal Aviation Agency              |
| FBI        | - Federal Bureau of Investigation      |
| GSA        | - General Services Administration      |
| JCS        | - Joint Chiefs of Staff                |
| NATO       | - North Atlantic Treaty Organization   |
| OSD        | - Office of the Secretary of Defense   |
| PACAF      | - Pacific Air Forces                   |
| USAF       | - United States Air Force              |
| USAFA      | - United States Air Force Academy      |
| USAFE      | - United States Air Force Europe       |
| USCENTCOM  | - United States Central Command        |
| USEUCOM    | - United States European Command       |
| USMC       | - United States Marine Corps           |
| USSTRATCOM | - United States Strategic Command      |
| WP AFB     | - Wright-Patterson AFB, OH             |

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### ***CONTRACT METHOD / TYPE ACRONYMS***

|          |   |
|----------|---|
| C        | - Competitive   |
| BA       | - Basic Agreement   |
| BOA      | - Basic Ordering Agreement                                  |
| BPA      | - Blanket Purchasing Agreement                              |
| CS       | - Cost Sharing  |
| IDDQ     | - Indefinite Delivery, Definite Quantity                    |
| IDIQ     | - Indefinite Delivery, Indefinite Quantity                  |
| IDRT     | - Indefinite Delivery, Requirements                         |
| Letter   | - Letter  |
| LH       | - Labor-hour  |
| MIPR     | - Military Interdepartmental Purchase Request               |
| MIPR-C   | - Military Interdepartmental Purchase Request - Competitive |
| MIPR-OPT | - Military Interdepartmental Purchase Request - Option      |
| MIPR-OTH | - Military Interdepartmental Purchase Request – Other       |
| MIPR-SS  | - Military Interdepartmental Purchase Request - Sole Source |
| OPT      | - Option  |
| OTH      | - Other   |
| PO       | - Project Order   |
| REQN     | - Requisition   |
| SS       | - Sole Source   |
| T&M      | - Time and Materials  |
| UCA      | - Undefined Contract Action                                 |
| WP       | - Work Project  |

### ***CONTRACTED BY ACRONYMS***

|         |   |
|---------|---|
| 11 WING | - 11th Support Wing, Washington, DC                               |
| ACC     | - Air Combat Command, Langley AFB, VA                             |
| AEDC    | - Arnold Engineering Development Center, Arnold AFB, TN           |
| AAC     | - Air Armament Center, Eglin AFB, FL                              |
| AEDC    | - Arnold Engineering Development Center, Arnold AFB, TN           |
| AETC    | - Air Education and Training Command, Randolph AFB, TX            |
| AFCIC   | - Air Force Communications and Information Center, Washington, DC |
| AFCESA  | - Air Force Civil Engineering Support Agency, Tyndall AFB, FL     |

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|             |   |
|-------------|---|
| AFFTC       | - Air Force Flight Test Center, Edwards AFB, CA                         |
| AFLCMC      | - Air Force Life Cycle Management Center, Wright-Patterson AFB, OH      |
| AFMC        | - Air Force Materiel Command, Wright-Patterson AFB, OH                  |
| AFMETCAL    | - Air Force Metrology and Calibration Office, Heath, Ohio               |
| AFMLO       | - Air Force Medical Logistics Office, Ft Detrick, MD                    |
| AIA         | - Air Intelligence Agency, Kelly AFB, TX                                |
| AMC         | - Air Mobility Command, Scott AFB, IL                                   |
| ASC         | - Aeronautical Systems Center, Wright-Patterson AFB, OH & Eglin AFB, FL |
| AFWA        | - Air Force Weather Agency, Offutt AFB, NE                              |
| DGSC        | - Defense General Support Center, Richmond, VA                          |
| DPSC        | - Defense Personnel Support Center, Philadelphia, PA                    |
| ER          | - Eastern Range, Patrick SFB, FL  |
| ESC         | - Electronic Systems Center, Hanscom AFB, MA                            |
| HSC         | - Human Services Center, Brook AFB, TX                                  |
| OC-ALC      | - Oklahoma City Air Logistics Center, Tinker AFB, OK                    |
| OO-ALC      | - Ogden Air Logistics Center, Hill AFB, UT                              |
| SMC         | - Space & Missile Systems Center, Los Angeles AFB, CA                   |
| US STRATCOM | - US Strategic Command, Offutt AFB, NE                                  |
| WACC        | - Washington Area Contracting Center, Washington DC                     |
| WR          | - Western Range, Vandenberg SFB, CA                                     |
| WR-ALC      | - Warner-Robins Air Logistics Center, Robins AFB, GA                    |
| AFSPC       | - Air Force Space Command, Peterson AFB, CO                             |
| HQ ANG      | - Headquarters, Air National Guard, Washington, DC                      |
| USAFE       | - United States Air Force Europe, Ramstein AB, GE                       |
| USAFA       | - United States Air Force Academy, Colorado Springs, CO                 |

### ***IDENTIFICATION CODES***

|          |  |
|----------|--|
| Code "A" | - Line items of material which have been approved for Air Force service use. |
| Code "B" | - Line items of material that have not been approved for Service use         |
| OBAN     | - Operating Budget Account Number, 2-digit code for unit allocated funds     |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0603036F / <i>Modular Advanced Missile</i> |
|--|---|

| COST (\$ in Millions)                                | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                                | -           | 0.000   | 75.688  | 105.238      | 0.000       | 105.238       | 130.767 | 147.722 | 163.495 | 90.823  | 0.000            | 713.733    |
| 643036: <i>Armament Demonstration and Validation</i> | -           | 0.000   | 75.688  | 105.238      | 0.000       | 105.238       | 130.767 | 147.722 | 163.495 | 90.823  | 0.000            | 713.733    |
| Quantity of RDT&E Articles                           | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**A. Mission Description and Budget Item Justification**

This program, BA 4, PE 0603036F Armament Demonstration and Validation, project 643036, Modular Advanced Missile (MAM) is not a new start. Work started in FY 2022 and this is a continuation of work conducted under a separate PE.

The Armament Demonstration and Validation Program Element provides key linkage between Research and Development, and fielding of advanced capabilities. It will develop, mature, and demonstrate new or emerging armament technologies, processes, interfaces, mission planning, special test equipment, and resources. Armament Demonstration and Validation will design, develop, and perform demonstrations of prototypes and technologies to inform future acquisition and production decisions. Efforts are focused on current and future requirements and technologies, reduce life-cycle costs, and increased competition for system capability upgrades. Activities leverage the efforts of the Science and Technology community. This effort will include lab, bench, integration, ground and air demonstrations and validation of emerging/evolving technologies and systems via weapon scalable/modular architecture and Weapon Government Reference Architecture (GRA) compliant system performance.

This effort will mature and demonstrate the tenants of model based systems engineering, modular open systems architecture, agile software development, modeling, simulation and analysis, and extend these tenants to improve manufacturing processes.

This effort implements Digital Acquisition tenants of Open, Agile, and Digital; builds and establishes industrial base innovation around the program's enterprise for modularity and adaptability for the life cycle of the weapons system. Leverages common component development, in collaboration with other weapon systems, to reduce redundant costs between systems with similar subsystems requirements. Invests in analytical, data management, digital environments, networks, facilities, and security infrastructure upgrades supporting development of this program's capabilities, while leveraging DoD and DAF enterprise IT solutions. Expands program office staff, facilities, and security infrastructure to support the required classification levels for this program's activities. Engages with DoD, DAF, and industry stakeholders to refine threat analysis, refine inventory requirements, and plan upgrade requirements. Capitalizes on and incorporates successful laboratory research and development efforts applicable to this program's capability.

"This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In PY \$0.000M was expended for civilian pay expenses in this program element, and in CY \$2.596M is forecasted for civilian pay expenses in this program element."

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0603036F / <i>Modular Advanced Missile</i> |
|--|---|

This requirement supports performance of a full financial audit as required by title 10 U.S.C. Chapter 9A, Sec 240-D.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 0.000          | 125.688        | 152.948             | 0.000              | 152.948              |
| Current President's Budget                        | 0.000          | 75.688         | 105.238             | 0.000              | 105.238              |
| Total Adjustments                                 | 0.000          | -50.000        | -47.710             | 0.000              | -47.710              |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | -50.000        |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | -47.710             | 0.000              | -47.710              |

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <b>Title:</b> Modular Advanced Missile (MAM)   | 0.000          | 74.688         | 105.238        |
| <b>Description:</b> The Modular Advanced Missile (MAM) project will develop, mature, and demonstrate air launched modular missile technologies, processes, and resources. MAM will reduce risk to future air launched missile programs by designing, developing, integrating, and testing various modular missile subsystems and tools to inform future missile acquisition and production decisions.  |                |                |                |
| <b>FY 2023 Plans:</b><br>This program, BA 4, PE 0603036F Armament Demonstration and Validation, project 643036, Modular Advanced Missile (MAM) is not a new start. Continue progress toward a system preliminary design review level using an integrated digital environment. Continue to mature designs of modular missiles to reduce risk for future air launched and bench demonstrations. Initiate modeling of manufacturing processes for modular missile systems. Integrated Test Team will begin test planning with contractors. Planning and design activities related to weapon integration on test aircraft will occur. Rapidly respond to evolving warfighter priorities and emerging requirements. |                |                |                |
| <b>FY 2024 Plans:</b>  |                |                |                |



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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0603036F / <i>Modular Advanced Missile</i> |
|--|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| In FY24 funding realigned to a different PE.  |                |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>In FY24 funding realigned to a different PE.  |                |                |                |
| <b>Title:</b> Emerging & Enabling Armament Technology<br><br><b>Description:</b> Conduct risk reduction and prototyping activities on emerging and enabling technologies to inform future acquisition and production decisions for the armament portfolio, informed by internal and external stakeholders.<br><br><b>FY 2023 Plans:</b><br>Perform risk reduction through prototyping of critical components.<br><br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>In FY24 funding realigned to a different PE. | 0.000          | 1.000          | -              |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 0.000          | 75.688         | 105.238        |

**D. Other Program Funding Summary (\$ in Millions)**  
N/A

**Remarks**

**E. Acquisition Strategy**  
Accomplish studies, analysis, concept demonstration, prototyping and engineering; efforts will be conducted using contracting strategies deemed most appropriate, generally using competitive contracts and/or other obligating documentation considered most appropriate by the obligating and performing agencies involved.

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|--|-----------------------------------|---|--------------------|--|-------------------|---------------------|--------------------|--|-------------------------|--------------------|---------------------------------|-------------------------|-------------------------|-------------------|---------------------------------|
| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2024 Air Force</b> |                                   |   |                    |  |                   |                     |                    |  |                         |                    |                                 | <b>Date: March 2023</b> |                         |                   |                                 |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                       |                                   |   |                    | <b>R-1 Program Element (Number/Name)</b><br>PE 0603036F / Modular Advanced Missile |                   |                     |                    | <b>Project (Number/Name)</b><br>643036 / Armament Demonstration and Validation |                         |                    |                                 |                         |                         |                   |                                 |
| <b>Product Development (\$ in Millions)</b>                            |                                   |   |                    | <b>FY 2022</b>   |                   | <b>FY 2023</b>      |                    | <b>FY 2024 Base</b>  |                         | <b>FY 2024 OCO</b> |                                 | <b>FY 2024 Total</b>    |                         |                   |                                 |
| <b>Cost Category Item</b>  | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>  | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b>  | <b>Cost</b>  | <b>Award Date</b>       | <b>Cost</b>        | <b>Award Date</b>               | <b>Cost</b>             | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| Risk Reduction   | C/FPIF                            | Various : TBD                             | -                  | -  |                   | 64.405              | Jun 2023           | 105.238  |                         | -                  |                                 | 105.238                 | Continuing              | Continuing        | -                               |
| Emerging & Enabling Armament Technology                                | C/Various                         | Various : TBD                             | -                  | -  |                   | 1.000               | May 2023           | -  |                         | -                  |                                 | -                       | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>  |                                   |   | -                  | -  |                   | 65.405              |                    | 105.238  |                         | -                  |                                 | 105.238                 | Continuing              | Continuing        | N/A                             |
| <b>Test and Evaluation (\$ in Millions)</b>                            |                                   |   |                    | <b>FY 2022</b>   |                   | <b>FY 2023</b>      |                    | <b>FY 2024 Base</b>  |                         | <b>FY 2024 OCO</b> |                                 | <b>FY 2024 Total</b>    |                         |                   |                                 |
| <b>Cost Category Item</b>  | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>  | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b>  | <b>Cost</b>  | <b>Award Date</b>       | <b>Cost</b>        | <b>Award Date</b>               | <b>Cost</b>             | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| Other Government Costs   | TBD                               | TBD : TBD                                 | -                  | -  |                   | 3.271               | Jun 2023           | -  |                         | -                  |                                 | -                       | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>  |                                   |   | -                  | -  |                   | 3.271               |                    | -  |                         | -                  |                                 | -                       | Continuing              | Continuing        | N/A                             |
| <b>Management Services (\$ in Millions)</b>                            |                                   |   |                    | <b>FY 2022</b>   |                   | <b>FY 2023</b>      |                    | <b>FY 2024 Base</b>  |                         | <b>FY 2024 OCO</b> |                                 | <b>FY 2024 Total</b>    |                         |                   |                                 |
| <b>Cost Category Item</b>  | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>  | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b>  | <b>Cost</b>  | <b>Award Date</b>       | <b>Cost</b>        | <b>Award Date</b>               | <b>Cost</b>             | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| Program Management Administration                                      | Various                           | Various : Various                         | -                  | -  |                   | 7.012               | May 2023           | -  |                         | -                  |                                 | -                       | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>  |                                   |   | -                  | -  |                   | 7.012               |                    | -  |                         | -                  |                                 | -                       | Continuing              | Continuing        | N/A                             |
|  |                                   |   | <b>Prior Years</b> | <b>FY 2022</b>   | <b>FY 2023</b>    | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b>   | <b>Cost To Complete</b> | <b>Total Cost</b>  | <b>Target Value of Contract</b> |                         |                         |                   |                                 |
| <b>Project Cost Totals</b>   |                                   |   | -                  | -  | 75.688            | 105.238             | -                  | 105.238  | Continuing              | Continuing         | N/A                             |                         |                         |                   |                                 |
| <b>Remarks</b>   |                                   |   |                    |  |                   |                     |                    |  |                         |                    |                                 |                         |                         |                   |                                 |

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0603036F / <i>Modular Advanced Missile</i> | <b>Project (Number/Name)</b><br>643036 / <i>Armament Demonstration and Validation</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   |  |
|---|--|
| <b><i>Modular Advanced Missile</i></b>                    |  |
| Risk Reduction  |  |
| Other Government Costs                                    |  |
| Program Management Administration                         |  |
| <b><i>Emerging &amp; Enabling Armament Technology</i></b> |  |
| Emerging Technology                                       |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0603036F / <i>Modular Advanced Missile</i> | <b>Project (Number/Name)</b><br>643036 / <i>Armament Demonstration and Validation</i> |

Schedule Details

| Events by Sub Project                                     | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Modular Advanced Missile</i></b>                    |         |      |         |      |
| Risk Reduction  | 3       | 2023 | 2       | 2025 |
| Other Government Costs                                    | 3       | 2023 | 2       | 2025 |
| Program Management Administration                         | 2       | 2023 | 2       | 2025 |
| <b><i>Emerging &amp; Enabling Armament Technology</i></b> |         |      |         |      |
| Emerging Technology                                       | 3       | 2023 | 4       | 2028 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |  |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0603260F / <i>Intelligence Advanced Development</i> |
|--|--|

| COST (\$ in Millions)                                   | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                                   | -           | 5.795   | 7.401   | 6.237        | 0.000       | 6.237         | 3.813   | 3.907   | 3.989   | 4.133   | Continuing       | Continuing |
| 64536A: <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i>    | -           | 4.600   | 4.842   | 4.950        | 0.000       | 4.950         | 2.496   | 2.558   | 2.612   | 2.706   | Continuing       | Continuing |
| 64537A: <i>INTELLIGENCE ANALYSIS CAPABILITIES (IAC)</i> | -           | 1.195   | 2.559   | 1.287        | 0.000       | 1.287         | 1.317   | 1.349   | 1.377   | 1.427   | Continuing       | Continuing |

**A. Mission Description and Budget Item Justification**

Intelligence Advanced Development (IAD) develops and demonstrates technology required to support warfighter needs for timely all source intelligence information. IAD supports global awareness, consistent battlespace knowledge, precision information, and the execution of time critical missions. IAD focuses on enhancing defense intelligence capabilities through exploration and development of innovative tools including data analytics for mining and exploitation, machine-learning, and software automation. IAD projects provide improved on-time information to the warfighter using new and existing data sources, streamlining data analysis, thus reducing the footprint required, and enhancing performance. These support the Anti-Access/Area Denial (A2/AD) Contested/Congested Degraded Operations (CDO) problem set.

IAD requirements reflect specific warfighter and intelligence organization deficiencies at the tactical and operational levels as identified and prioritized by Air Combat Command (ACC). The Air Force Research Lab, Rome Research Site, Information Intelligence Systems and Analysis Division (AFRL/RIE), then works directly with users to meet the requirements, employing evolutionary approaches and integrating finished modules directly into the field. This PE expedites technology transition from the laboratory to operational users via rapid prototyping. IAD may also reallocate existing resources to support out-of-cycle new/updated warfighter requirements.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In PY22 \$00.145M was expended for civilian pay expenses in this program element, and in CY23 \$00.445M is forecasted for civilian pay expenses in this program element.

This program element received \$1.300M Ukraine Security Assistance Initiative (USAI) Funds in FY23.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|  |  |
|--|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0603260F / <i>Intelligence Advanced Development</i> |
|--|--|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 5.795          | 6.101          | 6.223               | 0.000              | 6.223                |
| Current President's Budget                        | 5.795          | 7.401          | 6.237               | 0.000              | 6.237                |
| Total Adjustments                                 | 0.000          | 1.300          | 0.014               | 0.000              | 0.014                |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 1.300          | 0.014               | 0.000              | 0.014                |

**Change Summary Explanation**

This program element received \$1.300M Ukraine Security Assistance Initiative (USAI) Funds in FY23.

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |  |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0603260F / <i>Intelligence Advanced Development</i> |                      |                |                | <b>Project (Number/Name)</b><br>64536A / <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>   | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 64536A: <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i>                    | -                  | 4.600          | 4.842          | 4.950               | 0.000  | 4.950                | 2.496          | 2.558          | 2.612   | 2.706                   | Continuing              | Continuing        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -  | -                    | -              | -              | -   | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

The mission is to develop prototypes which encompass several areas of intelligence exploitation including the advancement of all source correlation and fusion for the intelligence analyst. Projects include development of innovative data analytics, machine-learning, and automated software tools. The intent is to enhance the overall situational awareness for Air Force, DoD, and Coalition groups which have requirements to correlate various sources of intelligence information, including Communications Intelligence (COMINT), Electronics Intelligence (ELINT), Imagery Intelligence (IMINT), Geospatial Intelligence (GEOINT), Measurement and Signature Intelligence (MASINT), Signals Intelligence (SIGINT), Publicly Available Information (PAI) and others, in a timely manner. IET may reallocate existing resources to support out-of-cycle new/updated warfighter requirements.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Intelligence Exploitation Tools (IET)   | 4.600          | 4.842          | 4.950          |
| <p><b>Description:</b> IET addresses the accurate and timely interpretation of various Intelligence data sources (such as digital imagery, video, documents, signals) by developing and evaluating methods to index, exploit, and manipulate disparate data products using analytics, machine-learning, and software automation. This provides the analyst with the ability to rapidly search and fuse multiple intelligence sources for improved situational awareness and to better detect anomalies. Cross domain tools enable data exploitation at multiple classification levels. In addition, methods to improve analysis of current and future foreign weapon systems are developed. IET provides enhanced warning and accuracy to allow national and military authorities a greater range of options to avert, diminish or control a crisis.</p> <p><b>FY 2023 Plans:</b></p> <ul style="list-style-type: none"> <li>- Completing multi-INT entity resolution capabilities utilizing catalogued repositories to enable analysts to apply automated machine intelligence and prediction tools to identify trends and mission statistics for SIGINT and Distributed Common Ground System (DCGS) users</li> <li>- Completing streamlined Battle Damage Assessment process via automation and implement cross-domain solutions to collate intel data for physical and functional damage assessments for analyst review toolkits</li> <li>- Completing an efficient adaptive artificial intelligence (AI) and machine learning (ML) capability with rapid retraining for imagery and video analysis</li> </ul> |                |                |                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force   |  | <b>Date:</b> March 2023   |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4  | <b>R-1 Program Element (Number/Name)</b><br>PE 0603260F / <i>Intelligence Advanced Development</i> | <b>Project (Number/Name)</b><br>64536A / <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   |  | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| <ul style="list-style-type: none"> <li>- Continuing tools to enhance, automate, correlate, &amp; fuse multi-source, multi-domain intelligence, surveillance, and reconnaissance (ISR) data for National Air and Space Intelligence System (NASIC) situational awareness &amp; threat assessment</li> <li>- Developing the exploration of target complexity and advanced adversary threats in support of over the horizon future weapons employment</li> <li>- Developing knowledge representation and reasoning tools for intelligent systems to gain ability to solve complex tasks associated with audio/video (A/V) data clustering/filtering using semantic embedding techniques</li> <li>- Developing the prediction of aircraft trajectory and behavior w/out real-time positioning information while assessing future behavior based on complex models derived from training data</li> </ul> <p><b>FY 2024 Plans:</b></p> <ul style="list-style-type: none"> <li>- Completing development of tools to enhance, automate, correlate, &amp; fuse multi-source, multi-domain ISR data for NASIC situational awareness &amp; threat assessment</li> <li>- Continuing the exploration of target complexity and advanced adversary threats in support of over the horizon future weapons employment</li> <li>- Continuing knowledge representation and reasoning tools for intelligent systems to gain ability to solve complex tasks associated with A/V data clustering/filtering using semantic embedding techniques</li> <li>- Continuing the prediction of aircraft trajectory and behavior w/out real-time positioning information while assessing future behavior based on complex models derived from training data</li> </ul> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding increased due to inflation.</p> |  |   |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>   |  | 4.600   | 4.842          | 4.950          |
| <b>C. Other Program Funding Summary (\$ in Millions)</b>  |  |   |                |                |
| N/A   |  |   |                |                |
| <b>Remarks</b>  |  |   |                |                |



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| Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force |   | Date: March 2023   |
| Appropriation/Budget Activity<br>3600 / 4                    | R-1 Program Element (Number/Name)<br>PE 0603260F / <i>Intelligence Advanced Development</i> | Project (Number/Name)<br>64536A / <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i> |

**D. Acquisition Strategy**

Requirements for new/improved techniques for operational employment of simulation models are identified and prioritized by ACC. Development of the new/improved capabilities to meet these requirements is managed by Air Force Research Laboratory (AFRL) Rome Research Site. Prototype products (usually software), once evaluated by the users, are transitioned from the laboratory to the operational community in spirals. All major contracts within this project are awarded after full and open competition.

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| Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force |                        |   |             |   |            |              |             |  |                  |             |                          | Date: March 2023 |                  |            |                          |
|---|------------------------|---|-------------|---|------------|--------------|-------------|--|------------------|-------------|--------------------------|------------------|------------------|------------|--------------------------|
| Appropriation/Budget Activity                               |                        |   |             | R-1 Program Element (Number/Name)               |            |              |             | Project (Number/Name)                          |                  |             |                          |                  |                  |            |                          |
| 3600 / 4  |                        |   |             | PE 0603260F / Intelligence Advanced Development |            |              |             | 64536A / INTELLIGENCE EXPLOITATION TOOLS (IET) |                  |             |                          |                  |                  |            |                          |
| Product Development (\$ in Millions)                        |                        |   |             | FY 2022   |            | FY 2023      |             | FY 2024 Base                                   |                  | FY 2024 OCO |                          | FY 2024 Total    |                  |            |                          |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location            | Prior Years | Cost  | Award Date | Cost         | Award Date  | Cost   | Award Date       | Cost        | Award Date               | Cost             | Cost To Complete | Total Cost | Target Value of Contract |
| Intelligence Exploitation Tools (IET)                       | Various                | Various : Various                         | -           | 4.130   | Dec 2021   | 4.362        | Dec 2022    | 4.470  | Dec 2023         | -           |                          | 4.470            | Continuing       | Continuing | -                        |
| <b>Subtotal</b>   |                        |   | -           | 4.130   |            | 4.362        |             | 4.470  |                  | -           |                          | 4.470            | Continuing       | Continuing | N/A                      |
| Management Services (\$ in Millions)                        |                        |   |             | FY 2022   |            | FY 2023      |             | FY 2024 Base                                   |                  | FY 2024 OCO |                          | FY 2024 Total    |                  |            |                          |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location            | Prior Years | Cost  | Award Date | Cost         | Award Date  | Cost   | Award Date       | Cost        | Award Date               | Cost             | Cost To Complete | Total Cost | Target Value of Contract |
| Program Support Costs                                       | Various                | AFRL - Information Directorate : Rome, NY | -           | 0.470   | Nov 2021   | 0.480        | Nov 2022    | 0.480  | Nov 2023         | -           |                          | 0.480            | Continuing       | Continuing | -                        |
| <b>Subtotal</b>   |                        |   | -           | 0.470   |            | 0.480        |             | 0.480  |                  | -           |                          | 0.480            | Continuing       | Continuing | N/A                      |
| <b>Project Cost Totals</b>                                  |                        |   | Prior Years | FY 2022   | FY 2023    | FY 2024 Base | FY 2024 OCO | FY 2024 Total                                  | Cost To Complete | Total Cost  | Target Value of Contract |                  |                  |            |                          |
| <b>Project Cost Totals</b>                                  |                        |   | -           | 4.600   | 4.842      | 4.950        | -           | 4.950  | Continuing       | Continuing  | N/A                      |                  |                  |            |                          |
| <b>Remarks</b>  |                        |   |             |   |            |              |             |  |                  |             |                          |                  |                  |            |                          |

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |  |   | <b>Date:</b> March 2023 |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0603260F / <i>Intelligence Advanced Development</i> | <b>Project (Number/Name)</b><br>64536A / <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i> |                         |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |  |
|--|--|
| <b>IET</b>   |  |
| FY20 IET Development, Evaluation & Prototype Release |  |
| FY21 IET Development, Evaluation & Prototype Release |  |
| FY22 IET Development, Evaluation & Prototype Release |  |
| Multi-source, multi-domain info fusion tool          |  |
| Over the Horizon Targeting enhancement               |  |
| Audio/video exploitation enhancements                |  |
| Air traffic behavior prediction                      |  |
| FY24 IET Development, Evaluation & Prototype Release |  |
| FY25 IET Development, Evaluation & Prototype Release |  |
| FY26 IET Development, Evaluation & Prototype Release |  |
| FY27 IET Development, Evaluation & Prototype Release |  |
| FY28 IET Development, Evaluation & Prototype Release |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0603260F / <i>Intelligence Advanced Development</i> | <b>Project (Number/Name)</b><br>64536A / <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i> |

Schedule Details

| Events by Sub Project                                | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>IET</i></b>                                    |         |      |         |      |
| FY20 IET Development, Evaluation & Prototype Release | 1       | 2022 | 4       | 2023 |
| FY21 IET Development, Evaluation & Prototype Release | 1       | 2022 | 4       | 2023 |
| FY22 IET Development, Evaluation & Prototype Release | 1       | 2022 | 4       | 2023 |
| Multi-source, multi-domain info fusion tool          | 1       | 2022 | 4       | 2024 |
| Over the Horizon Targeting enhancement               | 2       | 2023 | 4       | 2025 |
| Audio/video exploitation enhancements                | 2       | 2023 | 4       | 2025 |
| Air traffic behavior prediction                      | 2       | 2023 | 4       | 2025 |
| FY24 IET Development, Evaluation & Prototype Release | 1       | 2024 | 1       | 2026 |
| FY25 IET Development, Evaluation & Prototype Release | 1       | 2025 | 1       | 2027 |
| FY26 IET Development, Evaluation & Prototype Release | 1       | 2026 | 1       | 2028 |
| FY27 IET Development, Evaluation & Prototype Release | 1       | 2027 | 4       | 2028 |
| FY28 IET Development, Evaluation & Prototype Release | 1       | 2028 | 4       | 2028 |

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|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|--|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |  |                      |                |                |  | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0603260F / <i>Intelligence Advanced Development</i> |                      |                |                | <b>Project (Number/Name)</b><br>64537A / <i>INTELLIGENCE ANALYSIS CAPABILITIES (IAC)</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>   | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>   | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 64537A: <i>INTELLIGENCE ANALYSIS CAPABILITIES (IAC)</i>                 | -                  | 1.195          | 2.559          | 1.287               | 0.000  | 1.287                | 1.317          | 1.349          | 1.377  | 1.427                   | Continuing              | Continuing        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -  | -                    | -              | -              | -  | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

The mission is to provide continuing development and upgrades of threat analysis capabilities to produce integrated, predictive air and space intelligence to enable military operations, force modernization decisions, and policy making. Products from IAC allow the Intelligence Analyst to accelerate and increase the accuracy of threat estimates and system descriptions to deployed operational forces. Each of the development projects within the IAC program portfolio transition technologies to the operational communities through the incremental release of upgraded versions over a period of years as development projects progress towards the final configuration. IAC may reallocate existing resources to support out-of-cycle new/ updated warfighter requirements.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <b>Title:</b> Intelligence Analysis Capabilities (IAC) Development   | 1.195          | 2.559          | 1.287          |
| <b>Description:</b> IAC develops tools and algorithms for Intelligence Analysts with the ability to produce accurate, predictive, relevant, and timely intelligence that supports client processes, operational planning, and mission execution. Methods include data analytics techniques, machine-learning, and software automation. IAC develops new and upgraded analysis, modeling and simulation tools focused on intelligence production supporting AF operational and developmental all source analysis functions. |                |                |                |
| <b>FY 2023 Plans:</b>  |                |                |                |
| - Completing computational data handling tools to ingest disparate data types across multiple disciplines within Air and Space Operations Centers to disseminate and display information to decision makers through existing common operational pictures and dashboards  |                |                |                |
| - Completing activities in support of a collaborative collection management environment for all ISR stakeholders for management of Priority Intelligence Reports and Critical Collection Intelligence Report   |                |                |                |
| - Developing analysis of geospatial features for DCGS making AI/ML models, datasets, predictions geospatially discoverable   |                |                |                |
| - Developing object detection algorithms within AI collaboration environment (Red Force) and enabling models on ground and aerial-based software platforms   |                |                |                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force   |  | <b>Date:</b> March 2023  |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4  | <b>R-1 Program Element (Number/Name)</b><br>PE 0603260F / <i>Intelligence Advanced Development</i> | <b>Project (Number/Name)</b><br>64537A / <i>INTELLIGENCE ANALYSIS CAPABILITIES (IAC)</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   |  | <b>FY 2022</b>   | <b>FY 2023</b> | <b>FY 2024</b> |
| <p>- Developing NASIC C4ISR intel database w/ graphical visualization, discovery, and editing capabilities, to facilitate volume, quality, and timeliness of C4ISR support.</p> <p>- Completing development and integration of Ground Moving Target Indicator (GMTI)-related applications with NRO's Thresher to provide near real time, fused ground track capability</p> <p><b>FY 2024 Plans:</b></p> <p>- Continuing analysis of geospatial features for DCGS making AI/ML models, datasets, predictions geospatially discoverable</p> <p>- Continuing object detection algorithms within AI collaboration environment (Red Force) and enabling models on ground and aerial-based software platforms</p> <p>- Continuing NASIC C4ISR intel database w/ graphical visualization, discovery, and editing capabilities, to facilitate volume, quality, and timeliness of C4ISR support.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding decreased due to adjusting to historical norms after USAI increase in FY23 funds.</p> |  |  |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>   |  | 1.195  | 2.559          | 1.287          |
| <b>C. Other Program Funding Summary (\$ in Millions)</b>  |  |  |                |                |
| N/A   |  |  |                |                |
| <b>Remarks</b>  |  |  |                |                |
| <b>D. Acquisition Strategy</b>  |  |  |                |                |
| Requirements of new/upgraded intelligence analysis tools are identified and prioritized by the ACC. Development of capabilities to meet these requirements is managed by AFRL Rome Research Site. Prototype products (usually software), once evaluated by the users, are fielded in incremental capability spirals. All major contracts within this project are awarded after full and open competition.   |  |  |                |                |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |  |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0603260F / <i>Intelligence Advanced Development</i> | <b>Project (Number/Name)</b><br>64537A / <i>INTELLIGENCE ANALYSIS CAPABILITIES (IAC)</i> |
|--|--|--|

| Product Development (\$ in Millions) |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--------------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                   | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| IAC                                  | Various                | Various : Various              | -           | 1.035   | Dec 2021   | 2.383   | Mar 2023   | 1.107        | Dec 2023   | -           |            | 1.107         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                      |                        |                                | -           | 1.035   |            | 2.383   |            | 1.107        |            | -           |            | 1.107         | Continuing       | Continuing | N/A                      |

| Management Services (\$ in Millions) |                        |   |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--------------------------------------|------------------------|---|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                   | Contract Method & Type | Performing Activity & Location            | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Program Support Costs                | Various                | AFRL - Information Directorate : Rome, NY | -           | 0.160   | Nov 2021   | 0.176   | Nov 2022   | 0.180        | Nov 2023   | -           |            | 0.180         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                      |                        |   | -           | 0.160   |            | 0.176   |            | 0.180        |            | -           |            | 0.180         | Continuing       | Continuing | N/A                      |

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | -           | 1.195   | 2.559   | 1.287        | -           | 1.287         | Continuing       | Continuing | N/A                      |

**Remarks**

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|---|--|--|-------------------------|--|--|
| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  |  | <b>Date:</b> March 2023 |  |  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0603260F / <i>Intelligence Advanced Development</i> |                         | <b>Project (Number/Name)</b><br>64537A / <i>INTELLIGENCE ANALYSIS CAPABILITIES (IAC)</i> |  |

|   | FY 2022          |   |   |   | FY 2023                      |   |   |   | FY 2024                      |   |   |   | FY 2025                      |   |   |   | FY 2026                      |   |   |   | FY 2027                      |   |   |   | FY 2028    |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |
|---|------------------|---|---|---|------------------------------|---|---|---|------------------------------|---|---|---|------------------------------|---|---|---|------------------------------|---|---|---|------------------------------|---|---|---|------------|---|---|---|--|--|--|--|--|--|--|--|--|--|--|--|
|   | 1                | 2 | 3 | 4 | 1                            | 2 | 3 | 4 | 1                            | 2 | 3 | 4 | 1                            | 2 | 3 | 4 | 1                            | 2 | 3 | 4 | 1                            | 2 | 3 | 4 | 1          | 2 | 3 | 4 |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>IAC</b>  |                  |   |   |   |                              |   |   |   |                              |   |   |   |                              |   |   |   |                              |   |   |   |                              |   |   |   |            |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |
| FY21 IAC Development, Evaluation & Prototype Release                            | ████████████████ |   |   |   |                              |   |   |   |                              |   |   |   |                              |   |   |   |                              |   |   |   |                              |   |   |   |            |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |
| Tools to make AI/ML models, datasets, and predictions geospatially discoverable |                  |   |   |   | ████████████████             |   |   |   |                              |   |   |   |                              |   |   |   |                              |   |   |   |                              |   |   |   |            |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |
| RedForce-compatible obj detection   |                  |   |   |   | ████████████████████████████ |   |   |   |                              |   |   |   |                              |   |   |   |                              |   |   |   |                              |   |   |   |            |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |
| C4ISR intel database w/advanced capabilities                                    |                  |   |   |   | ████████████████████████████ |   |   |   |                              |   |   |   |                              |   |   |   |                              |   |   |   |                              |   |   |   |            |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |
| Development and Integration of GMTI-related applications with NRO's Thresher    |                  |   |   |   | ██████████                   |   |   |   |                              |   |   |   |                              |   |   |   |                              |   |   |   |                              |   |   |   |            |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |
| FY24 IAC Development, Evaluation & Prototype Release                            |                  |   |   |   |                              |   |   |   | ████████████████████████████ |   |   |   |                              |   |   |   |                              |   |   |   |                              |   |   |   |            |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |
| FY25 IAC Development, Evaluation & Prototype Release                            |                  |   |   |   |                              |   |   |   |                              |   |   |   | ████████████████████████████ |   |   |   |                              |   |   |   |                              |   |   |   |            |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |
| FY26 IAC Development, Evaluation & Prototype Release                            |                  |   |   |   |                              |   |   |   |                              |   |   |   |                              |   |   |   | ████████████████████████████ |   |   |   |                              |   |   |   |            |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |
| FY27 IAC Development, Evaluation & Prototype Release                            |                  |   |   |   |                              |   |   |   |                              |   |   |   |                              |   |   |   |                              |   |   |   | ████████████████████████████ |   |   |   |            |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |
| FY28 IAC Development, Evaluation & Prototype Release                            |                  |   |   |   |                              |   |   |   |                              |   |   |   |                              |   |   |   |                              |   |   |   |                              |   |   |   | ██████████ |   |   |   |  |  |  |  |  |  |  |  |  |  |  |  |



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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0603260F / <i>Intelligence Advanced Development</i> | <b>Project (Number/Name)</b><br>64537A / <i>INTELLIGENCE ANALYSIS CAPABILITIES (IAC)</i> |

Schedule Details

| Events by Sub Project   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b>IAC</b>  |         |      |         |      |
| FY21 IAC Development, Evaluation & Prototype Release                            | 1       | 2022 | 4       | 2023 |
| Tools to make AI/ML models, datasets, and predictions geospatially discoverable | 2       | 2023 | 4       | 2024 |
| RedForce-compatible obj detection   | 2       | 2023 | 4       | 2025 |
| C4ISR intel database w/advanced capabilities                                    | 2       | 2023 | 4       | 2025 |
| Development and Integration of GMTI-related applications with NRO's Thresher    | 2       | 2023 | 1       | 2024 |
| FY24 IAC Development, Evaluation & Prototype Release                            | 1       | 2024 | 1       | 2026 |
| FY25 IAC Development, Evaluation & Prototype Release                            | 1       | 2025 | 1       | 2027 |
| FY26 IAC Development, Evaluation & Prototype Release                            | 1       | 2026 | 1       | 2028 |
| FY27 IAC Development, Evaluation & Prototype Release                            | 1       | 2027 | 4       | 2028 |
| FY28 IAC Development, Evaluation & Prototype Release                            | 1       | 2028 | 4       | 2028 |

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / <i>Combat Identification Technology</i> |
|--|---|

| COST (\$ in Millions)                                   | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                                   | -           | 17.536  | 13.718  | 21.298       | 0.000       | 21.298        | 24.756  | 25.337  | 25.855  | 25.788  | Continuing       | Continuing |
| 642597: <i>Noncooperative Identification Subsystems</i> | -           | 14.880  | 11.574  | 18.565       | 0.000       | 18.565        | 21.918  | 22.468  | 22.927  | 22.867  | 0.000            | 135.199    |
| 642599: <i>Cooperative Identification Techniques</i>    | -           | 0.000   | 0.070   | 0.076        | 0.000       | 0.076         | 0.120   | 0.084   | 0.086   | 0.086   | 0.000            | 0.522      |
| 643420: <i>Combat ID Database Development</i>           | -           | 2.656   | 2.074   | 2.657        | 0.000       | 2.657         | 2.718   | 2.785   | 2.842   | 2.835   | Continuing       | Continuing |

**A. Mission Description and Budget Item Justification**

Combat Identification is the process of characterizing an entity in the battlespace. It is essential to determine if a battlespace entity is a friend, enemy, or neutral; this information provides battlespace commanders and aircrew with options, ranging from avoiding and monitoring to engagement. The Combat Identification team's mission is to identify new and promising technology candidates, evaluate the usefulness of the technologies, conduct demonstrations in operationally relevant environments, and coordinate strategies that expedite transition to more than one platform. This Program Element aims to integrate and transition new capabilities into fielded systems, and improve existing capabilities. The mission area consists of three projects: non-cooperative Combat Identification, cooperative Combat Identification, and Combat Identification database development.

Non-cooperative Combat Identification techniques do not depend on a response from the targeted platform - such as high range resolution radar that measures the length of a target. Cooperative Combat Identification systems require communication between two participating platforms. Combat Identification database development continues the maturation of target representations in all databases that enable non-cooperative and cooperative algorithms to perform correctly. Both non-cooperative and cooperative Combat Identification techniques are currently in the field, and are necessary elements of the kill chain that ensure mission success and reduce fratricide. Air Combat Command (ACC) established a Senior Advisory Group (SAG) as the governing authority to guide these efforts in partnership with AFRL/Ry and SAF/AQR.

Activities also include studies and analysis to support both current program planning and execution and future program planning.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Combat Identification technologies. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|  |   |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / <i>Combat Identification Technology</i> |
|--|---|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b><u>FY 2022</u></b> | <b><u>FY 2023</u></b> | <b><u>FY 2024 Base</u></b> | <b><u>FY 2024 OCO</u></b> | <b><u>FY 2024 Total</u></b> |
|---|-----------------------|-----------------------|----------------------------|---------------------------|-----------------------------|
| Previous President's Budget                       | 21.939                | 17.318                | 24.119                     | 0.000                     | 24.119                      |
| Current President's Budget                        | 17.536                | 13.718                | 21.298                     | 0.000                     | 21.298                      |
| Total Adjustments                                 | -4.403                | -3.600                | -2.821                     | 0.000                     | -2.821                      |
| • Congressional General Reductions                | 0.000                 | 0.000                 |                            |                           |                             |
| • Congressional Directed Reductions               | 0.000                 | -3.600                |                            |                           |                             |
| • Congressional Rescissions                       | 0.000                 | 0.000                 |                            |                           |                             |
| • Congressional Adds                              | 0.000                 | 0.000                 |                            |                           |                             |
| • Congressional Directed Transfers                | 0.000                 | 0.000                 |                            |                           |                             |
| • Reprogrammings                                  | -3.800                | 0.000                 |                            |                           |                             |
| • SBIR/STTR Transfer                              | -0.603                | 0.000                 |                            |                           |                             |
| • Other Adjustments                               | 0.000                 | 0.000                 | -2.821                     | 0.000                     | -2.821                      |

**Change Summary Explanation**

Decrease in FY 2023 is Congressionally directed. Decrease in FY 2024 is due to higher Air Force priorities.

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|--|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |   |                      |                |                |  | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / <i>Combat Identification Technology</i> |                      |                |                | <b>Project (Number/Name)</b><br>642597 / <i>Noncooperative Identification Subsystems</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>  | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>   | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 642597: <i>Noncooperative Identification Subsystems</i>                 | -                  | 14.880         | 11.574         | 18.565              | 0.000   | 18.565               | 21.918         | 22.468         | 22.927   | 22.867                  | 0.000                   | 135.199           |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -   | -                    | -              | -              | -  | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

Non-cooperative combat identification (CID) employs a number of sensing technologies and signal processing techniques designed to extract discriminating features from a battlespace entity (target). Specifically-designed algorithms compare those extracted features to a tailored database to identify those targets. These technologies include: (A) non-cooperative Air Target Identification (ATID) technologies, (B) non-cooperative Ground Target Identification (GTID) technologies, and (C) Studies and Analysis, evaluating potential new technologies.

ATID technology development focuses on platform centric CID technologies that enhance capability to determine enemy air threats. A primary area of focus is in the development/implementation of the Joint Multi-platform Advanced Combat identification (JMAC) architecture, which is a framework that allows multiple sensors (on-board and off-board) to provide a robust combat identification solution; and efforts aimed at the discovery and generation of features from fielded sensors to supply data to JMAC. JMAC is evolving into the primary Department of Defense air target identification architecture. Other areas of focus include combat identification technologies that broaden the application of CID across air platforms utilizing larger air kill-webs planned for employment by the United States Air Force (USAF) and utilize assets in unmanned aerial system and space to improve and enable CID in future threat air engagements.

GTID development focuses on platform centric CID technologies that enhance capability to determine enemy ground threats. Primary areas of focus include transitioning CID capability for denied access environments using passive radio frequency and electronic warfare information, integrating radio based technologies into the cockpit to increase confidence of target identification and situational awareness as well as reduce fratricides, and to demonstrate weapon-based combat identification back to the launch platform using a communication link from that launched weapon. GTID is also focused on developing technology to address efficiency and sustainability issues associated with the development, operation and maintenance of non-cooperative monostatic and bi-static synthetic aperture radar aided target recognition algorithms and databases. Other areas of focus include combat identification technologies that broaden the application of CID across air platforms utilizing larger air kill-webs planned for employment by the United States Air Force and utilize assets in unmanned aerial system and space to improve and enable CID in future threat ground engagements.

Studies and Analysis discovers novel technologies that are ready to become transitionable projects, and includes Enhanced Combat ID (ECID), an activity to develop a robust ability to quantitatively evaluate promising combat identification technologies using enhanced modeling and simulation capabilities, database generation, database enhancement/employment (machine learning, deep learning, and artificial intelligence) to employ CID technologies in an operationally useful manner. The Studies and Analysis effort also performs early assessments of promising technologies through Concept Calls to determine if the program should incorporate them as a formal project within the CID portfolio.

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / <i>Combat Identification Technology</i> | <b>Project (Number/Name)</b><br>642597 / <i>Noncooperative Identification Subsystems</i> |
|--|---|--|

Activities also include studies and analysis to support both current program planning and execution and future program planning.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Combat Identification technologies. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, and 0605898F.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | FY 2022 | FY 2023 | FY 2024 |
|--|---------|---------|---------|
| <p><b>Title:</b> Hydra Vision/Air to Air</p> <p><b>Description:</b> Hydra Vision Air-to-Air project discovers, matures and integrates features collected from any battlespace sensor into the Joint Multiplatform Advanced Combat identification (JMAC) air target CID architecture, and transitions the mode to tactical aircraft.</p> <p><b>FY 2023 Plans:</b><br/>Starting in FY 2023, this work is performed under Project 642597, Noncooperative Identification Subsystems, Air Target Identification (ATID) effort.</p> <p><b>FY 2024 Plans:</b><br/>N/A</p>   | 4.707   | 0.000   | 0.000   |
| <p><b>Title:</b> Compact Aided Target Recognition and Sustainable Environment (CASE)</p> <p><b>Description:</b> Compact Aided Target Recognition and Sustainable Environment is a family of efforts to address efficiency and sustainability issues associated with the development, operation and maintenance of non-cooperative Aided Target Recognition technology. Develop sustainable multi-phenomenology Aided Target Recognition based on low fidelity, compact, and inexpensive database technology.</p> <p><b>FY 2023 Plans:</b><br/>Starting in FY 2023, this work is performed under Project 642597, Noncooperative Identification Subsystems, Ground Target Identification (GTID) effort.</p> <p><b>FY 2024 Plans:</b><br/>N/A</p> | 0.500   | 0.000   | 0.000   |
| <p><b>Title:</b> Passive Radio Frequency Identification Environment (PRIDE)</p> <p><b>Description:</b> Develop passive Radio Frequency target Identification capability for denied access environment utilizing passive Radio Frequency and Electronic Warfare information with potential non-traditional Intelligence, Surveillance and Reconnaissance capabilities.</p>  | 3.875   | 0.000   | 0.000   |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force  |   | <b>Date:</b> March 2023  |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4   | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / <i>Combat Identification Technology</i> | <b>Project (Number/Name)</b><br>642597 / <i>Noncooperative Identification Subsystems</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  |   | <b>FY 2022</b>   | <b>FY 2023</b> | <b>FY 2024</b> |
| <p><b>FY 2023 Plans:</b><br/>Starting in FY 2023, this work is performed under Project 642597, Noncooperative Identification Subsystems, Ground Target Identification (GTID) effort.</p> <p><b>FY 2024 Plans:</b><br/>N/A</p>  |   |  |                |                |
| <p><b>Title:</b> Radio ID (RID)</p> <p><b>Description:</b> Radio Identification will develop technologies to integrate radio based cooperative technologies with non-cooperative technologies into the cockpit. The benefits will be increased confidence target identification and situational awareness as well as reduced fratricides.</p> <p><b>FY 2023 Plans:</b><br/>Starting in FY 2023, this work is performed under Project 642597, Noncooperative Identification Subsystems, Ground Target Identification (GTID) effort.</p> <p><b>FY 2024 Plans:</b><br/>N/A</p>  |   | 3.061  | 0.000          | 0.000          |
| <p><b>Title:</b> Studies</p> <p><b>Description:</b> The studies effort serves to analyze all aspects of Air Target Identification and Ground Target Identification projects to mature combat identification (CID) technologies within the CID investment strategy. The studies effort covers low Technology Readiness Level (TRL 4) efforts which are funded through CID concept call. Areas include but are not limited to automatic target recognition, denied area access CID, CID sensor feature extraction, CID database use optimization, rapid database creation/employment for CID, synthetic data, CID focused training, off-board sensor feature employment, on-board sensor feature employment, United States Air Force CID architecture enhancements. Air Combat Command chartered this PE to make the above stated intent; in doing so it established a Senior Advisory Group as the authority overseeing this thrust.</p> <p><b>FY 2023 Plans:</b><br/>Continue to conduct CID related studies. Continue modeling, simulation and analysis of CID technologies and also new Concept Call technology development. Initiate machine learning and synthetic/real data operational use. Continue planning demonstrations in relevant operational environment. Continue development of a technical roadmap for CID Technologies to inform future studies.</p> <p><b>FY 2024 Plans:</b><br/>Continue to conduct CID related studies. Continue modeling, simulation and analysis of CID technologies and also new Concept Call technology development. Continue machine learning and synthetic/real data operational use. Continue planning</p> |   | 1.371  | 1.250          | 1.200          |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force   |   | <b>Date:</b> March 2023  |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4  | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / <i>Combat Identification Technology</i> | <b>Project (Number/Name)</b><br>642597 / <i>Noncooperative Identification Subsystems</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   |   | <b>FY 2022</b>   | <b>FY 2023</b> | <b>FY 2024</b> |
| demonstrations in relevant operational environment. Continue development of a technical roadmap for CID Technologies to inform future studies.  |   |  |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>FY 2024 decreased compared to FY 2023 by \$0.050 million. Justification for this decrease is described in the plans above.  |   |  |                |                |
| <b>Title:</b> Kill-chain Weapon Integrated CID (KWIC)<br><b>Description:</b> Kill-chain Weapons Integrated Combat Identification will use air to ground sensors to provide better situational awareness and Combat Identification of target area<br><b>FY 2023 Plans:</b><br>Starting in FY 2023, this work is performed under Project 642597, Noncooperative Identification Subsystems, Ground Target Identification (GTID) effort.<br><b>FY 2024 Plans:</b><br>N/A  |   | 1.366  | 0.000          | 0.000          |
| <b>Title:</b> Air Target Identification<br><b>Description:</b> The Air Target Identification (ATID) project discovers, matures and integrates features collected from any battlespace sensor into the Joint Multiplatform Advanced Combat Identification (JMAC) air target data-fusion architecture, and transitions the mode to tactical aircraft. ATID efforts include: (1) Air-to-Air Hydra Vision (AAHV), developing methods to extract and exploit features from fielded sensors to provide data to JMAC; (2) F-16 Joint Multiplatform Advanced Combat Identification Open Mission System Rapid Development (FJORD), the effort to demonstrate Joint Multiplatform Advanced Combat Identification on the F-16; the effort includes feature extraction/incorporation from the F-16 electronic warfare suite to enhance the JMAC. (3) F-15 Joint Multiplatform Advanced Combat Identification (JMAC-15), investigating transition of JMAC into the F-15E/EX fleet. (4) Exploration of sensor feature extraction for use within the JMAC architecture.<br><b>FY 2023 Plans:</b><br>Continue implementing and demonstrating JMAC in an F-16 test aircraft. Continue planning for JMAC integration and demonstration on F-15. Continue test and insertion of electronic warfare features into the JMAC architecture for maturation over future years. Initiate and complete demonstration of feature extraction algorithms within the JMAC construct in concert with the Army Aviation and Missile Center and Missile Defense Agency through F-16 testbed flights. Continue developing advanced data extraction algorithms. Continue planning for JMAC and other advanced CID technique integration onto 5th Generation air dominance platforms begins under this project with focus on F-35 and F-22 platforms. Initiate planning for on-board/off-board |   | 0.000  | 4.670          | 10.149         |



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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / <i>Combat Identification Technology</i> | <b>Project (Number/Name)</b><br>642597 / <i>Noncooperative Identification Subsystems</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p>sensor employment for JMAC and non-JMAC instantiations of Combat Identification (CID) on assets within USAF planned kill-web to include both unmanned and space assets.</p> <p><b>FY 2024 Plans:</b><br/>Continue maturation of sensor feature extraction algorithms. Continue maturation and effectiveness testing of the Joint Multiplatform Advanced Combat Identification algorithms on both F-16 and F-15; algorithm optimization on 4th generation air dominance platforms through software and hardware laboratory testing. Continue feature extraction use and database incorporation of extracted features. Continue flight demonstration and data analysis of feature extraction algorithms. Initiate JMAC integration efforts on 5th generation air dominance platforms. Continue integration planning for JMAC and non-JMAC CID on unmanned and space assets.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>FY 2024 increased compared to FY 2023 by \$5.479 million. Justification for this increase is due to an increased emphasis in air-to-air engagement feature extraction.</p>  |                |                |                |
| <p><b>Title:</b> Ground Target Identification</p> <p><b>Description:</b> Ground Target Identification (GTID) technologies consist of (1) Compact Aided target recognition (ATR) and Sustainable Environments (CASE), an approach that focuses on tailoring algorithms to use small, efficient databases that are relatively affordable to generate and maintain; (2) Passive Radio-frequency IDentification Environment (PRIDE), an effort to develop a bistatic synthetic aperture radar (SAR) ATR capability useful in a denied access environment; (3) Radio Identification (RID), an effort to develop methods (including machine learning and artificial intelligence algorithms) paired with advances in software defined radios to provide ground emitter ID to improve aircrew situational awareness; and (4) Kill-chain Weapon Integrated CID (KWIC), an effort that will use information from launched weapons through a back channel communication link to provide CID from within the hot battlespace. (5) Exploration of sensor feature extraction for use within the Joint Multiplatform Advanced Combat Identification (JMAC) architecture.</p> <p><b>FY 2023 Plans:</b><br/>Continue analysis of data collections and verification/validation of technique effectiveness based on data analysis. Initiate platform integration planning and demonstration planning. Continue investigation of machine learning algorithms to continue to provide CID ranges for ground targets and look at viability of implementing synthetic data and machine learning algorithms for ground target engagements. Continue verification/validation and analysis of data collected. Continue analysis of RID algorithm development from demonstration flight information. Initiate planning for off-board sensor employment for JMAC and non-JMAC instantiations of CID on assets within USAF planned kill-web to include both unmanned and space assets.</p> <p><b>FY 2024 Plans:</b></p> | 0.000          | 5.654          | 7.216          |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / <i>Combat Identification Technology</i> | <b>Project (Number/Name)</b><br>642597 / <i>Noncooperative Identification Subsystems</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p>Initiate development efforts toward identification of enemy targets in an actively denied ground environment (camouflage, concealment, denial and decoy conditions). This effort will look at sensor modes and sensor fusion to provide technical solutions to this critical challenge. Continue PRIDE efforts; finish Phase 2 efforts with an offline demonstration in Phase 2 and will ramp up for Phase 3. Continue CASE efforts; complete algorithm and database use optimization as new feature use cases are developed. Initiate integration of Kill-chain Weapon Integrated CID into program of record with potential for use application to be applied to other weapon systems. Continue planning for on-board/off-board sensor employment for JMAC and non-JMAC instantiations of CID on assets within United States Air Force planned kill-web to include both unmanned and space assets. Initiate ground components of JMAC architecture activity.</p> <p><b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br/> FY 2024 increased compared to FY 2023 by \$1.562 million. Increased is due to an increase in emphasis of integration of ground targets into the Joint Multi-platform Advanced Combat identification architecture.</p> |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 14.880         | 11.574         | 18.565         |

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

Combat Identification develops technologies for exploitation by the United States Air Force (USAF) and other services. Award multiple, competitive contract vehicles emphasizing the use of government owned technologies, government off-the-shelf technology (GOTS), commercial off-the-shelf (COTS), and maximize the use of non-developmental items (NDIs). Management develops a technology to a point it can be demonstrated in a relevant operational environment.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / <i>Combat Identification Technology</i> | <b>Project (Number/Name)</b><br>642597 / <i>Noncooperative Identification Subsystems</i> |
|--|---|--|

| <b>Product Development (\$ in Millions)</b>                            |                        |  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location           | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Passive Radar Identification Environment (PRIDE) - Air to Ground Prime | C/CPFF                 | Leidos : McLean, VA                      | -           | 1.715   | Jul 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Passive Radar Identification Environment (PRIDE) - Air to Ground SME 1 | C/CPFF                 | AFRL : Wright-Patterson AFB, OH          | -           | 0.116   | Jul 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 0.116      | -                        |
| Passive Radar Identification Environment (PRIDE) - Air to Ground SME 2 | C/CPFF                 | Leidos : Beavercreek, OH                 | -           | 1.680   | May 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 1.680      | -                        |
| Passive Radar Identification Environment (PRIDE) - Air to Ground SME 3 | C/CPFF                 | GTRI : Atlanta, GA                       | -           | 0.179   | Jul 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 0.179      | -                        |
| Studies - CID Digital Engineering Accelerator/ ePRIDE                  | C/CPFF                 | AFRL : Wright-Patterson AFB, OH          | -           | 0.400   | Jun 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 0.400      | -                        |
| Studies - WSU SAR ATR  | C/CPFF                 | Wright State University : Fairborn, OH   | -           | 0.100   | Jun 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Studies - AudaCID  | C/CPAF                 | Northrop Grumman : Baltimore, MD         | -           | 0.200   | Jun 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 0.200      | -                        |
| Concept Call - Multi-look SAR ATR                                      | MIPR                   | Sandia Ntnl Laboratory : Albuquerque, NM | -           | 0.450   | Aug 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Concept Call - Low Shot Learning for SAR ATR                           | MIPR                   | Sandia Ntnl Laboratory : Albuquerque, NM | -           | 0.200   | Jun 2022   | 0.200   |            | -            |            | -           |            | -             | 0.000            | 0.400      | -                        |
| Radio Identification (RID)   | MIPR                   | DMEA : Sacramento, CA                    | -           | 3.061   | Jun 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 3.061      | -                        |
| HydraVision - Air-to-Air   | C/CPFF                 | Raytheon : El Segundo, CA                | -           | 1.080   | May 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 1.080      | -                        |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / <i>Combat Identification Technology</i> | <b>Project (Number/Name)</b><br>642597 / <i>Noncooperative Identification Subsystems</i> |
|--|---|--|

| <b>Product Development (\$ in Millions)</b>   |                        |                                   |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|-----------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location    | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| HydraVision - Air-to-Air - SME  | C/CPFF                 | AFRL : Wright-Patterson AFB, OH   | -           | 0.162   | May 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 0.162      | -                        |
| HydraVision - PRECISE-R   | C/CPFF                 | Raytheon : El Segundo, CA         | -           | 0.263   | May 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 0.263      | -                        |
| HydraVision - PRECISE-N   | C/CPFF                 | Northrop Grumman : Baltimore, MD  | -           | 1.090   | May 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 1.090      | -                        |
| HydraVision - DOS   | C/CPFF                 | Leidos : Beavercreek, OH          | -           | 0.485   | May 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 0.485      | -                        |
| HydraVision - PRECISE-M   | C/CPFF                 | Matrix Research : Beavercreek, OH | -           | 0.269   | Jul 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 0.269      | -                        |
| Kill Chain Weapons Integrated CID (KWIC) - Air to Ground Prime                      | C/CPAF                 | Raytheon : El Segundo, CA         | -           | 1.165   | May 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 1.165      | -                        |
| Kill Chain Weapons Integrated CID (KWIC) - Air to Ground SME 1                      | C/CPFF                 | AFRL : Wright-Patterson AFB, OH   | -           | 0.100   | Jun 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 0.100      | -                        |
| HydraVision DOS/ Compact AiTR Sustainable Environment (CASE)                        | C/CPFF                 | Leidos : Beavercreek, OH          | -           | 0.594   | Jul 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 0.594      | -                        |
| Compact AiTR and Sustainable Environment (CASE)                                     | C/CPFF                 | Leidos : Dayton, OH               | -           | 0.500   | Jul 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Air Target Identification (ATID) - ID Algorithm / JMAC Features                     | TBD                    | Not specified. : TBD              | -           | -       |            | 2.512   | Feb 2023   | 6.017        | Feb 2024   | -           |            | 6.017         | Continuing       | Continuing | -                        |
| Air Target Identification (ATID) - Air Platform (F16/ F15/F35/F22) JMAC Integration | TBD                    | Not specified. : TBD              | -           | -       |            | 2.087   | Dec 2022   | 2.217        | Dec 2023   | -           |            | 2.217         | Continuing       | Continuing | -                        |
| Air Target Identification (ATID) - Study 1  | TBD                    | Not specified. : TBD              | -           | -       |            | 0.200   | Jan 2023   | 0.450        | Jan 2024   | -           |            | 0.450         | Continuing       | Continuing | -                        |
| Air Target Identification (ATID) - Study 2  | TBD                    | Not specified. : TBD              | -           | -       |            | 0.271   | Nov 2023   | 0.168        | Nov 2024   | -           |            | 0.168         | Continuing       | Continuing | -                        |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / <i>Combat Identification Technology</i> | <b>Project (Number/Name)</b><br>642597 / <i>Noncooperative Identification Subsystems</i> |
|--|---|--|

| <b>Product Development (\$ in Millions)</b>                        |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Air Target Identification (ATID) - Study 3                         | TBD                    | Not specified. : TBD           | -           | -       |            | -       |            | 0.350        | Aug 2024   | -           |            | 0.350         | Continuing       | Continuing | -                        |
| Ground Target Identification (GTID) - ID Algorithm / JMAC Features | TBD                    | Not specified. : TBD           | -           | -       |            | 2.700   | Apr 2023   | 4.700        | Apr 2024   | -           |            | 4.700         | Continuing       | Continuing | -                        |
| Ground Target Identification (GTID) - PRIDE                        | TBD                    | Not specified. : TBD           | -           | -       |            | 1.200   | Jun 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Ground Target Identification (GTID) - KWIC                         | TBD                    | Not specified. : TBD           | -           | -       |            | -       |            | 0.943        | Dec 2023   | -           |            | 0.943         | Continuing       | Continuing | -                        |
| Ground Target Identification (GTID) - Study 1                      | TBD                    | Not specified. : TBD           | -           | -       |            | 0.283   | Feb 2023   | 0.400        | Feb 2024   | -           |            | 0.400         | Continuing       | Continuing | -                        |
| Ground Target Identification (GTID) - Study 2                      | TBD                    | Not specified. : TBD           | -           | -       |            | 0.271   | Nov 2023   | 0.168        | Nov 2024   | -           |            | 0.168         | Continuing       | Continuing | -                        |
| Ground Target Identification (GTID) - Study 3                      | TBD                    | Not specified. : TBD           | -           | -       |            | -       |            | 0.300        | Aug 2024   | -           |            | 0.300         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>  |                        |                                | -           | 13.809  |            | 9.724   |            | 15.713       |            | -           |            | 15.713        | Continuing       | Continuing | N/A                      |

| <b>Support (\$ in Millions)</b>   |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|-----------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| ACC Modeling & Simulation Support | C/CPFF                 | ACC : Langley, AFB, VA         | -           | 0.100   | Jul 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 0.100      | -                        |
| ECID MS&A                         | C/CPFF                 | ACC : Langley, AFB, VA         | -           | 0.600   | Aug 2022   | 0.250   |            | 0.700        |            | -           |            | 0.700         | 0.000            | 1.550      | -                        |
| ATID/GTID MS&A                    | TBD                    | TBD : TBD                      | -           | -       |            | 0.000   |            | 0.400        |            | -           |            | 0.400         | 0.000            | 0.400      | -                        |
| ATID/GTID JMAC                    | TBD                    | TBD : TBD                      | -           | -       |            | 0.600   |            | 0.000        |            | -           |            | 0.000         | 0.000            | 0.600      | -                        |

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| Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force |                        |                                |             |  |            |         |            |   |            |             |            | Date: March 2023 |                  |            |                          |
|---|------------------------|--------------------------------|-------------|--|------------|---------|------------|---|------------|-------------|------------|------------------|------------------|------------|--------------------------|
| Appropriation/Budget Activity                               |                        |                                |             | R-1 Program Element (Number/Name)              |            |         |            | Project (Number/Name)                             |            |             |            |                  |                  |            |                          |
| 3600 / 4  |                        |                                |             | PE 0603742F / Combat Identification Technology |            |         |            | 642597 / Noncooperative Identification Subsystems |            |             |            |                  |                  |            |                          |
| <b>Support (\$ in Millions)</b>                             |                        |                                |             | FY 2022  |            | FY 2023 |            | FY 2024 Base                                      |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost   | Award Date | Cost    | Award Date | Cost  | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |
| <b>Subtotal</b>   |                        |                                | -           | 0.700  |            | 0.850   |            | 1.100   |            | -           |            | 1.100            | 0.000            | 2.650      | N/A                      |
| <b>Test and Evaluation (\$ in Millions)</b>                 |                        |                                |             | FY 2022  |            | FY 2023 |            | FY 2024 Base                                      |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost   | Award Date | Cost    | Award Date | Cost  | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |
| Test and Evaluation   | PO                     | 704TSS : Holloman, NM          | -           | -  |            | -       |            | -   |            | -           |            | -                | 0.000            | 0.000      | -                        |
| Data Collection-AvMC  | MIPR                   | AvMC : Huntsville, AL          | -           | -  |            | -       |            | -   |            | -           |            | -                | 0.000            | 0.000      | -                        |
| Data Collection-Eglin                                       | PO                     | 96th Test Wing : Eglin AFB, FL | -           | 0.210  |            | -       |            | -   |            | -           |            | -                | 0.000            | 0.210      | -                        |
| Data Collection-Yuma  | MIPR                   | Yuma Proving Ground : Yuma, AZ | -           | -  |            | -       |            | -   |            | -           |            | -                | 0.000            | 0.000      | -                        |
| Data Collection-NNSS  | MIPR                   | NNSS : NNSS, NE                | -           | -  |            | -       |            | -   |            | -           |            | -                | 0.000            | 0.000      | -                        |
| Data Collection   | MIPR                   | TBD : TBD                      | -           | -  |            | 0.400   |            | 1.152   |            | -           |            | 1.152            | 0.000            | 1.552      | -                        |
| <b>Subtotal</b>   |                        |                                | -           | 0.210  |            | 0.400   |            | 1.152   |            | -           |            | 1.152            | 0.000            | 1.762      | N/A                      |
| <b>Management Services (\$ in Millions)</b>                 |                        |                                |             | FY 2022  |            | FY 2023 |            | FY 2024 Base                                      |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost   | Award Date | Cost    | Award Date | Cost  | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |
| AFRL PMA  | Various                | Various : Various, OH          | -           | 0.161  |            | 0.600   |            | 0.500   |            | -           |            | 0.500            | 0.000            | 1.261      | 0.000                    |
| Management Services   | C/CPFF                 | TBD : TBD                      | -           | -  |            | -       |            | 0.100   |            | -           |            | 0.100            | 0.000            | 0.100      | -                        |
| <b>Subtotal</b>   |                        |                                | -           | 0.161  |            | 0.600   |            | 0.600   |            | -           |            | 0.600            | 0.000            | 1.361      | N/A                      |
| <b>Project Cost Totals</b>                                  |                        |                                | -           | 14.880   |            | 11.574  |            | 18.565  |            | -           |            | 18.565           | Continuing       | Continuing | N/A                      |

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|--|--------------------|----------------|---|---------------------|--------------------|--|-------------------------|-------------------|---------------------------------|--|
| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2024 Air Force |                    |                |   |                     |                    |  | <b>Date:</b> March 2023 |                   |                                 |  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                       |                    |                | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / <i>Combat Identification Technology</i> |                     |                    | <b>Project (Number/Name)</b><br>642597 / <i>Noncooperative Identification Subsystems</i> |                         |                   |                                 |  |
|  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b>  | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b>   | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |  |

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / <i>Combat Identification Technology</i> | <b>Project (Number/Name)</b><br>642597 / <i>Noncooperative Identification Subsystems</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

| <b>Combat Identification Technology</b>            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| HydraVision FJORD Air to Air Phase 2 & 3 Features  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| HydraVision FJORD Air to Air Phase 2 Features      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| HydraVision FJORD Air to Air Phase 3 Features      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| HydraVision JMAC15                                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Passive RF ID (PRIDE)                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Passive RF ID (PRIDE) - Lab Demo (Jun 2020)        |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Passive RF ID (PRIDE) - OPS Demo (Dec 2022)        |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Compact AiTR - Compact Feature AiTR                |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Radio ID (RID) Integrated CID w/Electronic Warfare |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Radio ID n Lab Demo #2 (Jan 2021)                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Radio ID - Flight Demo (Aug 2022)                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Kill Chain Weapons Integration (KWIC)              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Air Target Identification (ATID)                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Ground Target Identification (GTID)                |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Studies  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |



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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / <i>Combat Identification Technology</i> | <b>Project (Number/Name)</b><br>642597 / <i>Noncooperative Identification Subsystems</i> |

Schedule Details

| Events by Sub Project                              | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Combat Identification Technology</i></b>     |         |      |         |      |
| HydraVision FJORD Air to Air Phase 2 & 3 Features  | 1       | 2022 | 4       | 2024 |
| HydraVision FJORD Air to Air Phase 2 Features      | 1       | 2022 | 2       | 2024 |
| HydraVision FJORD Air to Air Phase 3 Features      | 4       | 2022 | 4       | 2024 |
| HydraVision JMAC15                                 | 1       | 2022 | 4       | 2025 |
| Passive RF ID (PRIDE)                              | 1       | 2022 | 4       | 2024 |
| Passive RF ID (PRIDE) - Lab Demo (Jun 2020)        | 3       | 2022 | 4       | 2023 |
| Passive RF ID (PRIDE) - OPS Demo (Dec 2022)        | 1       | 2022 | 4       | 2024 |
| Compact AiTR - Compact Feature AiTR                | 1       | 2022 | 4       | 2022 |
| Radio ID (RID) Integrated CID w/Electronic Warfare | 1       | 2022 | 4       | 2022 |
| Radio ID n Lab Demo #2 (Jan 2021)                  | 2       | 2022 | 4       | 2022 |
| Radio ID - Flight Demo (Aug 2022)                  | 3       | 2022 | 4       | 2024 |
| Kill Chain Weapons Integration (KWIC)              | 1       | 2022 | 4       | 2025 |
| Air Target Identification (ATID)                   | 1       | 2023 | 4       | 2028 |
| Ground Target Identification (GTID)                | 1       | 2023 | 4       | 2028 |
| Studies  | 1       | 2022 | 4       | 2028 |

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |   |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / <i>Combat Identification Technology</i> |                      |                |                | <b>Project (Number/Name)</b><br>642599 / <i>Cooperative Identification Techniques</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>  | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 642599: <i>Cooperative Identification Techniques</i>                    | -                  | 0.000          | 0.070          | 0.076               | 0.000   | 0.076                | 0.120          | 0.084          | 0.086   | 0.086                   | 0.000                   | 0.522             |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -   | -                    | -              | -              | -   | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

Cooperative Combat Identification (CID) employs technologies required to rapidly identify friendly platforms. The program develops, integrates and evaluates technologies that provide Air Force platforms with a means of positively identifying an air or ground platform as a friendly, via active or passive cooperative identification capabilities. The recent major effort funded by this project ensures availability of a Mode 5 upgrade path for implementing ground and air platforms across the Air Force fleet. The Department of Defense International Air Traffic Control Radar Beacon System (ATCRBS) Identification Friend or Foe (IFF) Mark XIIA/B System Program Office (AIMSPO) has system level interoperability testing and certification responsibilities for the present Mark XIIB system, development and integration of new Identification Friend or Foe (IFF) system capabilities, and development/integration of civil Mode S capabilities into Mark XIIB Identification Friend or Foe equipment. The AIMSPO ensures Identification Friend or Foe equipment/platform functionality in accordance with established standards and ensures total system interoperability to meet Department of Defense/Service mission areas (e.g. Offensive Counter Air, Defensive Counter Air, and Integrated Air and Missile Defense). This project transitioned to PE 0207420F at the end of FY 2021; all FY 2022 and beyond funding for the maturation and fielding of the Mark IIB system (Mode 5 Level 2B) moved to the above PE. This BPAC (642599) is preserved to initiate work on a follow-on cooperative system (Mode 6), and as such will remain in PE 0603742F. Initial studies related to Mode 6 will begin in FY 2023

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <b>Title:</b> Cooperative Follow-on System   | 0.000          | 0.070          | 0.076          |
| <b>Description:</b> Perform studies to identify potential paths forward for a new Identification Friend or Foe (IFF) system. Evaluate weakness in the current Mode 5 Identification Friend or Foe (IFF) system to inform required research areas. Establish transition path for current production/support to next generation cooperative system or systems. Continue evaluation of technologies necessary to employ operational useful next generation cooperative identification systems in conjunction with current system. |                |                |                |
| <b>FY 2023 Plans:</b><br>Initiate studies to evaluate weakness in the Mode 5 Identification Friend or Foe system, and to identify potential paths forward for the next generation cooperative Identification Friend or Foe system.   |                |                |                |
| <b>FY 2024 Plans:</b><br>Continue studies for identifying the technologies necessary for next generation cooperative IFF. Initiate transition path planning for technology incorporation of USAF platforms.  |                |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b>   |                |                |                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / <i>Combat Identification Technology</i> | <b>Project (Number/Name)</b><br>642599 / <i>Cooperative Identification Techniques</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| N/A   |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>           | 0.000          | 0.070          | 0.076          |

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

Combat Identification develops technologies for exploitation by the United States Air Force (USAF) and other services. Award multiple, competitive contract vehicles emphasizing the use of government owned technologies, government off-the-shelf technology (GOTS), commercial off-the-shelf (COTS), and maximize the use of non-developmental items (NDIs). Management develops a technology to a point it can be demonstrated in a relevant operational environment.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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|--|---|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / <i>Combat Identification Technology</i> | <b>Project (Number/Name)</b><br>642599 / <i>Cooperative Identification Techniques</i> |
|--|---|---|

| <b>Product Development (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Product Development AFRL                    | C/Various              | Not specified. : TBD           | -           | 0.000   |            | 0.060   | Apr 2023   | 0.065        |            | -           |            | 0.065         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 0.000   |            | 0.060   |            | 0.065        |            | -           |            | 0.065         | Continuing       | Continuing | N/A                      |

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Program Office Support                      | Various                | Various : Various              | -           | 0.000   |            | 0.010   | Sep 2023   | 0.011        |            | -           |            | 0.011         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 0.000   |            | 0.010   |            | 0.011        |            | -           |            | 0.011         | Continuing       | Continuing | N/A                      |

|                            |  |  | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|--|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> |  |  | -           | 0.000   | 0.070   | 0.076        | -           | 0.076         | Continuing       | Continuing | N/A                      |

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / <i>Combat Identification Technology</i> | <b>Project (Number/Name)</b><br>642599 / <i>Cooperative Identification Techniques</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

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| <b>Cooperative Identification Techniques</b> |  |
| Cooperative Follow On System                 |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / <i>Combat Identification Technology</i> | <b>Project (Number/Name)</b><br>642599 / <i>Cooperative Identification Techniques</i> |

Schedule Details

| Events by Sub Project                               | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Cooperative Identification Techniques</i></b> |         |      |         |      |
| Cooperative Follow On System                        | 1       | 2023 | 4       | 2028 |

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|--|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |   |                      |                |                |  | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / <i>Combat Identification Technology</i> |                      |                |                | <b>Project (Number/Name)</b><br>643420 / <i>Combat ID Database Development</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>  | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>   | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 643420: <i>Combat ID Database Development</i>                           | -                  | 2.656          | 2.074          | 2.657               | 0.000   | 2.657                | 2.718          | 2.785          | 2.842  | 2.835                   | Continuing              | Continuing        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -   | -                    | -              | -              | -  | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

The Database Initiative (DBI) is a project designed to remove the "hard-coded" static identification (ID) parameters (typically updated every 4-5 years) from the host platform's sensor(s) and replace them with parameterized values that are more easily and rapidly updated when new intelligence inputs come available (this allows maximum flexibility to tailor each aircraft's Combat Identification (CID) database(s) based on assigned theater of operation, threat country of interest, and assigned mission tasks).

This project primarily consists of four objectives: A.) determining a sensor's capability to capture target features for CID, B) designing and developing a database to contain the CID features identified in Objective A, C) developing techniques to generate the requisite features, and D) provide CID features developed from measured or modeled data.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Combat Identification technologies. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Database Development  | 2.656          | 2.074          | 2.657          |
| <b>Description:</b> Develop techniques to remove the "hard-coded" static ID parameters from the host platform's sensor and replace them with parameterized values that are dynamic.   |                |                |                |
| <b>FY 2023 Plans:</b><br>Continue collecting data to populate the databases for developmental test/debug. Continue developing techniques to remove the "hard-coded" static ID parameters from the host platform's sensor and replace them with parameterized values for Joint Multi-sensor Advanced Combat Identification (JMAC) architecture. Add new features into the JMAC architecture. |                |                |                |
| <b>FY 2024 Plans:</b><br>Continue collecting data to populate the databases for developmental test/debug. Continue developing techniques to remove the "hard-coded" static ID parameters from the host platform's sensor and replace them with parameterized values for Joint   |                |                |                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / <i>Combat Identification Technology</i> | <b>Project (Number/Name)</b><br>643420 / <i>Combat ID Database Development</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| Multi-sensor Advanced Combat Identification (JMAC) architecture. Add additional supported sensor modalities into the JMAC architecture.                              |                |                |                |
| <b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br>FY 2024 increased compared to FY 2023 by \$0.577 million. Increase is described in the above plans. |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 2.656          | 2.074          | 2.657          |

**C. Other Program Funding Summary (\$ in Millions)**  
N/A

**Remarks**

**D. Acquisition Strategy**  
 Combat Identification develops technologies for exploitation by the United States Air Force (USAF) and other services. Implement end product investment in government organizations that will maintain database infrastructures and utilize information to inform combat identification (CID) across all USAF platforms. Use of competitive contract awards and existing contract vehicles emphasizing the use of government owned technologies, government off-the-shelf technology (GOTS), commercial off-the-shelf (COTS), and maximize the use of non-developmental items (NDIs). Management develops a technology to a point it can be demonstrated in a relevant operational environment.



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| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2024 Air Force</b> |  |  |  |  |  |  |  |  |  |   | <b>Date: March 2023</b> |  |  |  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                       |  |  |  |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / Combat Identification Technology |  |  |  |  | <b>Project (Number/Name)</b><br>643420 / Combat ID Database Development |                         |  |  |  |

| <b>Product Development (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| Database Development                        | MIPR                              | NASIC : WPAFB, OH                         | -                  | 2.656          |                   | 2.074          |                   | 2.657               |                   | -                  |                   | 2.657                | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>                             |                                   |   | -                  | 2.656          |                   | 2.074          |                   | 2.657               |                   | -                  |                   | 2.657                | Continuing              | Continuing        | N/A                             |
|   |                                   |   | <b>Prior Years</b> | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| <b>Project Cost Totals</b>                  |                                   |   | -                  | 2.656          |                   | 2.074          |                   | 2.657               |                   | -                  |                   | 2.657                | Continuing              | Continuing        | N/A                             |

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / <i>Combat Identification Technology</i> | <b>Project (Number/Name)</b><br>643420 / <i>Combat ID Database Development</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|                                       |  |
|---------------------------------------|--|
| <b>Combat ID Database Development</b> |  |
| Combat ID Database Development        |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0603742F / <i>Combat Identification Technology</i> | <b>Project (Number/Name)</b><br>643420 / <i>Combat ID Database Development</i> |

Schedule Details

| Events by Sub Project                        | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Combat ID Database Development</i></b> |         |      |         |      |
| Combat ID Database Development               | 1       | 2022 | 4       | 2028 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0603790F / NATO Research and Development |
|--|---|

| COST (\$ in Millions)            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|----------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element            | -           | 4.114   | 4.295   | 2.208        | 0.000       | 2.208         | 4.490   | 4.602   | 4.697   | 4.867   | 0.000            | 29.273     |
| 64NATO: <i>Nato Coop R&amp;D</i> | -           | 4.114   | 4.295   | 2.208        | 0.000       | 2.208         | 4.490   | 4.602   | 4.697   | 4.867   | 0.000            | 29.273     |
| Quantity of RDT&E Articles       | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

Funds are used for air, space, and cyber international cooperative research, and development (ICR&D) agreements with North Atlantic Treaty Organization (NATO) member states, major non-NATO allies and friendly foreign countries. Each of the approved ICR&D projects are required to have a concluded international agreement (IA), prior to funds being released, that implements the provisions of Title 10 U.S. Code, Section 2350a. This legislation (Title 10 U.S. Code, Section 2350a) authorizes funds to significantly improve U.S. and allied conventional defense capabilities by leveraging the best defense technologies, eliminating costly duplication of R&D efforts, accelerating the availability of defense systems, and promoting US and allied interoperability or commonality. These funds will not be used for government civilian salaries, permanent construction, or spent overseas. This program element funds the implementation of DAF ICR&D agreements in (1) Basic Research (2) Applied Research (3) Advanced Technology Development (4) Advanced Component Development and Prototypes (5) System Development and Demonstration and (6) RDT&E Management Support. The FY 2024 funding request was reduced by \$2.175 million to account for the availability of prior year execution balances.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024 Base</u> | <u>FY 2024 OCO</u> | <u>FY 2024 Total</u> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 4.114          | 4.295          | 4.383               | 0.000              | 4.383                |
| Current President's Budget                        | 4.114          | 4.295          | 2.208               | 0.000              | 2.208                |
| Total Adjustments                                 | 0.000          | 0.000          | -2.175              | 0.000              | -2.175               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | -2.175              | 0.000              | -2.175               |

**C. Accomplishments/Planned Programs (\$ in Millions)**

|  | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|--|---------|---------|--------------|-------------|---------------|
| <b>Title:</b> International Cooperative Research and Development | 4.114   | 4.295   | 2.208        | 0.000       | 2.208         |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0603790F / NATO Research and Development |
|--|---|

**C. Accomplishments/Planned Programs (\$ in Millions)**

|  | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|--|---------|---------|--------------|-------------|---------------|
| <p><b>Description:</b> Supports bi- and multi-lateral international agreements that meet DAF RDT&amp;E objectives and goals. Each of the projects receiving NATO R&amp;D funding must meet 2 or more of the following requirements: enhance warfighter capabilities; increase coalition interoperability; accelerate the availability of defense systems; strengthen strategic partnerships; gain access to the best technologies, capabilities, techniques, and/or facilities/ test ranges; build or sustain partnerships/influence with strategically important nations; and eliminate duplication of R&amp;D efforts.</p> <p><b>FY 2023 Plans:</b><br/>FY 2023 cooperative projects involve RDT&amp;E efforts in Artificial Intelligence, directed energy, hypersonics, Autonomy, human performance, information systems, aerospace systems, munitions, materials and manufacturing, sensors, local area airbase / airfield defense, machine learning, space situational awareness, missile warning, military satellite communications, global positioning systems, responsive space capabilities, cyber network defense, sensors ,information assurance, and space vehicles. These projects include but are not limited to: High Power Electromagnetics Advanced Weapon non-Kinetic Initiative, Gyromagnetic NLT Arctic Systems (GNATS); Disturbed Ionospheres; High Atmospheric Eye Safe Laser (HAESL); Critical Infrastructure Resiliency and Prediction (CIRCAT); Dynamic Material Analysis Fatigue Life; Quantum, Photonic, &amp; Electromagnetic Enabling Technology (QPEET), "Near-Ground-Turbulence Impact Study", Corrosion Modelling and Accelerated Testing, Phased-Array HPM System, Functional Probiotic to Improve Warfighter Performance During, Deployment Stress, Material Advances in Human wearables for physiological Sensing and Augmentation Military applications of laser produced particle beams, Risk Reduction for Flown Full Scale Composite Component Testing, Pilot Performance and Exposure Tracking, Nanomaterial Sensors, Protected Tactical Services (PTS), Wideband Global SATCOM, Low Earth Orbit Space Domain Awareness, and Deep Space Radar. Bilateral and Multilateral cooperative efforts are with the following countries: Australia, Austria, Estonia, Latvia, Lithuania, Belgium, Netherlands, Italy, Israel, India, France, Germany, Sweden, Finland, Norway, Luxembourg, Switzerland, Japan, Republic of Korea, Singapore, New Zealand, Canada, and Chile.</p> <p><b>FY 2024 Base Plans:</b><br/>FY 2024 cooperative projects involve RDT&amp;E efforts in directed energy, hypersonics, autonomy, human performance, information systems, aerospace systems, munitions, materials and manufacturing, sensors, machine learning, space situational awareness, missile warning, military satellite communications, global positioning systems, responsive space capabilities, cyber network defense, sensors, quantum communication, deep space imaging, synthetic aviation fuel, information assurance, and space vehicles. These projects include but are not limited to: Nanomaterial Sensors, Protected Tactical Services (PTS), Wideband Global SATCOM,</p> |         |         |              |             |               |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0603790F / NATO Research and Development |
|--|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|--|---------|---------|--------------|-------------|---------------|
| <p>Low Earth Orbit Space Domain Awareness, Deep Space Radar, FALQON: Entanglement-Based Quantum PNT and SATCOM, AEGIS 3D: Autonomous Engine Genome with In-Situ Sensors from 3D Printing, Diamond: Low-SWaP Magnetometers for GPS-Denied Navigation, DASIE: Distributed Live Mirror Telescope, PiPET: Pilot Performance and Exposure Tracking, Nanomaterial Sensors, and Synthetic Aviation Fuels for Air Force Propulsion Systems. Bilateral and Multilateral cooperative efforts are with the following countries: Australia, Brazil, Canada, Estonia, France, Germany, India, Israel, Netherlands, New Zealand, Norway, Singapore, South Korea, Spain, Sweden, United Kingdom.</p> <p><b>FY 2024 OCO Plans:</b><br/>\$0 are planned for FY 2024 OCO Plan.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding decreased due to under execution in FY 2022 when 7 projects did not conclude the international agreement for approved projects to receive funding from this PE.</p> |         |         |              |             |               |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 4.114   | 4.295   | 2.208        | 0.000       | 2.208         |

**D. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**E. Acquisition Strategy**

A principal goal of the NATO Cooperative R&D program is to effectively utilize the resources invested by the US and our allies in air, space, and cyber ICR&D projects. This program element provides the critical funding incentive needed to pursue air, space and cyber related ICR&D agreements and helps to (a) leverage USAF and allied resources through cost sharing and economies of scale; (b) exploit the best US and allied technologies for equipping coalition forces; (c) demonstrate areas of commonality or interoperability with our allies; and (d) accelerate the availability of defense technology and systems. Candidate projects are reviewed against DAF goals, DoD objectives, and warfighter needs prior to being approved. An international agreement defining project objectives, responsibilities, and costs is required prior to release of funds. To obtain these funds and ensure service commitment, projects are selected from existing or new RDT&E programs funded in the Future Years Defense Plan (FYDP). At a minimum, approved ICR&D projects must show that the project office is matching approved funding and allied funding will be equal to the total US DoD funding. Additional funding outside NATO Cooperative R&D program is the responsibility of the project/program office.

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| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2024 Air Force</b> |                        |                                |             |                |   |                |            |                     |            |  |            | <b>Date: March 2023</b> |                  |                  |                          |                          |
|--|------------------------|--------------------------------|-------------|----------------|---|----------------|------------|---------------------|------------|--|------------|-------------------------|------------------|------------------|--------------------------|--------------------------|
| <b>Appropriation/Budget Activity</b><br>3600 / 4                       |                        |                                |             |                | <b>R-1 Program Element (Number/Name)</b><br>PE 0603790F / NATO Research and Development |                |            |                     |            | <b>Project (Number/Name)</b><br>64NATO / Nato Coop R&D |            |                         |                  |                  |                          |                          |
| <b>Support (\$ in Millions)</b>  |                        |                                |             | <b>FY 2022</b> |   | <b>FY 2023</b> |            | <b>FY 2024 Base</b> |            | <b>FY 2024 OCO</b>                                     |            | <b>FY 2024 Total</b>    |                  |                  |                          |                          |
| Cost Category Item   | Contract Method & Type | Performing Activity & Location | Prior Years | Cost           | Award Date  | Cost           | Award Date | Cost                | Award Date | Cost   | Award Date | Cost                    | Cost To Complete | Total Cost       | Target Value of Contract |                          |
| NATO Coop R&D (International Research Projects)                        | Various                | Various : NV                   | -           | 2.873          | Feb 2022  | 2.905          | Feb 2023   | 0.808               | Mar 2024   | 0.000  |            | 0.808                   | Continuing       | Continuing       | -                        |                          |
| <b>Subtotal</b>  |                        |                                | -           | 2.873          |   | 2.905          |            | 0.808               |            | 0.000  |            | 0.808                   | Continuing       | Continuing       | N/A                      |                          |
| <b>Test and Evaluation (\$ in Millions)</b>                            |                        |                                |             | <b>FY 2022</b> |   | <b>FY 2023</b> |            | <b>FY 2024 Base</b> |            | <b>FY 2024 OCO</b>                                     |            | <b>FY 2024 Total</b>    |                  |                  |                          |                          |
| Cost Category Item   | Contract Method & Type | Performing Activity & Location | Prior Years | Cost           | Award Date  | Cost           | Award Date | Cost                | Award Date | Cost   | Award Date | Cost                    | Cost To Complete | Total Cost       | Target Value of Contract |                          |
| NATO Coop R&D (International Research Projects)                        | Various                | Various : NV                   | -           | 1.241          | Feb 2022  | 1.390          | Feb 2023   | 1.400               | Mar 2024   | 0.000  |            | 1.400                   | Continuing       | Continuing       | -                        |                          |
| <b>Subtotal</b>  |                        |                                | -           | 1.241          |   | 1.390          |            | 1.400               |            | 0.000  |            | 1.400                   | Continuing       | Continuing       | N/A                      |                          |
|  |                        |                                | Prior Years | <b>FY 2022</b> |   | <b>FY 2023</b> |            | <b>FY 2024 Base</b> |            | <b>FY 2024 OCO</b>                                     |            | <b>FY 2024 Total</b>    |                  | Cost To Complete | Total Cost               | Target Value of Contract |
| <b>Project Cost Totals</b>   |                        |                                | -           | 4.114          |   | 4.295          |            | 2.208               |            | 0.000  |            | 2.208                   | Continuing       | Continuing       | N/A                      |                          |
| <b>Remarks</b>   |                        |                                |             |                |   |                |            |                     |            |  |            |                         |                  |                  |                          |                          |



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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force | <b>Date:</b> March 2023   |  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0603790F / NATO Research and Development | <b>Project (Number/Name)</b><br>64NATO / Nato Coop R&D |

|  | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|  | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |
| <b>NATO Coop R&amp;D</b>   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| FY 2024 Projects - Call Letter   |         | ■ |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| FY 2024 Projects - nomination package development                                |         | ■ | ■ |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| FY 2024 Projects - Review panel  |         |   |   | ■ |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| FY 2024 Projects - Approved Project Letter to the MAJCOMs                        |         |   |   | ■ |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| FY 2024 Projects - International Agreement Development                           |         |   |   |   | ■       |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| FY 2024 Projects - International Agreement is staffed, negotiated, and concluded |         |   |   |   |         | ■ | ■ | ■ | ■       |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| FY 2024 Projects - RDT&E cooperative project work                                |         |   |   |   |         |   |   |   |         | ■ | ■ | ■ | ■       | ■ | ■ | ■ | ■       | ■ | ■ | ■ | ■       | ■ | ■ | ■ | ■       | ■ | ■ |   |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023                                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0603790F / NATO Research and Development | <b>Project (Number/Name)</b><br>64NATO / Nato Coop R&D |

Schedule Details

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b>NATO Coop R&amp;D</b>   |         |      |         |      |
| FY 2024 Projects - Call Letter   | 2       | 2022 | 2       | 2022 |
| FY 2024 Projects - nomination package development                                | 2       | 2022 | 3       | 2022 |
| FY 2024 Projects - Review panel  | 4       | 2022 | 4       | 2022 |
| FY 2024 Projects - Approved Project Letter to the MAJCOMs                        | 4       | 2022 | 4       | 2022 |
| FY 2024 Projects - International Agreement Development                           | 1       | 2023 | 1       | 2023 |
| FY 2024 Projects - International Agreement is staffed, negotiated, and concluded | 2       | 2023 | 1       | 2024 |
| FY 2024 Projects - RDT&E cooperative project work                                | 1       | 2024 | 2       | 2028 |

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force** **Date:** March 2023

| <b>Appropriation/Budget Activity</b>  |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b>                   |                      |                |                |                |                |                         |                   |
|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P) |                    |                |                |                     | PE 0603851F I Intercontinental Ballistic Missile - Dem/Val |                      |                |                |                |                |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>   | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b> | <b>FY 2028</b> | <b>Cost To Complete</b> | <b>Total Cost</b> |
| Total Program Element   | -                  | 73.897         | 46.100         | 45.319              | 0.000  | 45.319               | 56.756         | 0.000          | 0.000          | 0.000          | 0.000                   | 222.072           |
| 641020: ICBM Guidance Applications  | -                  | 8.213          | 4.137          | 0.000               | 0.000  | 0.000                | 0.000          | 0.000          | 0.000          | 0.000          | 0.000                   | 12.350            |
| 641022: ICBM Reentry Vehicle Applications   | -                  | 27.679         | 13.042         | 0.000               | 0.000  | 0.000                | 0.000          | 0.000          | 0.000          | 0.000          | 0.000                   | 40.721            |
| 644209: Long Range Planning (LRP)   | -                  | 38.005         | 28.921         | 45.319              | 0.000  | 45.319               | 56.756         | 0.000          | 0.000          | 0.000          | 0.000                   | 169.001           |

**A. Mission Description and Budget Item Justification**

The Intercontinental Ballistic Missile (ICBM) Demonstration/Validation (Dem/Val) program provides responsive solutions to address emerging threats and issues through technology insertion/technology application for legacy and future ICBM systems, and other common strategic deterrent mission areas. The ICBM Dem/Val program conducts technology maturation and risk reduction activities for new capabilities to support Minuteman (MM) III sustainment, MM III to Sentinel (GBSD) weapon system transition, and future ICBM systems development. ICBM Dem/Val conducts advanced component development and prototyping to validate emerging strategic technologies and future upgrades to the ICBM enterprise. Efforts will identify methods to improve system performance, develop potential future Reentry Vehicle (RV) designs, mitigate evolving threats, reduce life cycle costs, and develop/expand modeling and simulation. Additionally, ICBM Dem/Val will provide experimental platforms for weapon qualification activities, improve nuclear safety and surety, ensure both viability and durability of strategic missile systems.

The ICBM Dem/Val program will develop key enabling engineering tools for the ICBM mission to include Models Based Systems Engineering (MBSE), test software, and modernization of existing analytical tools. This program will leverage modular system, open architecture, and agile software development to build key enabling engineering tools and future upgrades to ICBMs.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2022, 0.000M was expended for civilian pay expenses in this program element, and in FY 2023, 0.000M is forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i> |
|--|---|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 76.621         | 46.432         | 16.717              | 0.000              | 16.717               |
| Current President's Budget                        | 73.897         | 46.100         | 45.319              | 0.000              | 45.319               |
| Total Adjustments                                 | -2.724         | -0.332         | 28.602              | 0.000              | 28.602               |
| • Congressional General Reductions                | 0.000          | -0.332         |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -2.724         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 28.602              | 0.000              | 28.602               |

**Change Summary Explanation**

FY2022 funding reflects an adjustment for Small Business Innovation Research (SBIR) of \$2.724M.

FY2024 funding reflects a realignment of \$28M from ICBM Reentry Vehicles (PE 0101328F) to address shortfall.

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|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|--|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |  |                      |                |                |  | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0603851F / <i>Intercontinental Ballistic Mis<br/>sile - Dem/Val</i> |                      |                |                | <b>Project (Number/Name)</b><br>641020 / <i>ICBM Guidance Applications</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>   | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>   | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 641020: <i>ICBM Guidance Applications</i>                               | -                  | 8.213          | 4.137          | 0.000               | 0.000  | 0.000                | 0.000          | 0.000          | 0.000  | 0.000                   | 0.000                   | 12.350            |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -  | -                    | -              | -              | -  | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

The Guidance Applications Program (GAP) ensures the development of strategic capability in response to the Nuclear Posture Review, recommendations of the United States Strategic Command (USSTRATCOM) Strategic Advisory Group, USSTRATCOM Commander Guidance, and the Defense Science Board Task Force on Nuclear Deterrence. The program conducts any necessary studies and assesses both legacy and future ICBM Guidance System technology applications. Efforts are focused on current and future requirements and technologies, reduced life cycle costs, and increased nuclear safety and surety. Activities leverage the efforts of the Science and Technology community and are coordinated with the Navy strategic applications program to enhance synergy and avoid duplication. Key elements include developing responsive technologies with common applications for future strategic guidance capabilities. This program also includes any needed nuclear surety, certification and system vulnerability assessments.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2022, 0.000M was expended for civilian pay expenses in this program element, and in FY 2023, 0.000M is forecasted for civilian pay expenses in this program element.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Guidance Applications Program   | 8.213          | 4.137          | 0.000          |
| <b>Description:</b> Develop and mature advanced technologies and concepts to support future requirements.   |                |                |                |
| <b>FY 2023 Plans:</b>   |                |                |                |
| <ul style="list-style-type: none"> <li>• Continue development of a Micro-Electro Mechanical System for potential insertion into the Path Length Module.</li> <li>• Continue evaluating emerging strategic instrument technologies for future strategic grade gyros and accelerometers to ensure appropriate test capability development, to include gyrometer and nested IMU development.</li> <li>• Continue to assess and rapidly respond to evolving warfighter priorities and emerging requirements.</li> </ul> |                |                |                |
| <b>FY 2024 Plans:</b>   |                |                |                |
| No FY24 funding. Efforts transition to AFRL   |                |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b>  |                |                |                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0603851F / <i>Intercontinental Ballistic Mis<br/>sile - Dem/Val</i> | <b>Project (Number/Name)</b><br>641020 / <i>ICBM Guidance Applications</i> |

|  |                |                |                |
|--|----------------|----------------|----------------|
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>                                    | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
| • Emerging Strategic Instrument Technology (Sparrow) will transition to AFRL beginning in FY24 |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 8.213          | 4.137          | 0.000          |

**C. Other Program Funding Summary (\$ in Millions)**

| Line Item  | FY 2022   | FY 2023   | FY 2024   | FY 2024 | FY 2024   | FY 2025   | FY 2026   | FY 2027   | FY 2028   | Cost To   |            |
|--|-----------|-----------|-----------|---------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
|  |           |           | Base      | OCO     | Total     |           |           |           |           | Complete  | Total Cost |
| • RDTE 04 PE 0605230F: <i>GBSD</i>                                 | 2,464.875 | 0.000     | 0.000     | -       | 0.000     | 0.000     | 0.000     | 0.000     | -         | 0.000     | 2,464.875  |
| • RDTE 05 PE 0605238F: <i>Ground Based Strategic Deterrent EMD</i> | 0.000     | 3,614.290 | 3,746.935 | -       | 3,746.935 | 3,401.679 | 3,246.870 | 2,610.928 | 1,855.302 | 2,168.865 | 20,644.869 |

**Remarks**

**D. Acquisition Strategy**

Accomplish studies, analyses, concept development and engineering; efforts will be conducted using contracting strategies deemed most appropriate, generally using competitive contracts and/or other obligating documentation considered most appropriate by obligating and performing agencies involved. Current effort deliverables to include strategic grade guidance prototypes to support multiple ongoing Air Force initiatives.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0603851F / <i>Intercontinental Ballistic Mis<br/>sile - Dem/Val</i> | <b>Project (Number/Name)</b><br>641020 / <i>ICBM Guidance Applications</i> |
|--|--|--|

| <b>Test and Evaluation (\$ in Millions)</b>            |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                                     | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| GAP Micro-Electronic Module System, Advanced Fuzing    | Various                | Various : Various              | -           | 1.237   | Feb 2022   | 1.000   | Dec 2022   | -            |            | -           |            | -             | 0.000            | 2.237      | -                        |
| GAP Emerging Strategic Instrument Technology (Sparrow) | Various                | Various : Various              | -           | 6.976   | Mar 2022   | 2.662   | Dec 2022   | -            |            | -           |            | -             | 0.000            | 9.638      | -                        |
| <b>Subtotal</b>  |                        |                                | -           | 8.213   |            | 3.662   |            | -            |            | -           |            | -             | 0.000            | 11.875     | N/A                      |

| <b>Management Services (\$ in Millions)</b>             |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                                      | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| GAP, Program Management Administrative Support Services | C/Various              | Various : Various              | -           | -       |            | 0.475   | Dec 2022   | -            |            | -           |            | -             | 0.000            | 0.475      | -                        |
| <b>Subtotal</b>   |                        |                                | -           | -       |            | 0.475   |            | -            |            | -           |            | -             | 0.000            | 0.475      | N/A                      |

|                            |  |  | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|--|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> |  |  | -           | 8.213   | 4.137   | -            | -           | -             | 0.000            | 12.350     | N/A                      |

**Remarks**

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0603851F / <i>Intercontinental Ballistic Mis<br/>sile - Dem/Val</i> | <b>Project (Number/Name)</b><br>641020 / <i>ICBM Guidance Applications</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |                      |
|--|----------------------|
| <b>GAP</b>   |                      |
| GAP Micro-Electronic Module System, Advanced Fuzing    | ████████████████████ |
| GAP Emerging Strategic Instrument Technology (Sparrow) | ████████████████████ |



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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0603851F / <i>Intercontinental Ballistic Mis<br/>sile - Dem/Val</i> | <b>Project (Number/Name)</b><br>641020 / <i>ICBM Guidance Applications</i> |

Schedule Details

| Events by Sub Project                                  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b>GAP</b>   |         |      |         |      |
| GAP Micro-Electronic Module System, Advanced Fuzing    | 1       | 2022 | 4       | 2023 |
| GAP Emerging Strategic Instrument Technology (Sparrow) | 1       | 2022 | 4       | 2023 |

**Note**  
Micro-Electronic Module System, Advanced Fuzing moved GAP to LRP in FY24.

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |   |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i> |                      |                |                | <b>Project (Number/Name)</b><br>641022 / <i>ICBM Reentry Vehicle Applications</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>  | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 641022: <i>ICBM Reentry Vehicle Applications</i>                        | -                  | 27.679         | 13.042         | 0.000               | 0.000   | 0.000                | 0.000          | 0.000          | 0.000   | 0.000                   | 0.000                   | 40.721            |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -   | -                    | -              | -              | -   | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

The Reentry Vehicle Applications Program (RVAP) ensures the ICBM force is equipped with the safest, most reliable, most survivable Reentry Systems, and explores options for common, multi-mission capabilities. The program enables a responsive engineering infrastructure by developing modeling/simulation, ground and flight test platforms to support Reentry System qualifications. The program ensures the availability of long-lead components and materials while identifying life cycle cost reduction methods. In addition, the program matures and tests advanced Reentry System technologies and designs to meet future capability requirements. This includes conducting any necessary studies and assessing technology applications relevant to Mk12A, Mk21, Mk21A and future ICBM Reentry Systems. The program leverages investments by the Science & Technology community and Navy reentry systems applications program. Testing may occur on a space available basis on Air Force and Navy Force Development Evaluation (FDE) flights.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2022, 0.000M was expended for civilian pay expenses in this program element, and in FY 2023, 0.000M is forecasted for civilian pay expenses in this program element.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Reentry Vehicle Applications Program  | 27.679         | 13.042         | 0.000          |
| <b>Description:</b> Mature, evaluate, and test reentry system materials, technologies, and vehicles including modeling/simulation, and ground and flight test platforms for use in current and future strategic applications.   |                |                |                |
| <b>FY 2023 Plans:</b>   |                |                |                |
| <ul style="list-style-type: none"> <li>• Continue new modeling/simulation and flight test platforms for future weapon qualification activities.</li> <li>• Continue study for future RV concepts.</li> <li>• Design predictive health management tool based on engineering predictive analysis.</li> <li>• Continue digital engineering research.</li> <li>• Continue the future system demonstrator effort (formerly Joint Technology Demonstrator).</li> <li>• Continue Rad Hard Non-Volatile Memory research</li> <li>• Continue Revolutionary Radar research</li> <li>• Initiate navigation aids/instrumentation &amp; sensor research</li> </ul> |                |                |                |

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0603851F / <i>Intercontinental Ballistic Mis<br/>sile - Dem/Val</i> | <b>Project (Number/Name)</b><br>641022 / <i>ICBM Reentry Vehicle Applications</i> |
|--|--|---|

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   | FY 2022 | FY 2023 | FY 2024 |
|---|---------|---------|---------|
| <ul style="list-style-type: none"> <li>• Initiate ground testing &amp; capabilities research</li> <li>• Rapidly respond to evolving warfighter priorities and emerging requirements.</li> </ul> <p><b>FY 2024 Plans:</b><br/>No FY24 activity</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b></p> <ul style="list-style-type: none"> <li>• RV Advanced Concept Study concludes end of FY23</li> </ul> |         |         |         |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 27.679  | 13.042  | 0.000   |

| <b>C. Other Program Funding Summary (\$ in Millions)</b>           |                |                |                               |                              |                                |                |                |                |                |                                   |                   |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| <u>Line Item</u>   | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
| • RDTE 04 PE 0605230F: <i>Ground Based Strategic Deterrent</i>     | 2,464.875      | 0.000          | 0.000                         | -                            | 0.000                          | 0.000          | 0.000          | 0.000          | -              | 0.000                             | 2,464.875         |
| • RDTE 05 PE 0605238F: <i>Ground Based Strategic Deterrent EMD</i> | 0.000          | 3,614.290      | 3,746.935                     | -                            | 3,746.935                      | 3,401.679      | 3,246.870      | 2,610.928      | 1,855.302      | 2,168.865                         | 20,644.869        |
| • RDTE 07 PE 0101328F: <i>ICBM Reentry Vehicles</i>                | 100.463        | 115.616        | 459.880                       | -                            | 459.880                        | 641.529        | 687.664        | 642.804        | 544.771        | 0.000                             | 3,192.727         |

**Remarks**

**D. Acquisition Strategy**

Studies, analyses, limited engineering, and pre-prototype hardware development will be accomplished; efforts will be conducted using contracting strategies deemed most appropriate, generally using competitive contracts and/or other obligating documentation considered most appropriate by obligating and performing agencies involved. Current effort deliverables include various technologies for ICBM re-entry vehicles including modeling and simulation software, alternate high temperature materials, advanced concepts, and radiation-hardened microelectronics.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0603851F / <i>Intercontinental Ballistic Mis<br/>sile - Dem/Val</i> | <b>Project (Number/Name)</b><br>641022 / <i>ICBM Reentry Vehicle Applications</i> |
|--|--|---|

| <b>Support (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item              | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| RVAP Support 1.0                | C/FFP                  | BAE Systems : Clearfield, UT   | -           | 4.330   | Jan 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 4.330      | -                        |
| RVAP Support 2.0                | C/FFP                  | TBD : TBD                      | -           | -       |            | 1.400   | Nov 2022   | -            |            | -           |            | -             | 0.000            | 1.400      | -                        |
| RVAP Study Support              | C/FFP                  | Aerospace : Various            | -           | 0.950   | Aug 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 0.950      | -                        |
| RVAP Engineering Support        | C/FP                   | JHU/APL : Various              | -           | 0.100   | Jul 2022   | 0.500   | Dec 2022   | -            |            | -           |            | -             | 0.000            | 0.600      | -                        |
| <b>Subtotal</b>                 |                        |                                | -           | 5.380   |            | 1.900   |            | -            |            | -           |            | -             | 0.000            | 7.280      | N/A                      |

| <b>Test and Evaluation (\$ in Millions)</b>       |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                                | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| RVAP Future System Demonstrator                   | MIPR                   | Various : Various              | -           | 2.982   | May 2022   | 3.000   | Nov 2022   | -            |            | -           |            | -             | 0.000            | 5.982      | -                        |
| RVAP Modeling and Simulation Programs             | Various                | Various : Various              | -           | 0.000   | Aug 2022   | 0.500   | Nov 2022   | -            |            | -           |            | -             | 0.000            | 0.500      | -                        |
| RVAP Advanced Concept Studies                     | Various                | Various : Various              | -           | 3.415   | Apr 2022   | 1.500   | Nov 2022   | -            |            | -           |            | -             | 0.000            | 4.915      | -                        |
| RVAP Radiation-Hardened Advanced Microelectronics | Various                | Various : Various              | -           | 11.791  | Jan 2022   | 2.841   | Nov 2022   | -            |            | -           |            | -             | 0.000            | 14.632     | -                        |
| RVAP Revolutionary Radar                          | Various                | Various : Various              | -           | -       |            | 0.500   | Nov 2022   | -            |            | -           |            | -             | 0.000            | 0.500      | -                        |
| RVAP Rad Hard Non-Volatile Memory                 | Various                | Various : Various              | -           | 2.450   | Apr 2022   | 1.500   | Nov 2022   | -            |            | -           |            | -             | 0.000            | 3.950      | -                        |
| RVAP Navigation Aids/Instrumentation              | TBD                    | Not specified. : TBD           | -           | -       |            | 1.301   | Nov 2022   | -            |            | -           |            | -             | 0.000            | 1.301      | -                        |
| <b>Subtotal</b>                                   |                        |                                | -           | 20.638  |            | 11.142  |            | -            |            | -           |            | -             | 0.000            | 31.780     | N/A                      |

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| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2024 Air Force</b> |  |  |  |  |  |  |  |  |  |  | <b>Date: March 2023</b>   |  |  |  |  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                       |  |  |  |  |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0603851F / <i>Intercontinental Ballistic Mis<br/>sile - Dem/Val</i> |  |  |  |  | <b>Project (Number/Name)</b><br>641022 / <i>ICBM Reentry Vehicle Applications</i> |  |  |  |  |

| <b>Management Services (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| RVAP Program Management Administration      | Various                           | Various : Various                         | -                  | 0.938          | May 2022          | -              |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 0.938             | -                               |
| Travel                                      | Various                           | Various : Various                         | -                  | 0.723          | May 2022          | -              |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 0.723             | -                               |
| <b>Subtotal</b>                             |                                   |   | -                  | 1.661          |                   | -              |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 1.661             | N/A                             |

| <b>Project Cost Totals</b> | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|----------------------------|--------------------|----------------|----------------|---------------------|--------------------|----------------------|-------------------------|-------------------|---------------------------------|
|                            | -                  | 27.679         | 13.042         | -                   | -                  | -                    | 0.000                   | 40.721            | N/A                             |

**Remarks**

Revolutionary Radar moved from LRP to RVAP in FY23

Future System Demonstrator moved from RVAP to LRP in FY24

Modeling and Simulation Programs moved from RVAP to LRP in FY24

Radiation-Hardened Advanced Microelectronics moved from RVAP to LRP in FY24

Revolutionary Radar moved from RVAP to LRP in FY24

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0603851F / <i>Intercontinental Ballistic Mis<br/>sile - Dem/Val</i> | <b>Project (Number/Name)</b><br>641022 / <i>ICBM Reentry Vehicle Applications</i> |

|   | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|   | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |
| <b>RVAP</b>                             |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| RVAP Future System Demonstrator         |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| RVAP Modeling and Simulation Programs   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| RVAP Advanced Concept Studies           |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| RVAP Rad Hard Advanced Microelectronics |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| RVAP Revolutionary Radar                |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| RVAP Rad Hard Non-Volatile Memory       |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| RVAP Navigation Aids/Instrumentation    |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0603851F / <i>Intercontinental Ballistic Mis<br/>sile - Dem/Val</i> | <b>Project (Number/Name)</b><br>641022 / <i>ICBM Reentry Vehicle Applications</i> |

Schedule Details

| Events by Sub Project                   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b>RVAP</b>                             |         |      |         |      |
| RVAP Future System Demonstrator         | 1       | 2022 | 4       | 2023 |
| RVAP Modeling and Simulation Programs   | 1       | 2022 | 4       | 2023 |
| RVAP Advanced Concept Studies           | 1       | 2022 | 4       | 2023 |
| RVAP Rad Hard Advanced Microelectronics | 1       | 2022 | 4       | 2023 |
| RVAP Revolutionary Radar                | 1       | 2023 | 4       | 2023 |
| RVAP Rad Hard Non-Volatile Memory       | 1       | 2022 | 4       | 2023 |
| RVAP Navigation Aids/Instrumentation    | 3       | 2022 | 4       | 2023 |

**Note**

Revolutionary Radar moved from LRP to RVAP in FY23

Future System Demonstrator moved from RVAP to LRP in FY24

Modeling and Simulation Programs moved from RVAP to LRP in FY24

Radiation-Hardened Advanced Microelectronics moved from RVAP to LRP in FY24

Revolutionary Radar moved from RVAP to LRP in FY24

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |   |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i> |                      |                |                | <b>Project (Number/Name)</b><br>644209 / <i>Long Range Planning (LRP)</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>  | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 644209: <i>Long Range Planning (LRP)</i>                                | -                  | 38.005         | 28.921         | 45.319              | 0.000   | 45.319               | 56.756         | 0.000          | 0.000   | 0.000                   | 0.000                   | 169.001           |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -   | -                    | -              | -              | -   | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

The Long Range Planning (LRP) effort identifies, analyzes, and evaluates potential modifications to current and future ICBM Weapon Systems required to meet warfighter objectives related to executing flight tests, long-term sustainment, technology insertion, battle space awareness, employment, force structure, and future systems. The studies will focus on system supportability, operability, reliability, innovation, and maintainability. Options/concepts generated by these studies are evaluated for feasibility, system impacts, and cost. LRP supports and conducts testing in support of future weapon system development and deployment. Pre-milestone activities may be conducted for current and/or future ICBM weapon systems, which may include entry criteria for milestone activities enabling a rapid response to evolving warfighter priorities and emerging requirements.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2022, 0.000M was expended for civilian pay expenses in this program element, and in FY 2023, 0.000M is forecasted for civilian pay expenses in this program element.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Long Range Planning   | 38.005         | 28.921         | 45.319         |
| <b>Description:</b> Analyze, study and plan current and future ICBM activities to meet requirements for long-term sustainment, novel technology insertion, employment force structure, and future systems.  |                |                |                |
| <b>FY 2023 Plans:</b>   |                |                |                |
| <ul style="list-style-type: none"> <li>• Continue Experimental Flight Test efforts</li> <li>• Initiate Terminal Tracking and Scoring research</li> <li>• Rapidly respond to evolving warfighter priorities and emerging requirements.</li> <li>• Conduct any necessary roadmap studies</li> </ul> |                |                |                |
| <b>FY 2024 Plans:</b>   |                |                |                |
| <ul style="list-style-type: none"> <li>• Continue Experimental Flight Test efforts</li> </ul>   |                |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b>  |                |                |                |



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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0603851F / <i>Intercontinental Ballistic Mis<br/>sile - Dem/Val</i> | <b>Project (Number/Name)</b><br>644209 / <i>Long Range Planning (LRP)</i> |

|   |                |                |                |
|---|----------------|----------------|----------------|
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
| • Experimental Flight Test efforts increase                 |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>           | 38.005         | 28.921         | 45.319         |

**C. Other Program Funding Summary (\$ in Millions)**

| Line Item  | FY 2022   | FY 2023   | FY 2024   | FY 2024 | FY 2024   | FY 2025   | FY 2026   | FY 2027   | FY 2028   | Cost To   |            |
|--|-----------|-----------|-----------|---------|-----------|-----------|-----------|-----------|-----------|-----------|------------|
|  |           |           | Base      | OCO     | Total     |           |           |           |           | Complete  | Total Cost |
| • RDTE 04 PE 0605230F: <i>GBSD</i>                                 | 2,464.875 | 0.000     | 0.000     | -       | 0.000     | 0.000     | 0.000     | 0.000     | -         | 0.000     | 2,464.875  |
| • RDTE 05 PE 0605238F: <i>Ground Based Strategic Deterrent EMD</i> | -         | 3,614.290 | 3,746.935 | -       | 3,746.935 | 3,401.679 | 3,246.870 | 2,610.928 | 1,855.302 | 2,168.865 | 20,644.869 |
| • RDTE 07 0101328F: <i>ICBM Reentry Vehicles</i>                   | 100.463   | 115.616   | 459.880   | -       | 459.880   | 641.492   | 687.664   | 642.804   | 544.771   | 0.000     | 3,192.690  |

**Remarks**

**D. Acquisition Strategy**

Studies, analyses, limited engineering, and pre-prototype hardware development will be accomplished; efforts will be conducted using contracting strategies deemed most appropriate, generally using competitive contracts and/or other obligating documentation considered most appropriate by obligating and performing agencies involved.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0603851F / <i>Intercontinental Ballistic Mis<br/>sile - Dem/Val</i> | <b>Project (Number/Name)</b><br>644209 / <i>Long Range Planning (LRP)</i> |
|--|--|---|

| <b>Support (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item              | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| LRP Support                     | C/CPFF                 | BAE : Various                  | -           | 0.756   | Sep 2022   | 1.893   | Nov 2022   | 3.500        | Feb 2024   | -           |            | 3.500         | Continuing       | Continuing | -                        |
| LRP Study Support               | C/CPFF                 | Aerospace : Various            | -           | -       |            | 0.450   | Nov 2022   | -            |            | -           |            | -             | 0.000            | 0.450      | -                        |
| LRP Engineering Support         | C/CPFF                 | JHU/APL : Various              | -           | -       |            | 1.015   | Nov 2022   | 1.000        | Feb 2024   | -           |            | 1.000         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                 |                        |                                | -           | 0.756   |            | 3.358   |            | 4.500        |            | -           |            | 4.500         | Continuing       | Continuing | N/A                      |

| <b>Test and Evaluation (\$ in Millions)</b>                           |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| LRP Experimental Flight Test 1  | C/CPIF                 | Northrup Grumman : Various     | -           | 12.271  | Apr 2022   | 13.000  | Nov 2022   | -            |            | -           |            | -             | 0.000            | 25.271     | -                        |
| LRP Experimental Flight Test 2  | TBD                    | TBD : TBD                      | -           | -       |            | 10.000  | Feb 2023   | 28.500       | Feb 2024   | -           |            | 28.500        | Continuing       | Continuing | -                        |
| LRP Virtual Environment Trainer Launch Facility Prototype Development | C/CPAF                 | Various : Various              | -           | 0.089   | May 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 0.089      | -                        |
| LRP Revolutionary Radar   | C/CPAF                 | Sandia : Various               | -           | 2.689   | Jul 2022   | 1.000   | Jan 2023   | 2.000        | Feb 2024   | -           |            | 2.000         | Continuing       | Continuing | -                        |
| LRP Terminal Tracking & Scoring                                       | TBD                    | TBD : TBD                      | -           | -       |            | 0.461   | Feb 2023   | 1.245        | Feb 2024   | -           |            | 1.245         | Continuing       | Continuing | -                        |
| LRP Future System Demonstrator  | MIPR                   | Various : Various              | -           | -       |            | -       |            | 1.000        | Feb 2024   | -           |            | 1.000         | Continuing       | Continuing | -                        |
| LRP Radiation-Hardened Advanced Microelectronics 2.0                  | Various                | Various : Various              | -           | -       |            | -       |            | 4.717        | Feb 2024   | -           |            | 4.717         | Continuing       | Continuing | -                        |
| LRP Modeling and Simulation Programs                                  | Various                | Various : Various              | -           | -       |            | -       |            | 0.500        | Jan 2024   | -           |            | 0.500         | Continuing       | Continuing | -                        |
| LRP Micro-Electronic Module System, Advanced Fuzing                   | Various                | Various : Various              | -           | -       |            | -       |            | 1.500        | Jan 2024   | -           |            | 1.500         | Continuing       | Continuing | -                        |
| AFGSC Innovation Hub Apps   | Various                | Various : Various              | -           | 22.200  | Aug 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 22.200     | -                        |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0603851F / <i>Intercontinental Ballistic Mis<br/>sile - Dem/Val</i> | <b>Project (Number/Name)</b><br>644209 / <i>Long Range Planning (LRP)</i> |
|--|--|---|

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| <b>Subtotal</b>                             |                        |                                | -           | 37.249  |            | 24.461  |            | 39.462       |            | -           |            | 39.462        | Continuing       | Continuing | N/A                      |

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| LRP Program Management                      | Various                | Various : Various              | -           | -       |            | 1.102   | Nov 2022   | 1.357        | Jan 2024   | -           |            | 1.357         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | -       |            | 1.102   |            | 1.357        |            | -           |            | 1.357         | Continuing       | Continuing | N/A                      |

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | -           | 38.005  | 28.921  | 45.319       | -           | 45.319        | Continuing       | Continuing | N/A                      |

**Remarks**  
 FY23 DFT and FY25 DFT were renamed to EFT 1 and EFT 2, respectively, during the FY24PB budget cycle.

Experimental Flight Tests require two years of funding prior to the test to support planning/execution activities. Experimental Flight Tests enable us to demonstrate developing technologies in relevant ICBM environments.

Experimental Flight Test 1 funding started in FY21 under RVAP and PAP and will meet combined technology demonstration needs between the Dem/Val and Mk21A programs.

Revolutionary Radar moved from LRP to RVAP in FY23

Future System Demonstrator moved from RVAP to LRP in FY24

Modeling and Simulation Programs moved from RVAP to LRP in FY24

Radiation-Hardened Advanced Microelectronics moved from RVAP to LRP in FY24

Revolutionary Radar moved from RVAP to LRP in FY24

LRP Micro-Electronic Module System, Advanced Fuzing moved from GAP to LRP in FY24

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0603851F / <i>Intercontinental Ballistic Mis<br/>sile - Dem/Val</i> | <b>Project (Number/Name)</b><br>644209 / <i>Long Range Planning (LRP)</i> |
|--|--|---|

|  | Prior<br>Years | FY 2022 | FY 2023 | FY 2024<br>Base | FY 2024<br>OCO | FY 2024<br>Total | Cost To<br>Complete | Total<br>Cost | Target<br>Value of<br>Contract |
|--|----------------|---------|---------|-----------------|----------------|------------------|---------------------|---------------|--------------------------------|
|--|----------------|---------|---------|-----------------|----------------|------------------|---------------------|---------------|--------------------------------|

AFGSC Innovation Hub Apps was a Congressional add in FY22 and was executed in LRP BPAC. Please note, however, that the FY23PB categorized this Congressional add under the RVAP BPAC.

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0603851F / <i>Intercontinental Ballistic Mis<br/>sile - Dem/Val</i> | <b>Project (Number/Name)</b><br>644209 / <i>Long Range Planning (LRP)</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |  |
|--|--|
| <b>LRP</b>   |  |
| LRP Experimental Flight Test (EFT) 1                 |  |
| LRP EFT 1 Launch (Nov 23)                            |  |
| LRP Experimental Flight Test (EFT) 2                 |  |
| LRP EFT 2 Launch (Feb 26)                            |  |
| LRP Revolutionary Radar                              |  |
| LRP VET-LF   |  |
| LRP Terminal Tracking & Scoring                      |  |
| LRP Future System Demonstrator                       |  |
| LRP Radiation-Hardened Advanced Microelectronics 2.0 |  |
| LRP Modeling and Simulation Programs                 |  |
| LRP Micro-Electronic Module System, Advanced Fuzing  |  |
| AFGSC Innovation Hub Apps                            |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0603851F / <i>Intercontinental Ballistic Mis<br/>sile - Dem/Val</i> | <b>Project (Number/Name)</b><br>644209 / <i>Long Range Planning (LRP)</i> |

**Schedule Details**

| Events by Sub Project                                | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b>LRP</b>   |         |      |         |      |
| LRP Experimental Flight Test (EFT) 1                 | 1       | 2022 | 2       | 2024 |
| LRP EFT 1 Launch (Nov 23)                            | 1       | 2024 | 1       | 2024 |
| LRP Experimental Flight Test (EFT) 2                 | 3       | 2023 | 2       | 2026 |
| LRP EFT 2 Launch (Feb 26)                            | 2       | 2026 | 2       | 2026 |
| LRP Revolutionary Radar                              | 1       | 2022 | 4       | 2025 |
| LRP VET-LF   | 1       | 2022 | 4       | 2022 |
| LRP Terminal Tracking & Scoring                      | 2       | 2023 | 4       | 2025 |
| LRP Future System Demonstrator                       | 1       | 2024 | 4       | 2025 |
| LRP Radiation-Hardened Advanced Microelectronics 2.0 | 1       | 2024 | 4       | 2025 |
| LRP Modeling and Simulation Programs                 | 1       | 2024 | 4       | 2025 |
| LRP Micro-Electronic Module System, Advanced Fuzing  | 1       | 2024 | 4       | 2025 |
| AFGSC Innovation Hub Apps                            | 4       | 2022 | 4       | 2023 |

**Note**

- FY23 DFT and FY25 DFT were renamed to EFT 1 and EFT 2, respectively, during the FY24PB budget cycle
- Experimental flight tests require two years of funding prior to the test to support planning/execution activities. Experimental Flight Tests enable us to demonstrate developing technologies in relevant ICBM environments.
- Experimental Flight Test 1 funding started in FY21 under RVAP and PAP and will meet combined technology demonstration needs between the Dem/Val and Mk21A programs.
- Revolutionary Radar moved from LRP to RVAP in FY23
- Future System Demonstrator moved from RVAP to LRP in FY24
- Modeling and Simulation Programs moved from RVAP to LRP in FY24
- Radiation-Hardened Advanced Microelectronics moved from RVAP to LRP in FY24

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| Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force |   | Date: March 2023   |
| Appropriation/Budget Activity<br>3600 / 4               | R-1 Program Element (Number/Name)<br>PE 0603851F / <i>Intercontinental Ballistic Mis<br/>sile - Dem/Val</i> | Project (Number/Name)<br>644209 / <i>Long Range Planning (LRP)</i> |

-Revolutionary Radar moved from RVAP to LRP in FY24  
-LRP Micro-Electronic Module System, Advanced Fuzing moved from GAP to LRP in FY24  
- AFGSC Innovation Hub Apps was a Congressional add in FY22 and was executed in LRP BPAC. Please note, however, that the FY23PB categorized this Congressional add under the RVAP BPAC.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604001F / NC3 Advanced Concepts |
|--|---|

| COST (\$ in Millions)                | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                | -           | 6.900   | 5.098   | 10.011       | 0.000       | 10.011        | 10.131  | 10.163  | 10.242  | 10.248  | 0.000            | 62.793     |
| 646020: <i>NC3 Advanced Concepts</i> | -           | 6.900   | 5.098   | 10.011       | 0.000       | 10.011        | 10.131  | 10.163  | 10.242  | 10.248  | 0.000            | 62.793     |
| Quantity of RDT&E Articles           | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**A. Mission Description and Budget Item Justification**

Nuclear Command, Control, and Communications (NC3) Advanced Concepts are required for analysis, development and prototyping of next generation NC3 systems and subsystems. This program ensures a responsive design and development engineering infrastructure to address evolving Nuclear Deterrence Operations (NDO) mission requirements; emerging issues and technology insertion/technology application on the NC3 Weapon System (WS), future strategic systems/capability, and other common strategic areas where appropriate; and develop enhanced multi-use capabilities. The NC3 Advanced Concepts Program will provide technology maturation and risk reduction activities to support the AF NC3 Weapon System (AN/USQ-225). Activity will reduce life cycle costs, inform technology maturation & risk reduction efforts, improve system performance, mitigate evolving threats, and ensure both viability and durability of the AF NC3 Weapon System.

Additional details can be provided at a higher classification.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605831F and 0605833F. In FY22 \$0.0M was expended for civilian pay expenses in this program element, in FY23 \$0.0M is forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604001F / NC3 Advanced Concepts |
|--|---|

| <b>B. Program Change Summary (\$ in Millions)</b> | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024 Base</u> | <u>FY 2024 OCO</u> | <u>FY 2024 Total</u> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 6.900          | 5.098          | 0.000               | 0.000              | 0.000                |
| Current President's Budget                        | 6.900          | 5.098          | 10.011              | 0.000              | 10.011               |
| Total Adjustments                                 | 0.000          | 0.000          | 10.011              | 0.000              | 10.011               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 10.011              | 0.000              | 10.011               |

**Change Summary Explanation**

FY24 10.0M increase for development and risk reduction of NC3 technologies, to include prototyping, testing, and demonstration of technical capabilities.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u> |
|--|----------------|----------------|----------------|
| <b>Title:</b> NC3 Advanced Concepts  | 6.900          | 5.098          | 10.011         |
| <b>Description:</b> NC3 Advanced Concepts activities will include, but are not limited to: conducting studies, analysis, and prototyping; test bed activities; exercise participation; developing modeling and simulation of identified NC3 WS architecture; integrated NC3 WS testing, validation, and certification; and direct mission support contracts in support of next generation NC3 systems and sub-systems. NC3 Advanced Concepts ensures a responsive design and development engineering infrastructure to address evolving NDO. |                |                |                |
| <b>FY 2023 Plans:</b><br>Continue studies, analysis, and prototyping; test bed activities; exercise participation; develop modeling and simulation of identified NC3 WS architecture; integrated NC3 WS testing, validation, and certification; direct mission support contracts in support of next generation NC3 systems and sub-systems; rapidly respond to evolving warfighter priorities and warfighter requirements.   |                |                |                |
| <b>FY 2024 Plans:</b><br>Continue studies, analysis, and prototyping; test bed activities; exercise participation; develop modeling and simulation of identified NC3 WS architecture; integrated NC3 WS testing, validation, and certification; direct mission support contracts in support of next generation NC3 systems and sub-systems; rapidly respond to evolving warfighter priorities and warfighter requirements.   |                |                |                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604001F / NC3 Advanced Concepts |
|--|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p>Additionally, FY24 funding will support continued early development and risk reduction of an NC3 multi-band/multi-channel (MB/MC) software defined radio (SDR), which will inform evolving NC3 requirements as well as provide viable prototyping for testing and demonstration of technical capability. Funds will also support High Frequency (HF) engineering analysis to reduce technical risk and schedule for potential future program of record/requirement (details can be provided at higher classification levels).</p> <p><b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br/>Increased funding to support development and risk reduction of NC3 technologies, such as software defined radios, to inform evolving NC3 requirements as well as to provide viable prototypes for testing and demonstration of various technical capabilities.</p> |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 6.900          | 5.098          | 10.011         |

**D. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**E. Acquisition Strategy**

To conduct NC3 Advanced Concepts essential activities, a combination of competitively awarded contracts, sole source contracts, and/or other transaction authority, may be used to augment Air Force organic capabilities with technical skill sets from Federally Funded Research and Development Centers (FFRDCs), research laboratories, University-Affiliated Research Centers (UARCs), and industry Advisory and Assistance Services (A&AS) providers. All NC3 Advanced Concepts activities will be evaluated for promising technologies and considered for tech transition into the Air Force NC3 Weapon System.

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|--|-------------------------|
| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2024 Air Force</b> | <b>Date:</b> March 2023 |
|--|-------------------------|

|  |   |  |
|--|---|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604001F / NC3 Advanced Concepts | <b>Project (Number/Name)</b><br>646020 / NC3 Advanced Concepts |
|--|---|--|

| <b>Product Development (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| NC3 Advanced Concepts                       | Various                           | Various : Various                         | -                  | 6.900          | Sep 2022          | 5.098          | Jan 2023          | 10.011              | Mar 2024          | -                  |                   | 10.011               | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>                             |                                   |   | -                  | 6.900          |                   | 5.098          |                   | 10.011              |                   | -                  |                   | 10.011               | Continuing              | Continuing        | N/A                             |
|   |                                   |   | <b>Prior Years</b> | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| <b>Project Cost Totals</b>                  |                                   |   | -                  | 6.900          |                   | 5.098          |                   | 10.011              |                   | -                  |                   | 10.011               | Continuing              | Continuing        | N/A                             |

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604001F / <i>NC3 Advanced Concepts</i> | <b>Project (Number/Name)</b><br>646020 / <i>NC3 Advanced Concepts</i> |
|--|--|---|

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   |  |
|---|--|
| <b><i>NC3 Advanced Concepts</i></b>                               |  |
| Studies, analysis, and prototyping                                |  |
| Test bed activities and exercise participation                    |  |
| Develop modeling and simulation of identified NC3 WS architecture |  |

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2024 Air Force **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604001F / <i>NC3 Advanced Concepts</i> | <b>Project (Number/Name)</b><br>646020 / <i>NC3 Advanced Concepts</i> |
|--|--|---|

Schedule Details

| Events by Sub Project   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>NC3 Advanced Concepts</i></b>                               |         |      |         |      |
| Studies, analysis, and prototyping                                | 1       | 2022 | 4       | 2028 |
| Test bed activities and exercise participation                    | 1       | 2022 | 4       | 2028 |
| Develop modeling and simulation of identified NC3 WS architecture | 1       | 2022 | 4       | 2028 |

**Note**  
NC3 Advanced Concepts (Level of Effort)

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |  |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604002F / <i>Air Force Weather Services Research</i> |
|--|--|

| COST (\$ in Millions)                   | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                   | -           | 3.714   | 0.000   | 0.000        | 0.000       | 0.000         | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 3.714      |
| 643560: <i>Weather Service Research</i> | -           | 3.714   | 0.000   | 0.000        | 0.000       | 0.000         | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 3.714      |
| Quantity of RDT&E Articles              | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**Note**  
In FY 2023, SWAFS effort transferred from PE 0604002F, AF Weather Services Research, to PE 0604002SF, SF Weather Services Research, to consolidate space-related efforts under the Space Force, and ensure an integrated and systems-oriented approach to program management decisions.

**A. Mission Description and Budget Item Justification**

This budget activity funds the development necessary to evaluate integrated technologies and models for future operationalization into segments of the Air Force Weather Services (AFWS) in support of the 2018 National Defense Strategy's (NDS) three lines of effort. To improve readiness for a more lethal force, AFWS provides timely, accurate, resilient and relevant environmental information, to include space and terrestrial weather, for global battlespace situational awareness for the Air Force (AF), Army, Special Operations Forces (SOF), Space Force (USSF), combatant commands, the Intelligence Community (IC), and other government agencies. AFWS capabilities at home station and deployed provide critical environmental information in support of decision makers to gain the asymmetric advantage during the full spectrum of air and space combat operations. AFWS development enhances the lethality, effectiveness, and survivability of AF weapon systems and precision munitions by modernizing capability and seeking the military advantage to accurately predict friendly and foe environmental impacts to optimize mission execution and planning, targeting, weaponeering, battle damage assessment, and space systems operations. To strengthen alliances and partnerships, AFWS development efforts integrate Department of Defense (DoD), government agency, commercial, and international partner environmental data with AFWS information system equipment for processing, storing, exploiting, and disseminating all-domain weather information for analysis, forecasting, mission integration, and greater interoperability. To ensure greater performance and affordability for the AF, AFWS systems are being modernized through improvements to architecture and system efficiency, cybersecurity, joint all-domain command and control (JADC2) and sensing grid integration, migration to cloud computing, and expanding agile software development practices.

AFWS aligns activities under four capability areas: Weather Data Collection, Weather Data Analysis and Dissemination, Weather Forecasting, and Product Tailoring/Warfighter Applications (PTWA). This alignment ensures an integrated and systems-oriented approach to program management decisions. A portion of the Weather Forecasting capability is addressed by RDT&E, BA 04, PE 0604002F, Project 643560 - Air Force Weather Services Research.

1. Weather Forecasting provides global and regional advanced scientific numerical weather prediction capabilities for automated, high-resolution forecast products for mission planning and execution. Space weather modeling assists in characterizing and forecasting the near-earth environment to the sun and enables space weather anomaly and space weather impact assessments. Weather Forecasting includes activities for Numerical Weather Modeling (NWM) and Space Weather Analysis and Forecast System (SWAFS). SWAFS is a software suite of 47 models and applications to ingest, process, and store space environmental data, run space environmental models to specify and forecast the near-earth environment, and run space effects characterization applications.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |  |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604002F / <i>Air Force Weather Services Research</i> |
|--|--|

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22, \$0M was expended for civilian pay expenses in this program element, and in FY23 \$0M is forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 3.855          | 0.000          | 0.000               | 0.000              | 0.000                |
| Current President's Budget                        | 3.714          | 0.000          | 0.000               | 0.000              | 0.000                |
| Total Adjustments                                 | -0.141         | 0.000          | 0.000               | 0.000              | 0.000                |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -0.141         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 0.000               | 0.000              | 0.000                |

**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

**Project:** 643560: *Weather Service Research*

Congressional Add: *Drought Warning System*

Congressional Add Subtotals for Project: 643560

Congressional Add Totals for all Projects

|  | <b>FY 2022</b> | <b>FY 2023</b> |
|--|----------------|----------------|
|  | 2.763          | -              |
|  | 2.763          | -              |
|  | 2.763          | -              |

**C. Accomplishments/Planned Programs (\$ in Millions)**

|   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Space Weather Analysis and Forecast System (SWAFS) magnetospheric Energetic Charged Particle Hazard Assessment (SWAFS-ECP HAS)  | 0.000          | 0.000          | 0.000          |
| <b>Description:</b> The SWAFS legacy baseline is currently being redesigned and upgraded under the Space Domain Awareness Environmental Toolkit for Defense (SET4D) program to satisfy Space Domain Awareness (SDA) goals for a modern cloud hosted infrastructure that is cyber resilient and integrated with the Unified Data Library (UDL). The Energetic Charged Particle |                |                |                |



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |  |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604002F / <i>Air Force Weather Services Research</i> |
|--|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | FY 2022 | FY 2023 | FY 2024 |
|---|---------|---------|---------|
| Hazard Assessment System (ECP HAS) is one of several models and applications within the (SET4D) environment designed to inform satellite operators of hazards and the impacts of those hazards to their spacecraft that will provide warfighters with the environmental awareness to safely sustain their respective orbits and missions.<br><br><b>FY 2023 Plans:</b><br>N/A<br><br><b>FY 2024 Plans:</b><br>N/A |         |         |         |
| <b>Title:</b> Space Weather Analysis and Forecast System (SWAFS) Scintillation Nowcast and Forecast Technology (SNFT) software upgrade<br><br><b>Description:</b> N/A<br><br><b>FY 2023 Plans:</b><br>N/A<br><br><b>FY 2024 Plans:</b><br>N/A   | 0.951   | 0.000   | 0.000   |
| <b>Accomplishments/Planned Programs Subtotals</b>   |         |         |         |
|   | 0.951   | 0.000   | 0.000   |

|  | FY 2022 | FY 2023 |
|--|---------|---------|
| <b>Congressional Add:</b> Drought Warning System<br><br><b>FY 2022 Accomplishments:</b> Will develop an initial Global Composite Drought Indicator (GCDI) capability that utilizes operational, publicly available global data sets related to precipitation, soil moisture, evapotranspiration, and vegetation health to produce a beta version of the GCDI for global, drought 'hot spot' detection. | 2.763   | -       |
| <b>Congressional Adds Subtotals</b>  | 2.763   | -       |

| <b>D. Other Program Funding Summary (\$ in Millions)</b> |         |         |                 |                |                  |         |         |         |         |                     |            |
|--|---------|---------|-----------------|----------------|------------------|---------|---------|---------|---------|---------------------|------------|
| Line Item  | FY 2022 | FY 2023 | FY 2024<br>Base | FY 2024<br>OCO | FY 2024<br>Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To<br>Complete | Total Cost |
| • RDTE 07 0305111F:<br><i>Weather Service</i>            | 3.316   | 0.000   | 0.000           | 0.000          | 0.000            | 0.000   | 0.000   | 0.000   | 0.000   | 0.000               | 3.316      |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|  |  |
|--|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604002F / <i>Air Force Weather Services Research</i> |
|--|--|

**D. Other Program Funding Summary (\$ in Millions)**

| <u>Line Item</u> | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|

**Remarks**

**E. Acquisition Strategy**

SWAFS will use individual Federal Acquisition Regulation (FAR) based and rapid acquisition contracting methods, as well as AFRL for development works (Technology Readiness Level (TRL) 6 and below) to develop AoA, design solutions, and prototype code.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
|--|---|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604002F / Air Force Weather Services Research | <b>Project (Number/Name)</b><br>643560 / Weather Service Research |
|--|---|---|

| Product Development (\$ in Millions)                  |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                                    | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| SWAFS Scintillation Nowcast Forecast Model Update AoA | PO                     | AFRL : Kirtland AFB, NM        | -           | 0.951   | Jan 2022   | -       |            | 0.000        |            | -           |            | 0.000         | 0.000            | 0.951      | -                        |
| Drought Warning System R&D                            | Various                | Various : Various              | -           | 2.763   |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                                       |                        |                                | -           | 3.714   |            | -       |            | 0.000        |            | -           |            | 0.000         | Continuing       | Continuing | N/A                      |

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | -           | 3.714   | -       | 0.000        | -           | 0.000         | Continuing       | Continuing | N/A                      |

**Remarks**

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604002F / Air Force Weather Services Research | <b>Project (Number/Name)</b><br>643560 / Weather Service Research |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |  |
|--|--|
| <b>Scintillation Nowcast SNFT</b>              |  |
| Forecast Model Update Analysis of Alternatives |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604002F / <i>Air Force Weather Services Research</i> | <b>Project (Number/Name)</b><br>643560 / <i>Weather Service Research</i> |

Schedule Details

| Events by Sub Project                          | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Scintillation Nowcast SNFT</i></b>       |         |      |         |      |
| Forecast Model Update Analysis of Alternatives | 1       | 2022 | 4       | 2022 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |   |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604003F / <i>Advanced Battle Management System (ABMS)</i> |
|--|---|

| COST (\$ in Millions)                                   | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                                   | -           | 262.452 | 237.332 | 500.575      | 0.000       | 500.575       | 815.046 | 951.369 | 721.619 | 711.021 | Continuing       | Continuing |
| 640141: <i>Advanced Battle Management System (ABMS)</i> | -           | 262.452 | 237.332 | 500.575      | 0.000       | 500.575       | 815.046 | 951.369 | 721.619 | 711.021 | Continuing       | Continuing |
| Quantity of RDT&E Articles                              | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

ABMS is the primary program element funding architecture, digital infrastructure and software development for the Department of the Air Force's (DAF) primary contribution towards meeting the Joint All-Domain Command and Control (JADC2) warfighting concept. JADC2 requires individual military activities not simply be deconflicted, but integrated (i.e., activities in one domain must enhance the effectiveness of those in other domains and compensate for vulnerabilities). ABMS PE programs will therefore connect sensors, battle management C2 systems (BMC2), and weapons across both the U.S. Space Force (USSF) and U.S. Air Force (USAF) through the delivery of aligned infrastructure and secure data to enable global battle management for JADC2. The DAF formally refers to its integrated JADC2 deliverable as the "DAF BATTLE NETWORK."

On 24 Nov 2020, the DAF Rapid Capabilities Office (DAF RCO) became the ABMS Integrating Program Executive Office (PEO) in a deliberate transition to start acquiring enduring ABMS capability through focused acquisition efforts and investments in a robust DAF digital infrastructure. In September 2022, the Secretary of the Air Force (SecAF) directed the standup of the DAF Integrating Program Executive Office for Command, Control, Communication and Battle Management (DAF PEO C3BM). The construct emerged out of the Operational Imperatives (OI) analysis that identified a significant need for C3BM integration and a greater level of system-of-systems engineering and technical discipline across the enterprise to ensure the effectiveness of ABMS in supporting DAF operations. Notably, DAF PEO C3BM combines the previous efforts of the DAF Rapid Capabilities Office (RCO) ABMS program and the DAF Chief Architect Office (CAO). By bringing the ABMS and CAO portfolio of programs and authorities under a single PEO and then conferring unto that PEO the responsibility to integrate broader DAF battle management and C2 capabilities, one organization now has the architectural authorities to direct technical integration activities across the DAF while also having the acquisition authorities of a PEO to execute organic materiel solutions to field a survivable, distributable command and control capability into the integrated DAF BATTLE NETWORK. The C3BM construct will enable the DAF to provide a resilient decision advantage that will enable the joint force win against the pacing challenge.

The DAF PEO C3BM identified an initial set of 50 programs across the DAF that collectively comprise the core elements of the DAF BATTLE NETWORK. The DAF PEO C3BM will work in partnership with the PEOs of these core programs to ensure the technical and programmatic integration necessary to achieve the required operational decision advantage needed by the USAF, USSF, joint, and coalition forces to win against the pacing challenge. The DAF PEO C3BM will employ a range of integration and reporting activities with the PEOs for Command, Control, Communication, Intelligence and Networks; Digital; DAF Rapid Capabilities Office; Space Force PEO for Battle Management, Command, Control, and Communication; Space Development Agency; Space Rapid Capabilities Office; the National Reconnaissance Office; the Missile Defense Agency; and other PEOs across the DoD as needed to ensure the DAF BATTLE NETWORK delivers an integrated capability to build situational awareness, make operational decisions, and execute force direction at the scale and speed necessary to win against the pacing challenge. These activities may include technical and programmatic collaboration, reporting, and integration; leveraging the ABMS PE funding to accelerate critical capabilities or activities in

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force Date: March 2023

| Appropriation/Budget Activity   | R-1 Program Element (Number/Name)                      |
|---|--|
| 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P) | PE 0604003F I Advanced Battle Management System (ABMS) |

another PEO to provide the needed DAF BATTLE NETWORK operational outcomes; accepting funding, manning, networks, or facilities from another PEO to design, build, or deliver DAF BATTLE NETWORK capabilities; or executing organic programs with the DAF PEO C3BM to meet DAF BATTLE NETWORK cost, schedule, or performance requirements. The DAF PEO C3BM will exercise technical architecture authorities across the DAF to ensure the Command and Control mission area is integrated technically and programmatically to meet DAF C2 mission requirements and provide the needed resilient decision advantage to the joint and coalition forces the USAF and USSF will fight alongside of.

For clarity in nomenclature, the end-to-end, system-of-systems needed to deliver resilient decision advantage is the DAF BATTLE NETWORK. The core of the DAF BATTLE NETWORK encompasses 50 programs across multiple PEOs collectively called the DAF C3BM Enterprise. The DAF PEO C3BM integrates across the DAF C3BM Enterprise core programs to ensure the DAF BATTLE NETWORK operates as needed to provide resilient decision advantage to the joint and coalition force. The ABMS portfolio of programs are the specific programs the DAF PEO C3BM maintains organic control over from a cost, schedule, and performance standpoint, and initially encompasses the programs formerly executed by the DAF RCO. The ABMS PE content described in this document funds the ABMS portfolio of programs and the architecture and systems engineering work required to execute technical direction across the rest of the DAF.

Relative to the broader DAF BATTLE NETWORK capability, ABMS is therefore not just a weapon system platform or sensor. It is the aggregate of materiel and non-materiel solutions to integrate the essential data network that connects and empowers current and future weapon system platforms and sensors to fight and win in the modern era as defined by the National Defense Strategy and Joint All-Domain Operations Department of Defense directives. Legacy and future sensors from a variety of air and space-based programs and sources will produce data that needs to be made available to operators or systems that need it. Multi-level secure processing occurs on global distributed clouds, tactical edge nodes, infrastructure, platforms, and end user devices where operators interface with the data and applications at the required classification level. For information to flow, the network must be enabled by a combination of government and commercial connectivity pathways to move data to and through a suite of cloud and local edge-based applications that make sense of the environment and apply advanced algorithms aided by artificial intelligence and machine learning. Strategic, operational, and tactical operators use these applications to manage and direct the desired effects using machine-to-machine connections.

Since the DAF BATTLE NETWORK is comprised of a DAF wide collection of acquisition efforts being executed by many different PEOs, the broader collection of "core" programs key to delivering the DAF BATTLE NETWORK must be well aligned. Investments in the ABMS portfolio of programs aligns USAF investment with USSF investment (e.g., Space Command and Control (C2) Program Element PE (1208248SF) and the MeshOne-T PE (1206760SF)) to eliminate duplication of effort while optimizing capability delivery to create the DAF BATTLE NETWORK deliverable.

Under the purview of the DAF PEO C3BM, ABMS will pursue multiple symbiotic investment strategies within PE 0604003F that will seek to optimally leverage "best of breed" capability from across the DAF to facilitate accelerated delivery of the DAF BATTLE NETWORK. The first thrust area is entitled: "Architecture and Systems Engineering (ASE)" and continues work previously conducted under PE 0604006F: Dept of the Air Force Tech Architecture. The ASE team combines DAF Chief Architect authorities with the Systems Engineering authorities needed for the design and fielding of the DAF BATTLE NETWORK. The ASE leads technical architectures for the entire DAF Air and Space portfolio to enable accelerated agile delivery of integrated warfighter capabilities in support of national security objectives. The second thrust area continues, and significantly scales, work from Fiscal Year 2023 and is entitled: "C3BM Software and Applications." The "Cloud-Based Command and Control (CBC2) program falls in the "C3BM Software and Applications" thrust area. The fourth thrust area continues work started in Fiscal Year 2023 and is entitled: "Airborne Edge Node (AEN) C3BM Aerial Networking." The Airborne Edge Node program falls under thrust area #4. In the Fiscal Year 2023 R-Doc for ABMS, CBC2 and AEN



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were collectively captured under a thrust area entitled "Capability Release." In Fiscal Year 2024, these programs have been broken out to the aforementioned thrusts to provide greater insight and understanding to the work ABMS is pursuing in Fiscal Year 2024 and beyond.

The purpose of the four C3BM thrust areas is to ensure a focused delivery of ABMS investments to enable the broader DAF BATTLE NETWORK. To do this, all ABMS investments will vector towards delivery of the following ABMS elements:

1. **Secure Processing:** The hardware and software for processing and storage through multi-level security environments globally and at the edge enabling a full range of military operations.
2. **Connectivity:** Maturation and integration of open software-defined radios and networks, government-owned waveform libraries, and wideband multi-function RF systems. This element also includes the integration and standards required to leverage advances in commercial technology such as Open Communications Standards (OCS), 5G networks, and connections through multi-orbit satellite communications.
3. **Data Management:** Cloud-based data libraries, data feeds, data wrappers, software-defined data management, and content routing to improve data discoverability and information sharing across the joint force for legacy and future platforms and programs.
4. **Applications:** Cloud-based applications to provide User Interface/User Experience (UI/UX) capabilities that will position warfighters "on the loop" to provide robust and dynamic battle management, command, and control (BMC2) functionality, improved timing, and enhanced decision advantage.
5. **Sensor Integration:** ABMS will develop (as needed), codify, and mature government-owned standards, solidify interface specifications, and will provide open and reusable capabilities to ensure interoperability with the ABMS digital infrastructure\* for existing and future military systems.
6. **Effects Integration:** ABMS will develop (as needed), codify, and mature government-owned standards and interface specifications to ensure the successful integration of DAF and Joint effects capabilities into the ABMS digital infrastructure\* for existing and future military systems.

To ensure effective delivery of capability across the four C3BM Thrust Areas in accordance with the aforementioned 6 ABMS elements, an ABMS Battle Lab will provide a critical digital experimentation environment to explore and vet new command and control technologies, as well as to develop C2 tactics, techniques, and procedures. The ABMS Battle Lab will allow warfighters direct interaction with software development teams and prototypes in development, speeding up the feedback loop and product maturity.

Thrust Area 1: "Architecture and Systems Engineering (ASE)" encapsulates the following categories of activity in Fiscal Year 2024: 1) Digital Engineering, 2) Mission Domain Architectures, Mission Integration Team (MITs), and Enterprise Integration as it relates to the identification, capture, maturation, and codification of derived requirements, standards, interface specifications, and/or new technologies that enable delivery of an integrated DAF BATTLE NETWORK that will directly contribute to the joint fight in the face of a pacing challenge, and 3) an Operational Response Team (ORT) facilitating quick reaction prototyping and experimentation in response to

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| <p>warfighter-led efforts and new relevant technologies. Thrust Area 1 supports all 6 ABMS elements to ensure effective delivery of ABMS Thrust Areas 2, 3, and 4, as well as any activities considered to be C3BM core programs.</p> <p>Thrust Area 2: "C3BM Digital Infrastructure" encapsulates the following categories of activity in Fiscal Year 2024: 1) ABMS Digital Infrastructure (DI), 2) the ABMS Consortium, and 3) the ABMS Battle Lab. ABMS DI covers the ongoing work of Distributed Battle Management Node (DBMN), Software Defined Wide Area Network (SD-WAN), and several other digital infrastructure activities to include Deployable Digital Infrastructure (Deployable DI), Tactical and Enterprise Cross Domain Solutions (CDS), and ABMS-specific support for DAF enterprise solutions. Thrust Area 2 satisfies the ABMS Elements of secure processing, connectivity, and data management.</p> <p>Thrust Area 3: "C3BM Software and Applications" encapsulates the following categories of activity in Fiscal Year 2024: 1) Cloud-Based Command and Control (CBC2) and (2) Distributed Battle Management Applications. For Cloud-Based C2, efforts include LOE #1 for a SW Integrator, LOE #2 for Agile Software Development at scale, and LOE #3 for data transport, storage, and access, as well as platform investment. For Distributed Battle Management Applications, ABMS Thrust Area 3 will continue development and extension of CBC2 functionality, initially developed for NORAD &amp; USNORTHCOM Battle Control Centers, to other DAF BATTLE NETWORK entities (e.g. the Tactical Operations Center Family of Systems, or TOC FoS) in line with Air Combat Command's (ACC) Common Battle Management Command and Control (BMC2) Interface (CBI) concept. Inherent to the C3BM Software and Applications Thrust Area is the requirement to align and/or integrate with multiple DAF software factories, artificial intelligence and machine learning centers of excellence, and DAF Data as a Service solutions to facilitate efficient deployment of critically needed software capabilities through development, staging, and production in support of joint operations. Thrust Area 3 contributes to ABMS element 4 (i.e. Applications) and leverages ABMS DI delivered capability (ABMS elements #1, #2, and #3) to achieve ABMS elements #4, #5, and #6.</p> <p>Thrust Area 4: "C3BM Aerial Networking" covers the ongoing work associated with the Airborne Edge Node (AEN), including Capability Release #1 (CR #1) and the effort to extend AEN capabilities to tactically relevant aircraft. AEN will connect select Tac Air assets and C2 functions to the ABMS cloud at the tactical edge, enhancing Situational Awareness and decision making at multiple echelons. CR #1 is the first prototype effort for AEN and will inform future design and fielding decisions for other platforms and C2 functions to connect to the ABMS DI. This work includes a Communications Subsystem, platform integration, and onboard tactical edge node capabilities for secure compute, and storage to host mission applications that increase aircrew situational awareness. The Airborne Edge Node work will include continued development and maturation of multi-function processors, multi-function arrays, edge node hardware and software to host mission applications, and platform integration options to ease implementation and scaling.</p> <p>To ensure delivery of ABMS projects in each ABMS Thrust Area, and to ensure alignment of the broader DAF from a battle management perspective, ABMS funding provides for program management support, operational concept development and demonstration, hardware development and integration, software development and integration, and other government costs.</p> <p>This program element may include necessary emergent or unanticipated civilian and National Guard/Reserve Duty pay expenses required to manage, execute, and deliver for emergent or unanticipated weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F and 0604858F.</p> |   |                         |

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| <b>Appropriation/Budget Activity</b>   | <b>R-1 Program Element (Number/Name)</b>                      |
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This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 268.849        | 231.408        | 556.108             | 0.000              | 556.108              |
| Current President's Budget                        | 262.452        | 237.332        | 500.575             | 0.000              | 500.575              |
| Total Adjustments                                 | -6.397         | 5.924          | -55.533             | 0.000              | -55.533              |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | -4.076         |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 10.000         |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -6.397         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | -55.533             | 0.000              | -55.533              |

**Change Summary Explanation**

FY 2022: Program reduced -6.397M in total due to SBIR/STTR transfer in the year of execution.

FY 2023: The program received a +10.000M Congressional add and a FFRDC Reductions (Section 8026(e)) of -4.076M.

FY 2024: Reflects a -55.533 decrease to the overall program from previous President's Budget. This amount significantly ramps up funding from FY23 to FY24 in order to support execution of ongoing acquisition strategies and develop new efforts that are needed to deliver ABMS capability, SecAF directed initiatives for accelerated delivery of ABMS and JADC2 capability (consistent with the SecAF's Operational Imperatives (OI) efforts initiated in December 2021), and Architecture and Systems Engineering (ASE) work previously conducted under PEO 0604006F and evolved under DAF PEO C3BM. ABMS portfolio efforts in Fiscal Year 2024 support the DAF's migration toward resilient, distributable battle management by developing the ability to federate BMC2 tasks, functions, and execution, while providing the computational platform, data connectivity, and decision support tools to support these battle management nodes as dictated by the operational environment.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
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| <b>Title:</b> Architecture and Systems Engineering (ASE)    | 0.000          | 0.000          | 80.000         |

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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
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**Description:** DAF PEO C3BM combined the roles of the Chief Architect and the Chief Engineer into a single office called the Architecture and Systems Engineering (ASE) office, which is responsible for the technical integrity of the DAF BATTLE NETWORK as we integrate ABMS capabilities, the rest of the DAF's C2 systems, and other Services's capabilities under JADC2.

Architecture integration in system-of-systems mission threads and environments is critical to deliberately advancing the DAF's technological edge by informing architecture design, acquisition investments, system requirements for future capabilities, and acquisition baseline updates for current systems.

**FY 2023 Plans:**

- These activities were previously conducted under PE 0604006F: Dept of the Air Force Tech Architecture.

**FY 2024 Plans:**

Digital Engineering (DE):

- Leverage, or create as necessary, a common DE approach and methodology for all the Mission Integration Teams to aggregate and analyze various cross-functional and cross-domain data products, and to then make them available to the C3BM Enterprise. Fund Model-Based Systems Engineering at the TS/SCI and SAP level for all ASE and DAF/OSD/Joint partners. This environment supports government sensitive C3BM and Joint partner planning and integration efforts. This DE environment is fully complementary to analogous contractor-led ABMS DE efforts.

- Develop Modeling & Simulation capabilities to enable evaluation of C3BM systems virtually via software digital twins.

Mission Domain Architectures (MDA) and Mission Integration Team (MITs):

Through MDA and MIT activities, ASE will perform the following functions in support of the broader success of the C3BM Enterprise.

- Operational Analysis: Build models and provide mission value metrics for C3BM decisions. Invest in longer-lead modeling to enable rapid responsiveness to Mission Integration Team priorities set annually in consultation with C3BM Enterprise stakeholders. Fiscal Year 2023 initiated the build out of MIT capabilities spanning the air, space and maritime domains. Fiscal Year 2024 will complete this work and will scale out capability for land and homeland defense.

- Architecture Modeling: Model interfaces and interactions for specified mission areas. Build team to support DAF programs, and OSD/Joint Staff on standards for integration.

- System Engineering: Build team to manage artifacts in the DE environment related to tracking interfaces, roadmaps and progress.

- Risk Reduction: Hold community-wide enterprise risk reviews yearly with different communities (operators, S&T, Tech Advisors, cyber) and manage enduring risk register and provide senior leader products.

- Test and Evaluation: Build team to analyze artifacts to test mission area architecture.

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| <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604003F / <i>Advanced Battle Management System (ABMS)</i> |
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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
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| <p>Operational Response Team (ORT):</p> <ul style="list-style-type: none"> <li>- Prototype Integration and Experimentation: Continue operational integration and experimentation of the initial Digital tactical edge connectivity prototype as it transitions to C3BM Digital Infrastructure for further development.</li> <li>- Continue to prototype and experiment Deployable DI mobile solutions that provide multi-level security compute and storage able to host mission data, data management software, and mission applications at deployed C2 nodes. Support identification, orchestration, "shepherding" and potential investment in emergent C3BM technologies. Rapidly develop and execute experimentation and prototyping activities in support of ASE findings to mitigate risks or exploit opportunity identified during mission engineering or architecture development work.</li> <li>- C3BM Vignette Analysis: Continue Counter-C5ISR (Command and Control, Communications, Computers, Cyber, Intelligence, Surveillance, Reconnaissance, Targeting) numerical analysis, modeling, and simulation to assess impact of specific capabilities on the ability to protect US assets and achieve mission success to prioritize DAF investments and modernization.</li> </ul> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Fiscal Year 2023 funding for Architecture and Systems Engineering (ASE) was executed under PE 0604006F: Dept of the Air Force Tech Architecture. Fiscal Year 2024 funding for ASE has been consolidated under PE 0604003F. The budget increased due to adding architecture development to ensure the technical integrity of the system of systems integration across air, space, maritime, land, and homeland defense domains to integrate the DAF BATTLE NETWORK. Furthermore, Fiscal Year 2024 funding will increase over Fiscal Year 2023 as investment in emergent commercial technologies, to accelerate operational adoption, are made.</p> |                |                |                |
| <p><b>Title:</b> C3BM Digital Infrastructure (DI)</p> <p><b>Description:</b> The C3BM DI effort, which incorporates Fiscal Year 2023 efforts referred to as ABMS DI, reflects a composite of activities to deliver ABMS Elements #1 (secure processing), #2 (connectivity), and #3 (data management). The ABMS DI orchestrates ongoing digital infrastructure activities to provide a multi-level security (i.e. unclassified to top secret) environment as a foundation for battle management C2 (BMC2) data and software across the space, airborne, and terrestrial domains. C3BM DI investments ensure the ability to connect the joint force and allow decision advantage at the tactical, operational, and strategic levels. In Fiscal Year 2024, C3BM DI will start the initial phase of physical infrastructure procurement. Investments focus on hybrid commercial and tactical edge multi-level security, multi-cloud environments resulting in secure compute and storage capability. Solutions will provide tactical edge secure processing environments and tools to enable both "remote operations" and "on the move" operations when disconnected from the broader network and global environment. These secure processing solutions will host critical services such as robust data management solutions, zero-trust multi-level security applications, Artificial Intelligence (AI) algorithms and Machine Learning (ML) capabilities.</p> <p><b>FY 2023 Plans:</b></p>  | 71.000         | 86.838         | 270.121        |

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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
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| <p>- Continue ABMS Consortium comprised of traditional and non-traditional companies to perform Operational Analysis, Mission Analysis, Systems Engineering, and Integration of the ABMS Digital Infrastructure.</p> <p>- Continue maturing CONUS and OCONUS clouds by adding more data types, data transfers across classification levels, establishing data and network management standards and tools, and developing and hosting cloud-native applications.</p> <p>- Continue maturing connections between CONUS, OCONUS, and existing clouds.</p> <p>- Continue data architecture, data tagging and data orchestration design solutions and prototypes that enable available data to be exposed, processed and transferred amongst multi-level security ABMS cloud environments.</p> <p>- Integrate with and expand Battle Lab connections to additional sites / C2 programs.</p> <p>- Integrate with and expand Battle Lab connections to Joint Partners, to include Project Convergence and Project Overmatch.</p> <p>- Begin deployment of ABMS Digital Infrastructure to the Battle Lab.</p> <p>- Integrate with Capability Release #1 Line of Effort #3 (Tactical Edge Node Situational Awareness and Edge Processing).</p> <p><b>FY 2024 Plans:</b><br/>Beginning in FY 2024, there are 3 major efforts within Thrust Area #2 - "C3BM Digital Infrastructure":</p> <ol style="list-style-type: none"> <li>1. ABMS Digital Infrastructure (DI)</li> <li>2. ABMS Consortium</li> <li>3. ABMS Battle Lab</li> </ol> <p>ABMS Digital Infrastructure (DI):</p> <p>- ABMS DI invests in technologies and solutions to expose, transport, and host data and mission/infrastructure software through widely used commercial best practices and techniques such as Application Program Interfaces (APIs) and standardized data fabric solutions. This capability includes the capability for machine-assisted tagging of data across the DAF to enable rapid exploitation and processing. These techniques enable data to rapidly and securely move across multiple security levels and support decision making. High priority data management solutions include critical investments in zero-trust multi-level security applications, Cross Domain Solutions (CDS), as well as Artificial Intelligence and Machine Learning (AI/ML) capabilities.</p> <p>- ABMS DI connectivity-related focus areas include Software-Defined Wide Area Networking (SD-WAN) solutions, which will deliver capabilities to enable resilient, robust, communications and the transport of data globally, to the edge, and through space. This will include the software-defined networking and routing layer to enable content routing across connected nodes through both government and commercial communication paths. SD-WAN will integrate into existing and future connectivity solution efforts in order to bridge gaps across existing and future platforms. In partnership with ongoing USSF satellite communication efforts, ABMS will also leverage the rapidly advancing commercial satellite ecosystem to provide SD-WAN solutions that will ensure robust and resilient connectivity for the Joint Force.</p> <p>- ABMS will also develop Deployable DI solutions that provide a multi-level security compute and storage environment able to host mission data, data management software, and mission applications at deployed C2 nodes. Initial deployment locations include</p> |                |                |                |

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| <p>Wing Operations Centers (WOC) and Tactical Operations Centers (TOC) supporting the Lead Wing concept for Agile Combat Employment (ACE). Deployable DI will include an interface to connect with ABMS SD-WAN and/or existing communications infrastructure, as needed.</p> <ul style="list-style-type: none"> <li>- The ABMS DI portfolio includes the ABMS Distributable Battle Management Node (DBMN), an edge instance of ABMS DI, aligned to the Tactical Operations Center-Light concept for tactical C2. This effort provisions lightweight, scalable connectivity, data management, and edge compute/store for tactical edge battle management command and control (BMC2).</li> <li>- ABMS DI will fund efforts related to content delivery, datalink integration, and scalable transport is underway in partnership with operational MAJCOMs, Air Combat Command, the ABMS CFT, and C3BM ASE. As operational and technical requirements are refined, ABMS DI will look to accelerate development of acquisition strategies and propel additional efforts into execution.</li> <li>- ABMS DI will provide funding to the Space Systems Command MeshOne-T program and Space Data Fusion programs to provide resilient long-haul terrestrial data transport capacity for ABMS solutions delivered under the larger DAF PEO C3BM architecture and to facilitate the integration and processing of space data for the broader set of C3BM requirements. Space Data Fusion efforts are consistent with the scope of ABMS Consortium data related efforts (see below for more details) by exposing and processing key data sets as needed.</li> </ul> <p>ABMS Consortium:</p> <ul style="list-style-type: none"> <li>- Continue ABMS Consortium activity comprised of industry partners, federally funded research and development centers (FFRDC), and USG stakeholders performing operational analysis, mission analysis, Systems Engineering, and integration of ABMS Digital Infrastructure.</li> <li>- Continue data architecture, data tagging, and data orchestration design solutions and prototypes that enable available data to be exposed, processed, and transferred within multi-level security ABMS cloud environments.</li> <li>- Continue maturing the extension of the ABMS DI to the tactical edge based on operator and ABMS CFT input.</li> <li>- Continue maturing CONUS and OCONUS clouds by adding more data types, data transfers across classification levels, establishing data and network management standards and tools (e.g., SD-WAN), and developing and hosting cloud-native applications (e.g., Cloud-Based C2, advanced targeting tools, air base air defense applications, etc.).</li> </ul> <p>ABMS Battle Lab:</p> <ul style="list-style-type: none"> <li>- Support experimentation efforts within the Battle Lab construct to accelerate requirements development.</li> <li>- Integrate with and expand Battle Lab connections to Joint Partners.</li> <li>- Begin deployment of ABMS Digital Infrastructure to the Battle Lab.</li> <li>- Integrate with Airborne Edge Node (Tactical Edge Node Situational Awareness and Edge Processing) and Cloud-Based C2.</li> </ul> <p><b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b></p> |  |   |                |                |

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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
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| Fiscal Year 2024 increased significantly due to improved maturity of operational concepts, requirements, and architecture definition with corresponding increase in number of fully defined and approved acquisition efforts (e.g. SD-WAN, Deployable DI, Distributable Battle Management Node) in addition to the continuation of ongoing ABMS DI acquisition efforts (e.g. Battle Lab, tactical and enterprise Cross Domain Solution, content delivery network, datalink integration, and scalable transport). |  |  |  |
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| <b>Title:</b> C3BM Software and Applications | 81.770 | 84.648 | 85.200 |
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| <p><b>Description:</b> Under Thrust Area #3, the C3BM Software and Applications effort encompasses ABMS portfolio activities that deliver ABMS Element #4 (applications) to facilitate Elements #5 and #6 (sensor and effects integration). These applications comprise front end (e.g., User Interface and User Experience, or UI/UX, Course of Action Recommendation tools, etc.) and back end microservices (data fusion, data brokering, track management, etc.). Where ABMS DI does not currently provide infrastructure services, C3BM Software and Applications leverages current DAF enterprise solutions (e.g. Cloud One, Platform One, etc.). C3BM Software and Applications develops C2 applications and integrates with DAF Software Factories (e.g. Kessel Run, Kobayashi Maru, etc.) to eliminate duplicative development. These software efforts are complementary and are working to facilitate sharing of data and products from multiple domains and echelons of command to provide decision advantage. C3BM Software development activities are executed with a continuous integration/continuous delivery (CI/CD) model that places operators as a critical member of the team and drives agile software development activities to generate user feedback and consistent product improvement.</p> |  |  |  |
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| <p>Cloud-Based C2 (CBC2):</p> <ul style="list-style-type: none"> <li>- CBC2 modernizes battle management and command and control functions by replacing four existing C2 systems with modern Cloud-Based applications, enhanced by AI/ML, to create a common operating picture. Initial development efforts are focused on delivery to Air Defense Sectors (ADS) in NORAD and USNORTHCOM (N&amp;NC) as well as Pacific Air Defense Sector (PADS); however, CBC2 is also working to provide hardware and software solutions that are extensible to additional Combatant Commands (COCOMs). This software suite equips operators executing tactical C2 in CONUS and OCONUS Air Defense Sectors (ADS) with modernized applications to ingest data from civilian and military sensors, fuse it with additional sources of data, conduct mission planning with machine-to-machine ingest of higher echelon tasking products, apply force accountability and risk assessments to a dynamic air picture with thousands of tracks, facilitate real time computing and scoring of Courses of Action (CoA) in order to speed F2T2EA timelines, and provide a UI/UX for battlespace awareness. CBC2 development follows commercial best practices for agile software development with an industry software integrator driving warfighter delivery across several independently contracted microservice developers.</li> </ul> |  |  |  |
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| <p>Distributed Battle Management Apps:</p> <ul style="list-style-type: none"> <li>- The extensibility of CBC2 aligns to Operational Imperative #2 initiatives associated with distributed battle management and Air Combat Command's Common BMC2 Interface (CBI). Additional software development teams will be established to increase</li> </ul> |  |  |  |
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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604003F / <i>Advanced Battle Management System (ABMS)</i> |
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**C. Accomplishments/Planned Programs (\$ in Millions)**

the number of C2 services that the core CBC2 applications for N&NC provide. Requirements currently under development for joint tactical integrated fire control and long range kill chains will trigger development activities for applications and advanced targeting tools development for maturing operational concepts including that are needed at the Tactical Operations Center Family of Systems (TOC FoS) and other maturing operational concepts.

**FY 2023 Plans:**

Cloud-Based C2 (CBC2):

- Continue design development activities focused on developing a scalable and extensible data-cloud architecture that leverages artificial intelligence/machine learning (AI/ML) applications and produces a common operating picture.
- Continue developing shared visualization of multiple sources: automated & fused 2D/3D representation of air domain.
- Ingest, fuse, and analyze data from military, government, and commercial sources to multi-classification cloud environments.
- Continue to develop automated and operator-selectable tasking of assets, voice, data and C2.
- Continue integrating new and existing development teams with ABMS Software Integrator to create a micro-services Cloud-Based C2 system for N&NC that is fully government owned.
- Continue building micro-services based software applications that will enable Cloud-Based C2.
- Continue efforts to design and build infrastructure pieces to support Cloud-Based C2 to include but not limited to: platform, cloud, cloud outposts, data transport, tactical data bus, identity management, zero trust network, cyber defense and data storage solutions.
- Continue Quarterly minimum viable product (MVP) releases, iteratively building out the Cloud-Based C2 application/software baseline, targeting minimum viable capability release (MVCR) to N&NC by the end of FY23.
- The Cloud-Based C2 application/software baseline is the starting point of Air Combat Command's (ACC) Common Battle Management Interface (CBI), which is the foundation of ACC's Battle Management Command & Control (BMC2) Roadmap.

**FY 2024 Plans:**

Cloud-Based C2 (CBC2):

- Continue design /development activities focused on developing a scalable and extensible data-cloud architecture that leverages artificial intelligence/machine learning (AI/ML) applications and produces a common operating picture.
- Continue developing shared visualization of multiple sources, automated and fused representation of air domain.
- Ingest, fuse, and analyze data from military, government, and commercial sources to multi-classification cloud environments.
- Continue to develop automated and operator-selectable tasking of assets, voice, data and C2.
- Continue integrating new and existing development teams with ABMS Software Integrator to create a micro-services CBC2 system that is fully government owned.
- Continue building micro-services-based software applications that will enable distributed battle management.

| FY 2022 | FY 2023 | FY 2024 |
|---------|---------|---------|
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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force   |  | <b>Date:</b> March 2023   |                |                |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>   |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604003F / <i>Advanced Battle Management System (ABMS)</i> |                |                |
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  |  | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| <ul style="list-style-type: none"> <li>- Continue efforts to design and build infrastructure to support CBC2 to include but not limited to: platform, cloud, cloud outposts, data transport, tactical data bus, identity management, zero trust network, cyber defense and data storage solutions.</li> <li>- Continue quarterly minimum viable product (MVP) releases, iteratively building out the Cloud-Based C2 application/software baseline and addressing product backlogs associated with N&amp;NC deliveries in pursuit of full operational capability (FOC).</li> </ul> <p>Distributed Battle Management Apps:</p> <ul style="list-style-type: none"> <li>- Continue development based on core CBC2 tactical C2 software suite to extend microservices functionality to support distributed BMC2 operational concepts and CBI requirements and associated capability needs.</li> <li>- Build microservices consistent with CBC2 development approach and in response to capability needs associated with joint tactical integrated fire control, long range kill chains, and other BMC2 functions.</li> <li>- Continue developing shared visualization consistent with CBC2 with automated and fused representation of multiple domains.</li> <li>- Continue integrating new and existing development teams with ABMS Software Integrator to create a microservices CBC2 system that is fully government owned.</li> <li>- Continue quarterly minimum viable product (MVP) releases, iteratively building out extensibility to additional distributed battle management operational concepts (e.g. Tactical Operations Center Family of Systems).</li> <li>- Facilitate transition of advanced targeting tools (e.g. developed under the Hawkeye program) by ensuring compatibility with ABMS digital infrastructure and battle management software.</li> </ul> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Fiscal Year 2024 increased due to additional software teams supporting distributed battle management operational concepts and ACC's CBI.</p> |  |   |                |                |
| <p><b>Title:</b> C3BM Aerial Networking</p> <p><b>Description:</b> Under Thrust Area #4, the C3BM Aerial Networking efforts encompass ABMS portfolio activities that deliver ABMS Element #1 and 2 (secure processing and connectivity) to facilitate Elements #5 and #6 (sensor and effects integration). AEN leverages government reference architecture and the ongoing ABMS DI investments to connect select Tac Air assets and C2 functions to the ABMS cloud at the tactical edge, enhancing Situational Awareness and decision making at multiple echelons. AEN's first implementation, known as Capability Release #1, includes a communications subsystem, platform integration, and a tactical edge node, CR #1 will be on a KC-46. Onboard secure compute/storage infrastructure will host mission-relevant applications and be developed as a roll-on/roll-off capability using commercial solutions. Further, C3BM Aerial Networking includes an effort, known as Phalanx Griffon, to extend AEN capabilities to tactically relevant aircraft based on maturing operational concepts and aerial network road mapping activities. This effort will initially be based on the F-15E/EX which can be traced back to Operational Imperative #2 operational analysis and ACC input. AEN prototype efforts will inform future design and fielding activities for platforms and C2 functions.</p>  |  | 109.682   | 65.846         | 65.254         |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604003F / <i>Advanced Battle Management System (ABMS)</i> |
|--|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <p><b><i>FY 2023 Plans:</i></b><br/>                     Capability Release #1:<br/>                     - Complete integration of capability on the KC-46 and conduct flights for test, military utility assessments, and Concept of Operations experimentation.<br/>                     - Complete development of a palletized compute and store enclave with local cloud storage, cloud synchronization, and network Management functions.<br/>                     - Complete build of additional podded systems to meet quantities in the requirement.<br/>                     - Maximize use of digital engineering, modern software development practices, and open architecture principles; develop Technical Data Package to enable potential follow-on development and integration activities.</p> <p><b><i>FY 2024 Plans:</i></b><br/>                     Capability Release #1:<br/>                     - Continue development and test activities associated with the CR #1 communications subsystem, including test and demonstration of skill development (e.g. MADL, DLOS, etc.) and preparations for security certifications.<br/>                     - Complete integration of Tactical Edge Node capability on the KC-46 and conduct planning for flights for test, military utility assessments, and Concept of Operations experimentation.<br/>                     - Complete development of a palletized compute and store enclave with local cloud storage, cloud synchronization, and network management functions.<br/>                     - Maximize use of digital engineering, modern software development practices, and open architecture principles; develop Technical Data Package to enable potential follow-on development and integration activities.<br/>                     - Demonstrate fieldable KC-46 capability in FY24 via Tactical Edge Node hardware and organic KC-46A communications capabilities.</p> <p>Phalanx Griffon:<br/>                     - Complete study for F-15E/EX platform integration options and develop mission architecture for acquisition planning activities.<br/>                     - Leverage CR#1 capabilities as applicable (e.g. security cryptographic module, or SCM) to continue development of open architecture multi-function processor tailored for hosting on tactical aircraft (i.e. F-15E/EX).<br/>                     - Continue development of content routing and communications software.<br/>                     - Conduct planning for test and demonstration activities associated with Phalanx Griffon.<br/>                     - Maximize use of digital engineering, modern software development practices, and open architecture principles; develop Technical Data Package to enable potential follow-on development and integration activities.</p> <p><b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b></p> |                |                |                |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604003F / <i>Advanced Battle Management System (ABMS)</i> |
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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| Work remains consistent from Fiscal Year 2023 to Fiscal Year 2024 as the team will finish out deployment of KC-46 Tactical Edge Node hardware and communication capabilities and will continue work for hosting capability on the F-15E/EX. |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 262.452        | 237.332        | 500.575        |

**D. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**E. Acquisition Strategy**

ABMS is building a portfolio of acquisition efforts and should not be viewed as a monolithic program. The first acquisition effort, formerly named Capability Release #1 (CR #1) and now referred to as AEN CR#1 under the C3BM Ariel Networking Thrust Area, is an ACAT II effort. The CR#1 acquisition strategy was approved by the Service Acquisition Executive (SAE) on 15 Jun 21. Cloud-Based C2 (CBC2) is Software Pathway program formerly captured under CR#1 and its acquisition strategy was approved by the SAE in May 2022. Aside from AEN and CBC2, the ABMS Digital Infrastructure project acquisition strategy was approved by the SAE in Nov 21 in order to initiate development of the ABMS Consortium. Follow-on Digital Infrastructure (DI) acquisition plans for Distributable Battle Management Node (DBMN), Software Defined Wide Area Networking (SD-WAN), and Deployable Digital Infrastructure leveraged the Middle Tier of Acquisition Rapid Prototyping Acquisition Pathway and were approved by DAF PEO C3BM in October 2022 and January 2023. Additional acquisition strategies will be developed and approved during the remainder of FY23.

The ABMS agile acquisition strategy and development approach is modeled after the path of commercial innovation and internet of things technology practices. The acquisition strategy breaks capabilities - that might traditionally be developed as a monolith in the government - up into modular components and then integrates them through open standards and an open architecture derived from ASE driven analysis. Modularity and openness enable increased competition and continuous innovation, as well as more rapid upgrade of product capabilities. Software development and hardware development can both follow this path—a proven, successful model that is employed in the commercial world as well as in agile government entities.

The iterative nature of technology and speed of technical obsolescence in the 21st century digital age mandate an agile approach to capability development, integration, and delivery that is both rapid and continuous. DAF PEO C3BM will make targeted investments in select areas and technologies to stabilize and integrate core operational capabilities, expedite the delivery of warfighter capability, and close operational gaps. This model is maturing FY2023 and FY2024, as is a number of digital infrastructure and software development efforts are in execution deploying minimum viable products across the DAF in keeping with a continuous integration/continuous delivery mindset where operators involved in regular feedback loops and a variety of traditional and non-traditional defense contractors involved in delivery.

To enable the speed and agility required by this acquisition strategy, the ABMS acquisition efforts have developed a contracting strategy that is highly flexible. Though the program employs the full range of contracting authorities, ABMS is currently utilizing, but not limited to, the following contracting vehicles to execute requirements: 1) JADC2 Multiple-Award, Multi-Level Security (MA-MLS) Indefinite Delivery/Indefinite Quantity (ID/IQ) vehicle; 2) JADC2 Broad Agency Announcement with Calls to

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

| <b>Appropriation/Budget Activity</b>   | <b>R-1 Program Element (Number/Name)</b>                      |
|--|---|
| 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | PE 0604003F / <i>Advanced Battle Management System (ABMS)</i> |

include a Call soliciting sources to participate in Cooperative Research and Development Agreements (CRADAs); 3) JADC2 Commercial Solutions Opening; 4) Small Business Innovation Research Phase III efforts; and 5) already existing contract vehicles where ABMS acquisition efforts are within scope. Additional vehicles will be considered on an as-needed basis.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604003F / <i>Advanced Battle Management System (ABMS)</i> | <b>Project (Number/Name)</b><br>640141 / <i>Advanced Battle Management System (ABMS)</i> |
|--|---|--|

| <b>Product Development (\$ in Millions)</b>                 |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| ASE: Digital Engineering                                    | Various                | DAF PEO C3BM: Multiple : TBD   | -           | 0.000   | Oct 2021   | 0.000   | Oct 2022   | 7.000        | Oct 2023   | 0.000       |            | 7.000         | Continuing       | Continuing | -                        |
| ASE: Mission Domain Architecture & Mission Integration Team | Various                | DAF PEO C3BM: Multiple : TBD   | -           | 0.000   | Oct 2021   | 0.000   | Oct 2022   | 64.000       | Oct 2023   | 0.000       |            | 64.000        | Continuing       | Continuing | -                        |
| ASE: Operational Response Team                              | Various                | DAF PEO C3BM: Multiple : TBD   | -           | 0.000   | Oct 2021   | 0.000   | Oct 2022   | 9.000        | Oct 2023   | 0.000       |            | 9.000         | Continuing       | Continuing | -                        |
| ABMS Digital Infrastructure (ABMS DI)                       | Various                | DAF PEO C3BM: Multiple : TBD   | -           | 41.347  | Jun 2022   | 58.848  | Jun 2023   | 226.801      | Jun 2024   | 0.000       |            | 226.801       | Continuing       | Continuing | -                        |
| ABMS Consortium   | C/FP                   | DAF PEO C3BM: Multiple : TBD   | -           | 23.403  | Jun 2022   | 24.100  | Jun 2023   | 24.820       | Jun 2024   | 0.000       |            | 24.820        | Continuing       | Continuing | -                        |
| ABMS Battle Lab   | Various                | DAF PEO C3BM: Various : TBD    | -           | 0.000   | Jun 2022   | 0.000   | Jun 2023   | 10.000       | Jun 2024   | 0.000       |            | 10.000        | Continuing       | Continuing | -                        |
| Cloud-Based Command and Control (CBC2)                      | Various                | DAF PEO C3BM: Multiple : TBD   | -           | 80.435  | Sep 2022   | 82.283  | Sep 2023   | 78.200       | Sep 2024   | 0.000       |            | 78.200        | Continuing       | Continuing | -                        |
| Distributed Battle Management Applications (DBMA)           | Various                | DAF PEO C3BM: Multiple : TBD   | -           | 0.000   | Sep 2022   | 0.000   | Sep 2023   | 6.000        | Sep 2024   | 0.000       |            | 6.000         | Continuing       | Continuing | -                        |
| Airborne Edge Node (AEN) CR#1                               | Various                | DAF PEO C3BM: Multiple : TBD   | -           | 84.830  | Sep 2022   | 39.959  | Sep 2023   | 23.475       | Sep 2024   | 0.000       |            | 23.475        | Continuing       | Continuing | -                        |
| Phalanx Griffon   | Various                | DAF PEO C3BM: Multiple : TBD   | -           | 0.000   | Sep 2022   | 0.000   | Sep 2023   | 4.000        | Sep 2024   | 0.000       |            | 4.000         | Continuing       | Continuing | -                        |
| SBIR/STTR   | TBD                    | TBD : TBD : TBD                | -           | 0.000   | Oct 2021   | 7.490   | Oct 2022   | 18.321       | Oct 2023   | 0.000       |            | 18.321        | Continuing       | Continuing | -                        |
| <b>Subtotal</b>   |                        |                                | -           | 230.015 |            | 212.680 |            | 471.617      |            | 0.000       |            | 471.617       | Continuing       | Continuing | N/A                      |

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| ABMS DI: Test                               | Various                | Various : TBD                  | -           | 6.250   | Jan 2022   | 3.891   | Jan 2023   | 8.500        | Jan 2024   | -           |            | 8.500         | Continuing       | Continuing | -                        |
| CBC2: Test                                  | Various                | Various : TBD                  | -           | 1.335   | Jan 2022   | 2.365   | Jan 2023   | 1.000        | Jan 2024   | -           |            | 1.000         | Continuing       | Continuing | -                        |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604003F / <i>Advanced Battle Management System (ABMS)</i> | <b>Project (Number/Name)</b><br>640141 / <i>Advanced Battle Management System (ABMS)</i> |
|--|---|--|

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| AEN CR#1: Test                              | Various                | Various : TBD                  | -           | 5.545   | Jan 2022   | 2.600   | Jan 2023   | 2.600        | Jan 2024   | -           |            | 2.600         | Continuing       | Continuing | -                        |
| OGC-Test                                    | Various                | Various : TBD                  | -           | 0.000   | Jan 2022   | 1.240   | Jan 2023   | 0.300        | Jan 2024   | -           |            | 0.300         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 13.130  |            | 10.096  |            | 12.400       |            | -           |            | 12.400        | Continuing       | Continuing | N/A                      |

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| FFRDC                                       | Various                | Various : TBD                  | -           | 7.485   | Oct 2021   | 6.115   | Oct 2022   | 6.770        | Oct 2023   | -           |            | 6.770         | Continuing       | Continuing | -                        |
| A&AS  | Various                | Various : TBD                  | -           | 5.169   | Oct 2021   | 4.867   | Oct 2022   | 5.013        | Oct 2023   | -           |            | 5.013         | Continuing       | Continuing | -                        |
| Other Support                               | Various                | Various : TBD                  | -           | 6.653   | Oct 2021   | 3.574   | Oct 2022   | 4.775        | Oct 2023   | -           |            | 4.775         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 19.307  |            | 14.556  |            | 16.558       |            | -           |            | 16.558        | Continuing       | Continuing | N/A                      |

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> |             |         |         |              |             |               |                  |            |                          |
|                            | -           | 262.452 | 237.332 | 500.575      | 0.000       | 500.575       | Continuing       | Continuing | N/A                      |

**Remarks**

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604003F / <i>Advanced Battle Management System (ABMS)</i> | <b>Project (Number/Name)</b><br>640141 / <i>Advanced Battle Management System (ABMS)</i> |

|   | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|   | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |
| <b>ABMS</b>   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Architecture and Systems Engineering (ASE)                    |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| ASE: Digital Engineering                                      |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| ASE: Mission Domain Architecture and Mission Integration Team |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| ASE: Operational Response Team                                |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| ABMS Digital Infrastructure (ABMS DI)                         |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| ABMS Consortium   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| ABMS Battle Lab   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| ABMS DI: Test   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Cloud-Based Command and Control (CBC2)                        |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Distributed Battle Management Applications (DBMA)             |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| CBC2 Test   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Airborne Edge Node (AEN) CR#1                                 |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Phalanx Griffon   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| AEN CR#1: Test  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| OGC-Test  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| FFRDC   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| A&AS  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Other Support   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |



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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604003F / <i>Advanced Battle Management System (ABMS)</i> | <b>Project (Number/Name)</b><br>640141 / <i>Advanced Battle Management System (ABMS)</i> |

Schedule Details

| Events by Sub Project   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b>ABMS</b>   |         |      |         |      |
| Architecture and Systems Engineering (ASE)                    | 1       | 2024 | 4       | 2028 |
| ASE: Digital Engineering                                      | 1       | 2024 | 4       | 2028 |
| ASE: Mission Domain Architecture and Mission Integration Team | 1       | 2024 | 4       | 2028 |
| ASE: Operational Response Team                                | 1       | 2024 | 4       | 2028 |
| ABMS Digital Infrastructure (ABMS DI)                         | 1       | 2022 | 4       | 2028 |
| ABMS Consortium   | 3       | 2022 | 4       | 2028 |
| ABMS Battle Lab   | 1       | 2024 | 4       | 2028 |
| ABMS DI: Test   | 2       | 2022 | 4       | 2024 |
| Cloud-Based Command and Control (CBC2)                        | 1       | 2022 | 4       | 2025 |
| Distributed Battle Management Applications (DBMA)             | 1       | 2024 | 4       | 2025 |
| CBC2 Test   | 2       | 2022 | 4       | 2025 |
| Airborne Edge Node (AEN) CR#1                                 | 1       | 2022 | 4       | 2026 |
| Phalanx Griffon   | 1       | 2024 | 4       | 2026 |
| AEN CR#1: Test  | 2       | 2022 | 4       | 2026 |
| OGC-Test  | 2       | 2022 | 4       | 2028 |
| FFRDC   | 1       | 2022 | 4       | 2028 |
| A&AS  | 1       | 2022 | 4       | 2028 |
| Other Support   | 1       | 2022 | 4       | 2028 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604004F / <i>Advanced Engine Development</i> |
|--|--|

| COST (\$ in Millions)              | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element              | -           | 562.717 | 220.363 | 595.352      | 0.000       | 595.352       | 579.834 | 456.876 | 291.118 | 0.000   | Continuing       | Continuing |
| 643608: <i>Advanced Engine Dev</i> | -           | 562.717 | 220.363 | 595.352      | 0.000       | 595.352       | 579.834 | 456.876 | 291.118 | 0.000   | Continuing       | Continuing |
| Quantity of RDT&E Articles         | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

The Advanced Engine Development Program enables demonstration of advanced engine technology prototypes, like the adaptive cycle engines. Adaptive cycle engine technology enables next generation combat aircraft capabilities by combining the efficiency of high bypass turbofans used by commercial airlines with the performance demanded of military fighter engines. This technology has undergone initial development under the auspices of the Air Force Research Laboratory through the Adaptive Versatile Engine Technology (ADVENT) and Adaptive Engine Technology Demonstrator (AETD) programs. This program is maturing fuel efficient adaptive engine component technologies and reducing associated risk in preparation for next-generation propulsion system development for combat aircraft applications.

The Adaptive Engine Transition Program (AETP) was moved out of this program element and into new program element 0604534F, Adaptive Engine Transition Program (AETP) in FY 2023 to comply with 2023 Appropriations Bill and accompanying Joint Explanatory Statement direction to maintain separate budget lines for the AETP and Next Generation Adaptive Propulsion (NGAP) efforts. This is a congressionally directed administrative realignment to provide increased transparency to Congress and is not a new start.

This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2022 \$3.803 million was expended for civilian pay expenses in this program element, and in FY 2023 \$2.305 million is forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604004F / <i>Advanced Engine Development</i> |
|--|--|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 583.712        | 353.658        | 757.468             | 0.000              | 757.468              |
| Current President's Budget                        | 562.717        | 220.363        | 595.352             | 0.000              | 595.352              |
| Total Adjustments                                 | -20.995        | -133.295       | -162.116            | 0.000              | -162.116             |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 152.800        |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -20.995        | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | -286.095       | -162.116            | 0.000              | -162.116             |

**Change Summary Explanation**

FY 2022 - Annual SBIR/STTR transfer

FY 2023 - Congress established separate budget lines for AETP (\$286.095 million) and NGAP (\$67.562 million) and added \$152.800 million for NGAP (new total \$220.362 million). DAF established new program element 0604534F, Adaptive Engine Transition Program (AETP) and moved AETP into the new program element (-\$286.095 million) to comply with the 2023 Appropriations Bill and accompanying Joint Explanatory Statement congressional direction.

FY 2024 - AETP moved out of this program element and now addressed in PE 0604534/AF RDT&E Line #56. NGAP Funding increased by \$375.500 million to appropriately resource a competitive program through detailed design. FY25-28 funding enables competitive prototyping through prototype testing.

|   |                |                |                |
|---|----------------|----------------|----------------|
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|

**Title:** Adaptive Engine Transition Program

|         |       |       |
|---------|-------|-------|
| 457.141 | 0.000 | 0.000 |
|---------|-------|-------|

**Description:** The Adaptive Engine Transition Program (AETP) will design and manufacture multiple adaptive engine prototypes, complete component rig assessments, characterize materials, and inform manufacturing process improvements. The program will demonstrate adaptive engine technology can be scaled to meet military fighter engine size requirements, while ensuring appropriate manufacturing and technology readiness levels by producing flight-weight prototypes. The prototype engines will demonstrate fuel efficiency increases, thrust increases, and new component technologies by performing sea-level, altitude, and durability assessments across multiple power settings. These assessments will provide data to quantify the capability and reduce risk in areas such as thermal capacity, reliability, and supportability, among others.

FY 2022 was the last year the entirety of AETP reported in Program Element 0604004F, Advanced Engine Development, Project 643608, Advanced Engine Development. FY 2023 is executing in its entirety in Program Element 0604534F, Adaptive Engine Transition Program, Project 640866: Advanced Engine Transition Program (AETP).

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604004F / <i>Advanced Engine Development</i> |
|--|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p><b>FY 2023 Plans:</b><br/>See Program Element 0604534F/Line #56.</p> <p><b>FY 2024 Plans:</b><br/>See Program Element 0604534F/Line #56.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>See Program Element 0604534F/Line #56.</p>   |                |                |                |
| <p><b>Title:</b> Next Generation Adaptive Propulsion</p> <p><b>Description:</b> The Next Generation Adaptive Propulsion (NGAP) effort will design and perform component risk reduction for adaptive engine prototypes enabling Next Generation Air Dominance (NGAD) capabilities. NGAP will select appropriate adaptive engine technologies that can meet Next Generation Air Dominance (NGAD) engine requirements while ensuring appropriate manufacturing and technology readiness levels.</p> <p><b>FY 2023 Plans:</b><br/>Continue adaptive prototyping planning, complete preliminary design activities, and transition to NGAP detailed design activities for Next Generation Air Dominance (NGAD) capabilities. More details can be provided in an appropriate forum.</p> <p><b>FY 2024 Plans:</b><br/>Continue adaptive prototyping planning and complete NGAP detailed design activities for Next Generation Air Dominance (NGAD) capabilities. More details can be provided in an appropriate forum.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding increased by \$374.989 million to appropriately resource a competitive program through detailed design.</p> | 105.576        | 220.363        | 595.352        |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 562.717        | 220.363        | 595.352        |

**D. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**E. Acquisition Strategy**

The Air Force awarded two limited source, cost plus incentive fee contracts in FY 2016 to General Electric and Pratt & Whitney due to their unique qualifications to design a high performance, flight-weight adaptive turbine engine in the thrust class for the Adaptive Cycle Engine Transition Program (AETP). Embedded in each AETP contract was an option for the Next Generation Adaptive Propulsion (NGAP) effort. In FY 2018, these options were exercised and awarded to optimize risk reduction for Next Generation Air Dominance (NGAD) capabilities through the NGAP effort.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

| <b>Appropriation/Budget Activity</b>   | <b>R-1 Program Element (Number/Name)</b>         |
|--|--|
| 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | PE 0604004F / <i>Advanced Engine Development</i> |

NGAP remains focused on delivering low risk, capability enabling propulsion options to NGAD, and in fourth quarter FY 2022 new indefinite delivery, indefinite quantity (IDIQ) contracts for completion of NGAP detailed design and prototyping were awarded to General Electric (GE), Pratt & Whitney (PW), Boeing, Lockheed Martin (LM), and Northrop Grumman (NG). The new contracts include digital transformation requirements, scope to complete prototype detail design and execute prototype engine testing, digital Weapon System integration activity to reduce technology transition risk, and a contracting approach that enhances the program's acquisition agility. Competitively awarded orders and options under the IDIQ contracts enable work to be rapidly defined to accommodate available funding, provide continued competitive incentives to contractors, and enable rapid and efficient execution of funds. The government agency responsible for managing this program is the Air Force Life Cycle Management Center, Propulsion Directorate, Wright-Patterson Air Force Base, Ohio.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604004F / <i>Advanced Engine Development</i> | <b>Project (Number/Name)</b><br>643608 / <i>Advanced Engine Development</i> |
|--|--|---|

| <b>Product Development (\$ in Millions)</b>                                  |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Adaptive Engine Transition Program - GE                                      | C/CPIF                 | GE : Evendale, OH              | -           | 279.365 | Oct 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 279.365    | -                        |
| Adaptive Engine Transition Program - PW                                      | C/CPIF                 | PW : East Hartford, CT         | -           | 163.715 | Oct 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 163.715    | -                        |
| Next Generation Adaptive Propulsion (Preliminary Design) - GE                | C/CPIF                 | GE : Evendale, OH              | -           | 50.000  | Oct 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 50.000     | -                        |
| Next Generation Adaptive Propulsion (Preliminary Design) - PW                | C/CPIF                 | PW : East Hartford, CT         | -           | 45.000  | Oct 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 45.000     | -                        |
| Next Generation Adaptive Propulsion (Detailed Design & Prototyping) - GE     | C/Various              | GE : Evendale, OH              | -           | 1.421   | Jul 2022   | 100.771 | Oct 2022   | 280.325      |            | -           |            | 280.325       | Continuing       | Continuing | -                        |
| Next Generation Adaptive Propulsion (Detailed Design & Prototyping) - PW     | C/Various              | PW : East Hartford, CT         | -           | 2.933   | Aug 2022   | 102.567 | Oct 2022   | 280.325      |            | -           |            | 280.325       | Continuing       | Continuing | -                        |
| Next Generation Adaptive Propulsion (Detailed Design & Prototyping) - Boeing | C/Various              | Boeing : St Louis, MO          | -           | 1.239   | Aug 2022   | 3.244   | Oct 2022   | 5.000        | Oct 2023   | -           |            | 5.000         | Continuing       | Continuing | -                        |
| Next Generation Adaptive Propulsion (Detailed Design & Prototyping) - LM     | C/Various              | LM : Ft Worth, TX              | -           | 1.007   | Aug 2022   | 3.244   | Oct 2022   | 5.000        | Oct 2023   | -           |            | 5.000         | Continuing       | Continuing | -                        |
| Next Generation Adaptive Propulsion (Detailed Design & Prototyping) - NG     | C/Various              | NG : Palmdale, CA              | -           | 0.982   | Aug 2022   | 3.244   | Oct 2022   | 5.000        | Oct 2023   | -           |            | 5.000         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>  |                        |                                | -           | 545.662 |            | 213.070 |            | 575.650      |            | -           |            | 575.650       | Continuing       | Continuing | N/A                      |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604004F / <i>Advanced Engine Development</i> | <b>Project (Number/Name)</b><br>643608 / <i>Advanced Engine Development</i> |
|--|--|---|

| <b>Management Services (\$ in Millions)</b>                      |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Adaptive Engine Transition Program - Program Management Support  | Various                | Various : TBD                  | -           | 14.044  | Dec 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 14.044     | -                        |
| Next Generation Adaptive Propulsion - Program Management Support | Various                | Various : TBD                  | -           | 3.011   | Dec 2021   | 7.293   | Dec 2022   | 19.702       | Dec 2023   | -           |            | 19.702        | Continuing       | Continuing | -                        |
| <b>Subtotal</b>  |                        |                                | -           | 17.055  |            | 7.293   |            | 19.702       |            | -           |            | 19.702        | Continuing       | Continuing | N/A                      |
| <b>Project Cost Totals</b>                                       |                        |                                | -           | 562.717 |            | 220.363 |            | 595.352      |            | -           |            | 595.352       | Continuing       | Continuing | N/A                      |

**Remarks**  
 GE - General Electric PW - Pratt & Whitney LM - Lockheed Martin NG - Northrop Grumman

FY 2022 Adaptive Engine Transition Program (AETP) distributions reflect the 460 million congressional program increase.

The Adaptive Engine Transition Program (AETP) was moved out of this program element and into new program element 0604534F, Adaptive Engine Transition Program (AETP) in FY 2023 to comply with 2023 Appropriations Bill and accompanying Joint Explanatory Statement direction to maintain separate budget lines for the AETP and Next Generation Adaptive Propulsion (NGAP) efforts. This is a congressionally directed administrative realignment to provide increased transparency to Congress and is not a new start.



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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604004F / <i>Advanced Engine Developm<br/>ent</i> | <b>Project (Number/Name)</b><br>643608 / <i>Advanced Engine Dev</i> |

|  | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|  | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |            |
|--|------------|
| <b><i>Adaptive Engine Transition Program</i></b>                                   |            |
| Detailed Design, Engine Fabrication, Engine Assessments                            | [REDACTED] |
| <b><i>Next Generation Adaptive Propulsion</i></b>                                  |            |
| Initial Design, Preliminary Design   | [REDACTED] |
| Adaptive Prototyping Plan, Detailed Design, Engine Fabrication, Engine Assessments | [REDACTED] |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604004F / <i>Advanced Engine Development</i> | <b>Project (Number/Name)</b><br>643608 / <i>Advanced Engine Dev</i> |

Schedule Details

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Adaptive Engine Transition Program</i></b>                                   |         |      |         |      |
| Detailed Design, Engine Fabrication, Engine Assessments                            | 1       | 2022 | 4       | 2023 |
| <b><i>Next Generation Adaptive Propulsion</i></b>                                  |         |      |         |      |
| Initial Design, Preliminary Design   | 1       | 2022 | 1       | 2023 |
| Adaptive Prototyping Plan, Detailed Design, Engine Fabrication, Engine Assessments | 3       | 2022 | 3       | 2027 |

**Note**

The Adaptive Engine Transition Program consists of four phases: detailed design, engine fabrication, engine assessments and transition.

Program deliverables include: military adaptive engine detailed design parameters and models; multiple engine sets of hardware (plus spare parts); matured technologies; major rig assessment data (controls, combustor, etc.); program reviews; and technology, afford-ability, sustainability and integration studies.

The Adaptive Engine Transition Program (AETP) was moved out of this program element and into new program element 0604534F, Adaptive Engine Transition Program (AETP) in FY 2023 to comply with 2023 Appropriations Bill and accompanying Joint Explanatory Statement direction to maintain separate budget lines for the AETP and Next Generation Adaptive Propulsion (NGAP) efforts. FY 2023 activities reflect expenditure of remaining FY 2022 funding; execution of FY 2023 funding reflected in its entirety under PE 0604534F, Adaptive Engine Transition Program. This is a congressionally directed administrative realignment to provide increased transparency to Congress and is not a new start.

The Next Generation Adaptive Propulsion effort consists of six phases initial design, preliminary design, adaptive prototyping planning, detailed design, engine fabrication, and engine assessments.

Program deliverables include: military adaptive engine detailed design parameters and models; engine hardware (plus spare parts); matured technologies; major rig assessment data (controls, combustor, etc.); program reviews; and technology, afford-ability and sustainability studies for capability enabling propulsion systems providing options to the Next Generation Air Dominance (NGAD) family of systems.

Additional details can be provided in the appropriate forum.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |   |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604005F / NC3 <i>Commercial Development &amp; Prototyping</i> |
|--|---|

| COST (\$ in Millions)   | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element   | -           | 0.000   | 97.000  | 78.799       | 0.000       | 78.799        | 68.004  | 67.188  | 61.004  | 0.000   | Continuing       | Continuing |
| 640860: <i>Nuclear Command Control and Communications (NC3)</i> | -           | 0.000   | 97.000  | 78.799       | 0.000       | 78.799        | 68.004  | 67.188  | 61.004  | 0.000   | Continuing       | Continuing |
| Quantity of RDT&E Articles                                      | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**Note**

This program, BA 4, PE 0604005F, project 640860, Commercial Leveraging for the Nuclear Enterprise, is a new start.

Funding for NC3 PE under PE 0604858F (Tech Transition), prototyping Project (BPAC 645351), transitioned to PE 0604005F, Project 640860, beginning in FY23 per Congressional direction.

**A. Mission Description and Budget Item Justification**

The DAF nuclear enterprise has historically used unique closed systems to provide the high degree of mission assurance and security needed for this mission. Furthermore the rapid development of the nuclear enterprise required the fielding of the most advanced technology of that time, and in most cases utilized technology that was well ahead of the commercial sector. Today the technological world is very different and in cases such as satellite communications and information technology (IT) systems the commercial sector has raced ahead of government unique systems.

Commercial Leveraging for the nuclear enterprise will explore a range of key technologies that are either commercial, or commercial entwined with government system to quantitatively determine whether these capabilities provide increased resilience, improved reconstitution, or lower cost for applications within the DOD nuclear enterprise. It is not intended to replace baseline systems, but rather will be prototypes to augment existing capabilities.

The program will reduce risk in leveraging emerging commercial-based technologies by partnering with industry while providing access to Government analysis, testing and certification capabilities. Prime investments focus on Government-Industry partnerships to influence and militarize emerging commercial capabilities to ensure US competitive advantage in key technology areas. Experimentation efforts will be employed to explore new concepts and their applications in future operating environments within a system-of-systems context taking risks early in the acquisition process to drive a more optimized and efficient acquisition approach significantly reducing overall acquisitions costs. Prototyping of commercially-derived technologies into government systems, followed by operational experimentation of the performance and security, will enable these candidate technologies to move into warfighting capability faster and at a lower cost, based on demonstrated low-risk prototypes.

Efforts include a focus on communications, secure data flow, and incorporating commercial approaches for a coarse navigation capability. Communications will focus primarily on satellite links by prototyping terminals that can gain access and switch across multiple commercial and government links from a common terminal. Multiple commercial vendors will be competitively awarded contracts for these prototypes and will work with the government partners to interface with selected platforms

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604005F / NC3 <i>Commercial Development &amp; Prototyping</i> |
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across the enterprise. Secure data flow will test various techniques across commercial and DOD partners to smartly utilize multiple communications paths to increase resilience, and also to integrate with hybrid architectures under USSF and across terrestrial networks. Coarse navigation will explore, test and prototype commercially-derived approaches to resiliently provide a very coarse navigation capability to disadvantaged users. This capability does not replace GPS or other advanced precision DOD Position-Navigation-Timing capabilities or approach their exquisite capabilities, but will instead provide a back-up option for a coarse capability for a scenario when no other options are available to the DOD user.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F, 0605831F, and/or 0606017F

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 0.000          | 0.000          | 0.000               | 0.000              | 0.000                |
| Current President's Budget                        | 0.000          | 97.000         | 78.799              | 0.000              | 78.799               |
| Total Adjustments                                 | 0.000          | 97.000         | 78.799              | 0.000              | 78.799               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 97.000         |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 78.799              | 0.000              | 78.799               |

**Change Summary Explanation**

The FY23 PB Congress directed the stand-up of this new PE. Previous efforts programmed in PE 0604858F.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <b>Title:</b> Commercial Leveraging for the Nuclear Enterprise   | -              | 97.000         | 78.799         |
| <b>Description:</b> Utilizing commercial terminal providers to develop key prototypes, and associated test and experimentation. Includes analysis to assess the hybrid architecture and integration options to the USSF/SDA space transport layer and DOD/ commercial terrestrial networks. Includes prototype of coarse navigation capability. Establish partnerships with DOD partners |                |                |                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604005F / NC3 <i>Commercial Development &amp; Prototyping</i> |
|--|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p>for secure data transport across multiple links. Initiate efforts with the USAF program offices for the key platforms to facilitate integration assessments.</p> <p><b>FY 2023 Plans:</b><br/>In FY23 the effort will award key contracts to 2-3 commercial terminal providers to develop the key prototypes.</p> <p><b>FY 2024 Plans:</b><br/>Receive initial terminal prototypes late in FY24 and initiate testing. Fund multiple contracts for platform integration assessments with each platform. Start field testing of coarse navigation techniques and approaches for secure data transport across multiple links.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>FY2024 funding decreased compared to FY2023 funding by \$18.201 million due to the high initial up-front hardware costs for the prototype terminals with a significant cost for long-lead items. In FY24 the effort starts switching to integration platform assessments experimentation, operational experimentation, and testing which are lower cost due to the nature of the work.</p> |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | -              | 97.000         | 78.799         |

**D. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**E. Acquisition Strategy**

For FY24-FY25, the NC3 contractual efforts are within the scope of the DEUCSI solicitation which has an ASP approved by AFRL/CC. We are currently working to raise the ceiling and add some scope to the DEUCSI ASP and solicitation. This will be completed shortly and will cause no delay in the execution of funds.

The FFRDC analysis will be executed under existing contractual arrangements. Those vehicles have sufficient scope and ceiling to support the NC3 effort.

Integration assessment will be executed by the existing contractor aligned with each platform. Each platform PEO already has those contracts in place, and the NC3 funds will be transferred as needed by MIPR.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604005F / NC3 Commercial Development & Prototyping | <b>Project (Number/Name)</b><br>640860 / Nuclear Command Control and Communications (NC3) |
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| <b>Product Development (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Prototype Terminals                         | C/CPAF                 | TBD : TBD                      | -           | -       |            | 89.000  | Feb 2023   | 63.799       |            | -           |            | 63.799        | Continuing       | Continuing | -                        |
| Coarse Navigation approach 1                | C/FFP                  | TBD : TBD                      | -           | -       |            | 5.000   | Jun 2023   | 10.000       |            | -           |            | 10.000        | Continuing       | Continuing | -                        |
| Platform Integration assessments            | C/Various              | TBD : TBD                      | -           | -       |            | 1.000   | Jul 2023   | 3.000        |            | -           |            | 3.000         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | -       |            | 95.000  |            | 76.799       |            | -           |            | 76.799        | Continuing       | Continuing | N/A                      |

| <b>Support (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item              | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Architecture analysis           | C/Various              | IDA : TBD                      | -           | -       |            | 1.000   |            | 1.000        |            | -           |            | 1.000         | Continuing       | Continuing | -                        |
| Architecture Analysis (1)       | C/CPAF                 | JHU/APL : TBD                  | -           | -       |            | 1.000   |            | 1.000        |            | -           |            | 1.000         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                 |                        |                                | -           | -       |            | 2.000   |            | 2.000        |            | -           |            | 2.000         | Continuing       | Continuing | N/A                      |

|                            |  |  | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|--|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> |  |  | -           | -       | 97.000  | 78.799       | -           | 78.799        | Continuing       | Continuing | N/A                      |

**Remarks**

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604005F / NC3 Commercial Development & Prototyping | <b>Project (Number/Name)</b><br>640860 / Nuclear Command Control and Communications (NC3) |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |            |
|--|------------|
| <b><i>Nuclear Command Control and Communications (NC3)</i></b> |            |
| NC3  | [REDACTED] |
| Prototype Terminal Vendor 1                                    | [REDACTED] |
| Prototype Terminal Vendor 2                                    | [REDACTED] |
| Coarse Navigation  | [REDACTED] |
| Data Transport   | [REDACTED] |
| Platform Integration Assessments                               | [REDACTED] |
| Architecture Analysis  | [REDACTED] |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604005F / NC3 Commercial Development & Prototyping | <b>Project (Number/Name)</b><br>640860 / Nuclear Command Control and Communications (NC3) |

Schedule Details

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Nuclear Command Control and Communications (NC3)</i></b> |         |      |         |      |
| NC3  | 1       | 2023 | 4       | 2028 |
| Prototype Terminal Vendor 1                                    | 2       | 2023 | 4       | 2024 |
| Prototype Terminal Vendor 2                                    | 2       | 2023 | 4       | 2024 |
| Coarse Navigation  | 3       | 2023 | 3       | 2024 |
| Data Transport   | 1       | 2023 | 4       | 2024 |
| Platform Integration Assessments                               | 1       | 2023 | 4       | 2024 |
| Architecture Analysis  | 2       | 2023 | 4       | 2024 |



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604006F / <i>Dept of the Air Force Tech Architecture</i> |
|--|--|

| COST (\$ in Millions)   | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element   | -           | 24.407  | 50.000  | 2.620        | 0.000       | 2.620         | 2.899   | 3.138   | 3.919   | 4.281   | Continuing       | Continuing |
| 645352: <i>Department of the Air Force Technical Architecture Design, Integration, and Evaluation</i> | -           | 24.407  | 50.000  | 2.620        | 0.000       | 2.620         | 2.899   | 3.138   | 3.919   | 4.281   | Continuing       | Continuing |
| Quantity of RDT&E Articles  | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

The Department of the Air Force (DAF) Tech Architecture resources activities to oversee and shape the technical architecture of the entire Air Force and Space Force and foster modular and agile architectures within individual programs and across programs to rapidly deliver warfighting capability. The complexity of modern conflict requires decision making and coordinated effects at expanding ranges and increasingly rapid timelines driving the need for flexible, integrated systems that work together instead of exquisite individual systems that operate in isolation. As a result, the system-of-systems integrated architecture is just as important as the design of individual systems to ensure that systems have the necessary interoperability and composability as well as the capacity to rapidly modernize as needed to defeat the rapidly evolving adversary capabilities. Successful commercial companies follow a similar approach across product lines, enabling seamless operation across platforms as well as rapid modernization of hardware and software for each of their products.

The complexity of modern conflict and the need for an effective family of systems to counter peer threats requires an office responsible for architecting across the entire USAF and USSF portfolio of systems to coordinate acquisition of those systems. Historically, acquisition has been done in the absence of a system-of-systems integrated reference architecture which has yielded systems that often only address a single use case (lack of composability); do not work together as desired (lack of interoperability); are unable to evolve or adopt new technologies (lack of ability to rapidly modernize); or fail to deliver the warfighter's desired operational effects (lack of military utility). The DAF Tech Architecture leads technical architectures for the entire DAF Air and Space portfolio to enable accelerated agile delivery of integrated warfighter capabilities in support of national security objectives.

The DAF Tech Architecture leads the development of reference technical architectures which are foundational to a modular open system approach and are key to ensuring successful system-of-systems acquisitions. Reference architectures facilitate understanding the impact each system has on DAF missions and assessing system-of-systems performance to prioritize investments, expose duplicative capabilities, and identify capability gaps. The reference technical architectures guide and constrain programs to ensure delivery of systems that are composable, interoperable, and able to be modernized; as well as providing a framework to integrate them together ensuring military utility for complex missions such as Decision Superiority and Information Advantage, Agile Combat Employment, Rapid All-Domain Kill Chains, Logistics Under Attack, Space Domain Awareness, and Space Defense. The architectures must keep pace with the adversary, maturing as threats advance and new technological opportunities arise. Without a reference technical architectures, the DAF will continue to acquire singular exquisite systems instead of modular, open system-of-systems capabilities.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604006F / <i>Dept of the Air Force Tech Architecture</i> |
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The DAF Tech Architecture will work with architecture stakeholders to develop policy, standards, and processes to ensure capability and composability of architectures from a single aircraft sensor to the entirety of the USAF and USSF. Training, tools, and infrastructure required for architecture will be developed and provided to organize, train, and equip the DAF acquisitions force.

To ensure successful system-of-systems acquisition, DAF Tech Architecture validates architecture designs by integrating them into the complex mission threads in the field, highlighting architectural gaps, validating military utility, and assessing architecture performance. A comprehensive understanding of mission threads, concepts of operation (CONOPS), and current/future systems is used to inform the development of an architectural minimum viable product (MVP); rapidly delivering critical technology with a bridge to acquisition and scaling. By integrating open architectures and solutions in complex mission scenarios on the battlefield, the DAF Tech Architecture has and will continue to deliver critical capability while uncovering mission-critical gaps. Architecture integration in system-of-systems mission threads and environments is critical to deliberately advancing the DAF's technological edge by informing architecture design, acquisition investments, system requirements for future capabilities, and acquisition baseline updates for current systems.

This activity is directed by the DAF Chief Architect Officer (CAO) with oversight by the Secretary of the Air Force along with the Chief of Staff of the Air Force, Chief of Space Operations, and Senior Acquisition Executive. This activity is executed by the Air Force Research Laboratory.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Department of the Air Force Tech Architecture. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F, 0605831F and/or 0604858F.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 25.138         | 66.615         | 78.731              | 0.000              | 78.731               |
| Current President's Budget                        | 24.407         | 50.000         | 2.620               | 0.000              | 2.620                |
| Total Adjustments                                 | -0.731         | -16.615        | -76.111             | 0.000              | -76.111              |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | -16.615        |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -0.731         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | -76.111             | 0.000              | -76.111              |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604006F / <i>Dept of the Air Force Tech Architecture</i> |
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**Change Summary Explanation**

FY23 Appropriation marked PE 0604006F \$16.615 million.  
FY24 and out, FYDP funding reduced for higher Air Force priorities.

**C. Accomplishments/Planned Programs (\$ in Millions)**

|  | FY 2022 | FY 2023 | FY 2024 |
|--|---------|---------|---------|
| <p><b>Title:</b> DAF Architecture Design and Integration</p> <p><b>Description:</b> The DAF Tech Architecture leads the development of technical architectures for the entire DAF Air and Space portfolio to enable accelerated agile delivery of integrated warfighter capabilities in support of national security objectives. Architectures will be developed to address critical operational needs as specified by the Secretary of the Air Force along with the Chief of Staff of the Air Force, Chief of Space Operations, Senior Acquisition Executive, and C3BM Program Office. Architecture Design develops technical reference architectures in coordination with, but not limited to Air and Space Staffs, Program Executive Offices, Major Commands, and Deltas leveraging a collaborative digital environment and architecture repository. These architectures enable scalability, flexibility, and interoperability through application of modular open system approaches, open standards, specified interfaces, and defined intra/inter-system relationships. Architectures consist of, but are not limited to, strategy, digital system-of-systems models, technology standards, reference implementations, and system interface specifications. Architecture Design analyzes architectures using approaches such as modeling and simulation to assess operational feasibility and performance of new capabilities across science, technology, research, and development enterprises informing acquisition strategy to maximize system-of-systems lethality. Architecture Design works with SAF/AQ and SAF/SQ leadership to deliver policy, procedures, and processes, driving the use of architectures throughout acquisitions and ensuring that the DAF delivers interoperable, modular, open systems designs. Architecture Design also works with architecture stakeholders to design and instantiate infrastructure, such as a collaborative digital environment and architecture repository, to support architecture development and sharing. Architecture Design drives programs and platforms to be built with agility via open systems and open standards so that they can adapt and upgrade components quickly in response to threats or opportunities to integrate technology as advances are made. Architecture Integration gauges opportunities and develops architecturally-sound, high impact Minimum Viable Products (MVPs) to validate architectures and accelerate transition to programs, delivering capabilities that warfighters need. This effort integrates MVP capabilities into the force-level (i.e., architecture level) operational scenarios that will stress architecture designs and provide real-world assessments of military utility and technical performance. Integration efforts provide essential feedback to architecture designs, capturing real-world system-of-systems interactions as well as warfighter perspectives to ensure architectures deliver on mission needs. Integration of DAF architectures in complex operational missions is key to delivering superior system-of-systems capabilities to address critical warfighting priorities and gaps.</p> <p><b>FY 2023 Plans:</b><br/>Continue DAF Architecture Design and Integration activities with focus on: (1) the DAF government reference architecture standards and governance within a Digital Architecture Enterprise Cloud Environment that enables programs to transition to DAF-</p> | 24.375  | 50.000  | 2.620   |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604006F / <i>Dept of the Air Force Tech Architecture</i> |
|--|--|

|   |                |                |                |
|---|----------------|----------------|----------------|
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|

|   |  |  |  |
|---|--|--|--|
| <p>wide technical architectures; (2) Architecture Minimum Viable Product (MVP) for Decision Superiority and Information Advantage inserting Operational Artificial Intelligence to drive global information exchange across regional commander boundaries in the face of contested operations; (3) Architecture MVP for Agile Combat Employment, Distributed Operations, and Layered Defense; (4) Expanded architecture for data infrastructure that includes structured, unstructured, and streaming data enabled through open source interfaces; (5) Integrated Warfighter Network architecture for classified networking and encrypted connectivity for seamless operation and connectivity whether on base or deployed in combat; (6) Identify needed changes to architectures and architecture-driven requirements for modernization programs.</p> <p><b>FY 2024 Plans:</b><br/>Requirements moved to 0604003F ABMS in FY2024 in support of the C3BM PEO.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>FY2024 funding decreased compared to FY2023 by \$47.380 million. Requirements moved to 0604003F ABMS in FY2024 in support of the C3BM PEO.</p> |  |  |  |
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|  |       |       |       |
|--|-------|-------|-------|
| <p><b>Title:</b> DAF Architecture Force Integration</p> <p><b>Description:</b> Department of the Air Force (DAF) Architecture Force Integration evaluates opportunities and delivers architecturally-sound, high impact Minimum Viable Product (MVP) capabilities with roadmaps for programs to scale capabilities that warfighters need. This work is a deliberate campaign that integrates capabilities at the force-level (i.e., architecture level). This process also uncovers mission-critical gaps that may not be uncovered at test ranges—meaning they would have been discovered on the road to conflict when it could be too late to correct. Therefore, a regular campaign to deliver time-critical technology with a bridge to scaling at the architecture level is critical to deliberately advancing the DAF's technological edge and impacts overall architecture design, funding priorities among multiple capability areas, investments, requirements for future capabilities, and acquisition baseline updates for current systems.</p> <p>The DAF Architecture Force Integration pillar conducts technical sprints to integrate (and when required develop) Minimum Viable Products (MVPs) that address the gaps identified in the Architecture Design Pillar by delivering focused, well-designed, and tangible fixes. This effort also includes Force Integration infrastructure, test personnel, range access, consumables, travel, operational concept and non-materiel development and technical sprints to solve near-term gaps.</p> <p><b>FY 2023 Plans:</b><br/>N/A</p> <p><b>FY 2024 Plans:</b><br/>N/A</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b></p> | 0.032 | 0.000 | 0.000 |
|--|-------|-------|-------|

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|  |  |
|--|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604006F / <i>Dept of the Air Force Tech Architecture</i> |
|--|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | FY 2022 | FY 2023 | FY 2024 |
|---|---------|---------|---------|
| N/A   |         |         |         |
| <b>Accomplishments/Planned Programs Subtotals</b>           | 24.407  | 50.000  | 2.620   |

**D. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**E. Acquisition Strategy**

Contracting strategies vary based on activity; please see R3 for additional details.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
|--|---|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604006F / Dept of the Air Force Tech Architecture | <b>Project (Number/Name)</b><br>645352 / Department of the Air Force Technical Architecture Design, Integration, and Evaluation |
|--|---|---|

| <b>Product Development (\$ in Millions)</b>           |                        |                                     |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|-------------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                                    | Contract Method & Type | Performing Activity & Location      | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| DAF Architecture Design                               | Various                | RAFT SBIR PhIII : Reston, VA        | -           | 3.780   | Jun 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| DAF Architecture Design and Integration Contract 1    | MIPR                   | BAH : McLean, VA                    | -           | 1.660   | Nov 2021   | 1.203   | Jan 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| DAF Architecture Design and Integration Contract 2    | MIPR                   | MIT/LL : Lexington, MA              | -           | 0.000   | Nov 2021   | 2.200   | Jan 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| DAF Architecture Modeling and Analysis Contract 1     | MIPR                   | GTRI, MITRE, MIT/LL, Aero : Various | -           | 2.900   | Nov 2021   | 3.414   | Nov 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| DAF Architecture Modeling and Analysis Contract 2     | MIPR                   | JHU APL : Laurel, MD                | -           | 3.690   | Nov 2021   | 8.572   | Nov 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| DAF Architecture Modeling and Analysis Infrastructure | Various                | Various : Various                   | -           | 0.055   | Nov 2021   | 1.055   | Dec 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| DAF Architecture Technology Solutions, FY22-23        | Various                | Various : Various                   | -           | 1.313   | Dec 2021   | 12.268  | Jan 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| DAF Mission Architecture                              | MIPR                   | GTRI, SEI : Various                 | -           | 0.852   | Dec 2021   | 2.027   | Dec 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| DAF Program Architecture                              | MIPR                   | GTRI, APL, SEI : Various            | -           | 0.000   | Dec 2021   | 0.000   | Dec 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| DAF Architecture Integration                          | Reqn                   | MITRE : McLean, VA                  | -           | 0.800   | Mar 2022   | 1.880   | Oct 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Architecture Design Contract 1                        | Reqn                   | MITRE : McLean, VA                  | -           | -       |            | -       |            | 0.000        | Oct 2023   | -           |            | 0.000         | Continuing       | Continuing | -                        |
| Architecture Design Contract 2                        | Reqn                   | CMU SEI : Pittsburgh, PA            | -           | -       |            | -       |            | 0.000        | Oct 2023   | -           |            | 0.000         | Continuing       | Continuing | -                        |
| Architecture Design Contract 3                        | Reqn                   | MIT/LL : Lexington, MA              | -           | -       |            | -       |            | 0.000        | Oct 2023   | -           |            | 0.000         | Continuing       | Continuing | -                        |
| Architecture Design Contract 4                        | SS/CPFF                | JHU APL : Laurel, MD                | -           | -       |            | -       |            | 0.000        | Oct 2023   | -           |            | 0.000         | Continuing       | Continuing | -                        |
| Architecture Design Contract 5                        | MIPR                   | Aerospace : TBD                     | -           | -       |            | -       |            | 0.000        | Oct 2023   | -           |            | 0.000         | Continuing       | Continuing | -                        |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
|--|---|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604006F / Dept of the Air Force Tech Architecture | <b>Project (Number/Name)</b><br>645352 / Department of the Air Force Technical Architecture Design, Integration, and Evaluation |
|--|---|---|

| <b>Product Development (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| Architecture Design Contract 6              | Reqn                              | GTRI : TBD                                | -                  | -              |                   | -              |                   | 0.000               | Oct 2023          | -                  |                   | 0.000                | Continuing              | Continuing        | -                               |
| Architecture Integration Contract 1         | Reqn                              | MITRE : TBD                               | -                  | -              |                   | -              |                   | 0.000               | Oct 2023          | -                  |                   | 0.000                | Continuing              | Continuing        | -                               |
| Architecture Integration Contract 2         | SS/CPFF                           | JHU APL : Laurel, MD                      | -                  | -              |                   | -              |                   | 0.000               | Oct 2023          | -                  |                   | 0.000                | Continuing              | Continuing        | -                               |
| Architecture Integration Contract 3         | Reqn                              | GTRI : TBD                                | -                  | -              |                   | -              |                   | 0.000               | Oct 2023          | -                  |                   | 0.000                | Continuing              | Continuing        | -                               |
| Architecture Integration Contract 4         | MIPR                              | ASI : TBD                                 | -                  | -              |                   | -              |                   | 0.000               | Oct 2023          | -                  |                   | 0.000                | Continuing              | Continuing        | -                               |
| Architecture Integration Contract 5         | SS/CPFF                           | Makai : TBD                               | -                  | -              |                   | -              |                   | 0.000               | Oct 2023          | -                  |                   | 0.000                | Continuing              | Continuing        | -                               |
| Architecture Integration Contract 6         | Reqn                              | RAFT : Reston, VA                         | -                  | -              |                   | -              |                   | 0.000               | Oct 2023          | -                  |                   | 0.000                | Continuing              | Continuing        | -                               |
| Architecture Integration Contract 7         | Reqn                              | KBR : TBD                                 | -                  | -              |                   | -              |                   | 0.000               | Oct 2023          | -                  |                   | 0.000                | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>                             |                                   |   | -                  | 15.050         |                   | 32.619         |                   | 0.000               |                   | -                  |                   | 0.000                | Continuing              | Continuing        | N/A                             |

| <b>Support (\$ in Millions)</b>      |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|--------------------------------------|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>            | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| DAF Architecture Initiatives Support | MIPR                              | BAH/SEI : Various                         | -                  | 0.319          | Nov 2021          | 1.691          | Dec 2022          | -                   |                   | -                  |                   | -                    | Continuing              | Continuing        | -                               |
| DAF Architecture Engineering Support | Reqn                              | AFRL : Various                            | -                  | 0.000          | Oct 2021          | -              |                   | -                   |                   | -                  |                   | -                    | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>                      |                                   |   | -                  | 0.319          |                   | 1.691          |                   | -                   |                   | -                  |                   | -                    | Continuing              | Continuing        | N/A                             |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
|--|---|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604006F / Dept of the Air Force Tech Architecture | <b>Project (Number/Name)</b><br>645352 / Department of the Air Force Technical Architecture Design, Integration, and Evaluation |
|--|---|---|

| <b>Test and Evaluation (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| DAF Architecture Design Test                | Various                           | LL; APL; MITRE; GTRI; BAH : Various       | -                  | 2.332          | Dec 2021          | 4.210          | Oct 2022          | -                   |                   | -                  |                   | -                    | Continuing              | Continuing        | -                               |
| DAF Architecture Execution Team 1           | MIPR                              | Booz Allen Hamilton : McLean, VA          | -                  | 3.196          | Oct 2021          | 2.000          | Nov 2022          | -                   |                   | -                  |                   | -                    | Continuing              | Continuing        | -                               |
| DAF Architecture Mission Execution          | Various                           | Various : Various                         | -                  | 0.270          | Dec 2021          | 0.000          | Dec 2022          | -                   |                   | -                  |                   | -                    | Continuing              | Continuing        | -                               |
| DAF Architecture Test Infrastructure        | Various                           | Various : Various                         | -                  | 0.000          | Dec 2021          | 0.000          | Dec 2022          | -                   |                   | -                  |                   | -                    | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>                             |                                   |   | -                  | 5.798          |                   | 6.210          |                   | -                   |                   | -                  |                   | -                    | Continuing              | Continuing        | N/A                             |

| <b>Management Services (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| Program Management Administration           | Various                           | Various : Various                         | -                  | 3.240          | Oct 2021          | 9.480          | Oct 2022          | 2.620               | Nov 2023          | -                  |                   | 2.620                | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>                             |                                   |   | -                  | 3.240          |                   | 9.480          |                   | 2.620               |                   | -                  |                   | 2.620                | Continuing              | Continuing        | N/A                             |

| <b>Prior Years</b>         | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|----------------------------|----------------|----------------|---------------------|--------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Project Cost Totals</b> | 24.407         | 50.000         | 2.620               | -                  | 2.620                | Continuing              | Continuing        | N/A                             |

**Remarks**



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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604006F / Dept of the Air Force Tech A<br>rchitecture | <b>Project (Number/Name)</b><br>645352 / Department of the Air Force<br>Technical Architecture Design, Integration,<br>and Evaluation |

|   | FY 2022                                  |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---|--|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|   | 1  | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |
| <b>DAFTADIE Product Development</b>                   |  |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| DAF Architecture Design                               | ██████████                               |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| DAF Architecture Design and Integration Contract 1    | ████████████████████                     |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| DAF Architecture Design and Integration Contract 2    | ████████████████████                     |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| DAF Architecture Modeling and Analysis Contract 1     | ████████████████████                     |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| DAF Architecture Modeling and Analysis Contract 2     | ████████████████████                     |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| DAF Architecture Modeling and Analysis Infrastructure | ████████████████████                     |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| DAF Technology Solution Sprints FY22-23               | ████████████████████                     |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| DAF Mission Architecture                              | ████████████████████                     |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| DAF Program Architecture                              | ████████████████████                     |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| <b>DAFTADIE Support</b>                               |  |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| DAF Architecture Support                              | ████████████████████                     |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| <b>DAFTADIE Test and Evaluation</b>                   |  |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| DAF Architecture Design Test                          | ████████████████████                     |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| DAF Architecture Execution Team                       | ████████████████████                     |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| DAF Architecture Mission Execution                    | ████████████████████                     |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| DAF Architecture Test Infrastructure                  | ████████████████████                     |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| <b>DAFTADIE Management Services</b>                   |  |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Program Management Administration                     | ██ |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604006F / Dept of the Air Force Tech Architecture | <b>Project (Number/Name)</b><br>645352 / Department of the Air Force Technical Architecture Design, Integration, and Evaluation |

Schedule Details

| Events by Sub Project                                 | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b>DAFTADIE Product Development</b>                   |         |      |         |      |
| DAF Architecture Design                               | 1       | 2022 | 4       | 2022 |
| DAF Architecture Design and Integration Contract 1    | 1       | 2022 | 4       | 2023 |
| DAF Architecture Design and Integration Contract 2    | 1       | 2022 | 4       | 2023 |
| DAF Architecture Modeling and Analysis Contract 1     | 1       | 2022 | 4       | 2023 |
| DAF Architecture Modeling and Analysis Contract 2     | 1       | 2022 | 4       | 2023 |
| DAF Architecture Modeling and Analysis Infrastructure | 1       | 2022 | 4       | 2023 |
| DAF Technology Solution Sprints FY22-23               | 1       | 2022 | 4       | 2023 |
| DAF Mission Architecture                              | 1       | 2022 | 4       | 2023 |
| DAF Program Architecture                              | 1       | 2022 | 4       | 2023 |
| <b>DAFTADIE Support</b>                               |         |      |         |      |
| DAF Architecture Support                              | 1       | 2022 | 4       | 2023 |
| <b>DAFTADIE Test and Evaluation</b>                   |         |      |         |      |
| DAF Architecture Design Test                          | 1       | 2022 | 4       | 2023 |
| DAF Architecture Execution Team                       | 1       | 2022 | 4       | 2023 |
| DAF Architecture Mission Execution                    | 1       | 2022 | 4       | 2023 |
| DAF Architecture Test Infrastructure                  | 1       | 2022 | 4       | 2023 |
| <b>DAFTADIE Management Services</b>                   |         |      |         |      |
| Program Management Administration                     | 1       | 2022 | 1       | 2024 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> / BA 4: <i>Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604007F / E-7 |
|---|---|

| COST (\$ in Millions)      | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element      | -           | 0.000   | 426.776 | 681.039      | 0.000       | 681.039       | 417.774 | 296.813 | 161.546 | 167.393 | Continuing       | Continuing |
| 644413: E-7A               | -           | 0.000   | 426.776 | 681.039      | 0.000       | 681.039       | 417.774 | 296.813 | 161.546 | 167.393 | Continuing       | Continuing |
| Quantity of RDT&E Articles | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

This budget line funds the E-7A program. The E-7A program replaces the unsustainable E-3 Airborne Warning and Control System (AWACS). The E-3 AWACS, first fielded in the 1970s, is at the end of its service life, and costly to maintain. The E-7A will be the USAF's principal airborne sensor for detecting, identifying, tracking, and reporting aerial tracks for the Joint Force Air Component Commander (JFACC).

The E-7A will provide multiple benefits and increased capabilities to the USAF and the Joint Services, including but not limited to: 1) ability to detect and track highly maneuverable, small radar cross-section airborne targets (modern and emerging threats); 2) enable greater airborne battlespace awareness through its precise, real-time air picture of sufficient quality to control and direct individual aircraft under a wide range of environmental and operational conditions; and 3) mitigate reliability, operational availability, maintainability, and sustainability issues.

The E-7A is a highly modified Airborne Battle Management and Command and Control aircraft integrating a Boeing 737-700 Next Generation airframe with reinforced Section 46, a Northrop Grumman Multifunction Electronically Scanned Array Radar mounted on the aircraft's Section 46, and two 180-kVA generators added to commercial CFM-56 engines mounted beneath each wing.

FY2024 funding will support continued rapid prototyping of two E-7As. Rapid prototyping consists of completing end items and potential modification components for up to two aircraft to support test and evaluation; development efforts to ensure compliance with US cyber security and program protection standards; development efforts to ensure navigation and communication systems comply with GPS M-Code and Narrowband SATCOM mandates; design and build-out of contractor and government System Integration Laboratories supporting development, integration, and test activities, and provide analysis and products supporting future requirements and airworthiness certification.

The total cost of the E-7A Middle Tier of Acquisition effort is \$2,730.776 million, including RDT&E and procurement of prototype units. E-7A is not fully funded across the Future Years Defense Program. The Department of the Air Force is assessing all options to address the funding shortfalls for MTA programs including additional funding in a future budget request performance trades based on technical maturity, or transition to alternative pathways.

In the previous budget cycle, this effort was referred to as E-3 Replacement, included in PE 0207417F.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604007F / E-7 |
|--|---|

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY23 4.538M is forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 0.000          | 0.000          | 0.000               | 0.000              | 0.000                |
| Current President's Budget                        | 0.000          | 426.776        | 681.039             | 0.000              | 681.039              |
| Total Adjustments                                 | 0.000          | 426.776        | 681.039             | 0.000              | 681.039              |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 200.000        |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 226.776        |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 681.039             | 0.000              | 681.039              |

**Change Summary Explanation**

FY23 Congressional Add \$200.000M; Congressional Directed Transfer \$226.776M from PE 0207417F to 0604007F

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <b>Title:</b> E-7A   | -              | 426.776        | 681.039        |
| <b>Description:</b> Funds will be used to continue E-7A rapid prototyping.   |                |                |                |
| <b>FY 2023 Plans:</b><br>Award contract to begin work on the following tasks:<br>- acquire long lead items and/or complete end items and potential modification components for up to two aircraft to support test and evaluation<br>- development efforts to ensure compliance with US cyber security and program protection standards<br>- development efforts to ensure navigation and communication systems comply with GPS M-Code and Narrowband SATCOM mandates |                |                |                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604007F / E-7 |
|--|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <p>- design and build-out contractor and government System Integration Laboratories supporting development, integration, and test activities</p> <p>- provide analysis and products supporting future requirements and airworthiness certification</p> <p>Program office will also support Operational Assessment (OA) of coalition systems providing basis for follow-on production/fielding decisions, undertake Depot Source of Repair (DSOR) analysis, and assemble FAA airworthiness certification package.</p> <p><b>FY 2024 Plans:</b><br/>Continue Rapid Prototyping effort including the following tasks:</p> <ul style="list-style-type: none"> <li>- complete end items and potential modification components for up to two aircraft to support test and evaluation</li> <li>- development efforts to ensure compliance with US cyber security and program protection standards - development efforts to ensure navigation and communication systems comply with GPS M-Code and Narrowband SATCOM mandates</li> <li>- design and build-out contractor and government System Integration Laboratories supporting development, integration, and test activities</li> <li>- provide analysis and products supporting future requirements and airworthiness certification.</li> </ul> <p>Program office will also continue to support Operational Assessment (OA) of coalition systems providing basis for follow-on production/fielding decisions, undertake Depot Source of Repair (DSOR) analysis, and assemble FAA airworthiness certification package.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding increased due to contract award timing and ramped-up rapid prototyping activity. The FY23 funding level reflects a late Q2 contract award. FY24 funding reflects a full 12-months of contract execution.</p> |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>   | -              | 426.776        | 681.039        |

**D. Other Program Funding Summary (\$ in Millions)**  
N/A

**Remarks**  
Other Program Funding  
Appn: RDT&E, BA 07, PE 27417F FY2022: \$22.16M  
Appn: APAF, BA: 04, WSC E00700, FY2025: \$809.84M, FY2026: \$1319.11M, FY2027: \$1259.00M FY2028: \$1284.16M  
Appn: APAF, BA: 06, WSC E00700, FY27: \$83.01M, FY28: \$84.67M  
Appn: APAF, BA: 07, WSC E00700, FY27: \$170.65M FY28: \$174.06M

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force Date: March 2023

| Appropriation/Budget Activity  | R-1 Program Element (Number/Name) |
|--|-----------------------------------|
| 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | PE 0604007F / E-7                 |

**E. Acquisition Strategy**  
E-7A Decision Authority is the Secretary of the Air Force, with authority delegated to the the Assistant Secretary of the Air Force for Acquisition, Technology, and Logistics. Air Force Life Cycle Management Center (AFLCMC) is the Contracting Authority for the E-7A and provides Contracts, Legal, and Comptroller Support.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
|--|---|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604007F / E-7 | <b>Project (Number/Name)</b><br>644413 / E-7A |
|--|---|---|

| <b>Product Development (\$ in Millions)</b> |                        |                                  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|----------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location   | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| E-7A Rapid Prototyping Contract             | SS/CPIF                | The Boeing Company : TUKWILA, WA | -           | -       |            | 379.865 | Feb 2023   | 615.194      | Jan 2024   | -           |            | 615.194       | Continuing       | Continuing | -                        |
| E-7A Platform One Contract                  | C/CPAF                 | TBD : TBD                        | -           | -       |            | 6.152   | Mar 2023   | 8.164        | Mar 2024   | -           |            | 8.164         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                  | -           | -       |            | 386.017 |            | 623.358      |            | -           |            | 623.358       | Continuing       | Continuing | N/A                      |

| <b>Support (\$ in Millions)</b>           |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                        | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| E-7A Organic Software Support             | PO                     | 76th SWES : Tinker, OK         | -           | -       |            | 3.664   | Mar 2023   | 5.422        | Jan 2024   | -           |            | 5.422         | Continuing       | Continuing | -                        |
| E-7A Government Furnished Equipment (GFE) | Various                | Not specified. : TBD           | -           | -       |            | 4.490   | Mar 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                           |                        |                                | -           | -       |            | 8.154   |            | 5.422        |            | -           |            | 5.422         | Continuing       | Continuing | N/A                      |

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| E-7A Test                                   | Various                | Not specified. : TBD           | -           | -       |            | 2.838   | Mar 2023   | 4.935        | Jan 2024   | -           |            | 4.935         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | -       |            | 2.838   |            | 4.935        |            | -           |            | 4.935         | Continuing       | Continuing | N/A                      |

| <b>Management Services (\$ in Millions)</b> |                        |  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location         | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Program Management Administration           | Various                | AWACS Program Office : Hanscom AFB, MA | -           | -       |            | 29.767  | Mar 2023   | 47.324       | Jan 2024   | -           |            | 47.324        | Continuing       | Continuing | -                        |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
|--|---|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604007F / E-7 | <b>Project (Number/Name)</b><br>644413 / E-7A |
|--|---|---|

| Management Services (\$ in Millions) |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--------------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                   | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| <b>Subtotal</b>                      |                        |                                | -           | -       |            | 29.767  |            | 47.324       |            | -           |            | 47.324        | Continuing       | Continuing | N/A                      |
| <b>Project Cost Totals</b>           |                        |                                | -           | -       |            | 426.776 |            | 681.039      |            | -           |            | 681.039       | Continuing       | Continuing | N/A                      |

**Remarks**  
E-7A effort is expected to involve significant amounts of hardware purchases early in development which create a larger than normal amount of termination and liability costs that must be funded.



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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604007F / E-7 | <b>Project (Number/Name)</b><br>644413 / E-7A |
|--|---|---|

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   |  |
|---|--|
| <b>E-7A PE 0604007F</b>                         |  |
| E-7A Rapid Prototyping (RP)                     |  |
| E-7A RP Undefined Contract Action (UCA) Award   |  |
| E-7A System Requirements Review                 |  |
| E-7A Software Development Lab Delivery          |  |
| E-7A Government System Integration Lab Delivery |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023                       |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604007F / E-7 | <b>Project (Number/Name)</b><br>644413 / E-7A |

Schedule Details

| Events by Sub Project                             | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b>E-7A PE 0604007F</b>                           |         |      |         |      |
| E-7A Rapid Prototyping (RP)                       | 2       | 2023 | 2       | 2028 |
| E-7A RP Undefinitized Contract Action (UCA) Award | 2       | 2023 | 2       | 2023 |
| E-7A System Requirements Review                   | 3       | 2023 | 3       | 2023 |
| E-7A Software Development Lab Delivery            | 3       | 2024 | 3       | 2024 |
| E-7A Government System Integration Lab Delivery   | 4       | 2026 | 4       | 2026 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |  |
|--|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604009F / AFWERX Prime |
|--|--|

| COST (\$ in Millions)                        | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                        | -           | 0.000   | 170.860 | 83.336       | 0.000       | 83.336        | 11.812  | 12.079  | 12.061  | 6.442   | Continuing       | Continuing |
| 640856: <i>AFWERX Operations and Support</i> | -           | 0.000   | 170.860 | 12.988       | 0.000       | 12.988        | 5.453   | 5.568   | 5.568   | 6.442   | Continuing       | Continuing |
| 640858: <i>AFWERX Prime</i>                  | -           | 0.000   | 0.000   | 70.348       | 0.000       | 70.348        | 6.359   | 6.511   | 6.493   | 0.000   | Continuing       | Continuing |

**A. Mission Description and Budget Item Justification**

The AFWERX mission is to transition agile, affordable, and accelerated capabilities by teaming innovative technology developers with Airmen and Guardian talent. AFWERX leverages Spark (the Airmen and Guardian talent base), AFVentures (the dual-use expanded technology base), and Prime (technology transitions) to scale and accelerate the capability. Funding in this project supports AFWERX research and development, innovation hubs, and information technology, public affairs, and marketing. The Spark mission is to inspire and enable Airmen and Guardians to unleash their potential and to drive capability development that increases the efficiency, effectiveness and quality of life of the warfighter. AFWERX uses Spark to discover and translate innovative talent into executable projects by facilitating stakeholder alignment through workshops and challenges. This connection brings together the creativity, innovation, and entrepreneurial spirit of our Airmen and Guardians to solve Air and Space Force technology and capability gaps.

The AFWERX Program reduces risk in emerging technology markets by partnering with industries through Prime investments and providing access to Government analysis, testing and certification capabilities. Prime investments focus on Government-Industry partnerships to influence and militarize emerging commercial capabilities to ensure US competitive advantage in key technology areas.

Next-Gen Large Aircraft aims to accelerate prototyping and widespread adoption of blended wing body aircraft for military and commercial applications, leveraging common goals among DOD and allied nations, commercial airlines and freight companies, other industry partners, and private investors. Cargo, tanker, and non-stealth bomber aircraft account for approximately 40% of DOD's total annual operational energy consumption, estimated to be about 1.2 billion gallons per year. Next-Gen Large Aircraft endeavors to meaningfully reduce fuel delivery logistical challenges, and prime the U.S. commercial aerospace sector to advance 21st century airframe designs in similar manner as military-developed aircraft primed commercial aircraft derivatives in the mid-20th century.

Funding for Project 640858 AFWERX Prime under Program 64858F Tech Transition transitioned to Project 640858 AFWERX Prime under this program beginning FY 2023 per Congressional direction.

Funding for Project 646030 AFWERX and Project 64317A Technology Transfer Add under Program 64317F Technology Transfer transitioned to Project 640856 AFWERX Operations and Support under this Program beginning in FY 2024.

The Blended Wing Body Next Generation Large Aircraft thrust was aligned to Project 640858 AFWERX Prime under this Program in FY 2023 and realigned to the Project 645351 Prototyping under Program 06040858F Tech Transition in FY 2024.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |  |
|--|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604009F / AFWERX Prime |
|--|--|

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Technology Transfer capabilities. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 0.000          | 0.000          | 0.000               | 0.000              | 0.000                |
| Current President's Budget                        | 0.000          | 170.860        | 83.336              | 0.000              | 83.336               |
| Total Adjustments                                 | 0.000          | 170.860        | 83.336              | 0.000              | 83.336               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 55.000         |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 115.860        |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 83.336              | 0.000              | 83.336               |

**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

**Project:** 640856: *AFWERX Operations and Support*

Congressional Add: *Program increase- supersonic aircraft technologies*

Congressional Add: *Program increase- Agility Prime*

Congressional Add Subtotals for Project: 640856

Congressional Add Totals for all Projects

|   | <b>FY 2022</b> | <b>FY 2023</b> |
|---|----------------|----------------|
|   | -              | 5.000          |
|   | -              | 50.000         |
| Congressional Add Subtotals for Project: 640856 | -              | 55.000         |
| Congressional Add Totals for all Projects       | -              | 55.000         |

**Change Summary Explanation**

FY 2023 funding increase of \$170.860 million due to congressionally directed AFWERX PE. It includes funding for AFWERX Prime and Core Operations and Support. Funding was realigned from Programs 0604858F Tech Transition and 0604317F Technology Transfer.

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|   |                    |                |                |                     |  |                      |                |                |  |                         |                         |                   |
|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|--|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |  |                      |                |                |  | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0604009F / AFWERX Prime |                      |                |                | <b>Project (Number/Name)</b><br>640856 / AFWERX Operations and Support |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>   | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>   | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 640856: AFWERX Operations and Support                                   | -                  | 0.000          | 170.860        | 12.988              | 0.000  | 12.988               | 5.453          | 5.568          | 5.568  | 6.442                   | Continuing              | Continuing        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -  | -                    | -              | -              | -  | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

The AFWERX mission is to transition agile, affordable, and accelerated capabilities by teaming innovative technology developers with Airmen and Guardian talent. AFWERX leverages Spark (the Airmen and Guardian talent base), AFVentures (the dual-use expanded technology base), and Prime (technology transitions) to scale and accelerate the capability. Funding in this project supports AFWERX research and development, innovation hubs, and information technology, public affairs, and marketing. The Spark mission is to inspire and enable Airmen and Guardians to unleash their potential and to drive capability development that increases the efficiency, effectiveness and quality of life of the warfighter. AFWERX uses Spark to discover and translate innovative talent into executable projects by facilitating stakeholder alignment through workshops and challenges. This connection brings together the creativity, innovation, and entrepreneurial spirit of our Airmen and Guardians to solve Air and Space Force technology and capability gaps.

Next-Gen Large Aircraft aims to accelerate prototyping and widespread adoption of blended wing body aircraft for military and commercial applications, leveraging common goals among DOD and allied nations, commercial airlines and freight companies, other industry partners, and private investors. Cargo, tanker, and non-stealth bomber aircraft account for approximately 40% of DOD's total annual operational energy consumption, estimated to be about 1.2 billion gallons per year. Next-Gen Large Aircraft endeavors to meaningfully reduce fuel delivery logistical challenges, and prime the U.S. commercial aerospace sector to advance 21st century airframe designs in similar manner as military-developed aircraft primed commercial aircraft derivatives in the mid-20th century.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <b>Title:</b> AFWERX   | 0.000          | 0.000          | 12.988         |
| <b>Description:</b> Transition affordable and accelerated capabilities by teaming innovative technology developers with Airmen and Guardian talent.  |                |                |                |
| <b>FY 2023 Plans:</b><br>This effort was executed out of Project 646030 AFWERX and Project 64317A Technology Transfer Add under Program 64317F Technology Transfer in FY 2023. Funding transitioned to Project 640856 AFWERX Operations and Support under this Program beginning in FY 2024.   |                |                |                |
| <b>FY 2024 Plans:</b><br>Continue development and sustainment of the Acquisition Workforce and organizational capabilities. Funding levels provide for full operational capability for core operations. Core operations include civilian billets, expanded Spark engagement, and dynamic hub and site initiatives. Spark funding delivers development and fielding of Airmen and Guardian centric program management tools to connect the innovation ecosystem, establishes a Joint Spark innovation incubator. Dynamic hub and site initiatives seeks |                |                |                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force   |  | <b>Date:</b> March 2023  |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604009F / AFWERX Prime | <b>Project (Number/Name)</b><br>640856 / AFWERX Operations and Support |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   |  | <b>FY 2022</b>   | <b>FY 2023</b> | <b>FY 2024</b> |
| to establish a dynamic hub/site posturing strategy that is consistent with the DIAL-In (Defense, Industry, Academia, and Local Government Investment) model, with phased expanded growth across the innovation/commercial ecosystem.<br><br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>FY 2024 funding increase of \$12.988 million is due to a transfer of funding from Project 646030 AFWERX and Project 64317A Technology Transfer Add under Program 64317F Technology Transfer to Project 640856 AFWERX Operations and Support under this Program beginning in FY 2024.  |  |  |                |                |
| <b>Title:</b> AFWERX Prime<br><br><b>Description:</b> Execution of efforts to explore and transition emerging dual-use technologies under this new acquisition approach to include evaluation of transformative vertical flight and agile logistics supporting distributed operations, autonomous capabilities, advanced energy and hybrid propulsion, and rapid commercial software capabilities. Activities include technical exchanges, research, development, certification, testing, and evaluation.<br><br><b>FY 2023 Plans:</b><br>Continue risk reduction ground testing with multiple aircraft manufacturers including wind tunnel, environmental, cyber evaluation, and Electromagnetic Interference characterization. Continue prototype testing to characterize performance, handling qualities, and mission system effectiveness. Continue airworthiness assessments aimed at providing flight certified vehicles. Establish initial base charging and infrastructure, including advanced traffic management, to support expanded test operations. Establish initial training and beddown of government piloted crewed eVTOL operations, enabling flight tests in realistic operating environments and scenarios to provide data for business case analysis and fielding. Collaborate with the FAA on operations and technical progress and insight to support their civil certification efforts. Continue to perform initial research, development, testing, and evaluation of other potential technology sectors to follow this Prime acquisition paradigm, including autonomy and integration of capabilities.<br><br><b>FY 2024 Plans:</b><br>FY 2024 AFWERX Prime funding was realigned to Project 640858 in this Program 64009F.<br><br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>FY 2024 funding decrease of \$73.951 million due to the realignment of funding to Project 640858 AFWERX Prime under this Program in FY 2024. |  | 0.000  | 73.951         | 0.000          |
| <b>Title:</b> Blended Wing Body - Next Generation Large Aircraft<br><br><b>Description:</b> In partnership with Defense Innovation Unit, allies, industry stakeholders, and private investors, Next-Gen Large Aircraft targets over a 30% increase in aerodynamic efficiency over traditional tube-and-wing large aircraft (given same engines). For military applications, initial analysis shows increases in combat capability greater than the percent increase in fuel efficiency for both aerial refueling and cargo aircraft productivity (e.g. 30% increase in fuel efficiency can equal 60% or more increased aerial   |  | 0.000  | 41.909         | 0.000          |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604009F / AFWERX Prime | <b>Project (Number/Name)</b><br>640856 / AFWERX Operations and Support |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p>refueling fuel offload at range). Project goals include designing an aircraft that can cost-effectively scale up and down to enable acquisition by a broader community of government and industry stakeholders. Overall effort intends to manufacture a prototype large-scale aircraft for certification and testing. This project works in coordination with DOD's Chief Sustainability Officer and the Air Force Operational Energy office.</p> <p><b>FY 2023 Plans:</b><br/>Execute prototype development of a blended wing body aircraft. Creation of digital environment for airframe design iteration and risk reduction. Manufacturing technology maturation and risk reduction, as well as design integration of advanced composites, non-cylindrical pressure vessel technology expanding on work done by NASA, flight control laws, and nacelle-airframe optimization., Continue airframe digital engineering design activities, demonstrate traceability between initial prototype aircraft and potential military and commercial derivatives, structural analysis and avionics and flight control system integration plan. Incorporate life-cycle sustainment cost considerations into design phase. Initial airworthiness and test planning for prototype aircraft.</p> <p><b>FY 2024 Plans:</b><br/>This thrust was realigned to the Prototyping Project 645351 under Program 64858F Tech Transition in FY24.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>FY 2024 funding decrease of \$41.909 million due to the realignment of funding to the Prototyping Project 645351 under Program 0604858F Tech Transition in FY 2024.</p> |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 0.000          | 115.860        | 12.988         |

|  | <b>FY 2022</b> | <b>FY 2023</b> |
|--|----------------|----------------|
| <b>Congressional Add:</b> Program increase- supersonic aircraft technologies<br><b>FY 2023 Plans:</b> Conduct Congressionally directed effort. | -              | 5.000          |
| <b>Congressional Add:</b> Program increase- Agility Prime<br><b>FY 2023 Plans:</b> Conduct Congressionally directed effort.                    | -              | 50.000         |
| <b>Congressional Adds Subtotals</b>  | -              | 55.000         |

|   |
|---|
| <b>C. Other Program Funding Summary (\$ in Millions)</b><br>N/A |
| <b>Remarks</b>  |

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Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force Date: March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604009F / AFWERX Prime | <b>Project (Number/Name)</b><br>640856 / AFWERX Operations and Support |
|--|--|--|

**D. Acquisition Strategy**

The Innovation Hubs, products and training, and innovation facilitation are awarded through a combination of Partnership Intermediary Agreements and competitive contract vehicles, some of which are directly awarded by AFWERX and others are executed through federal partnerships as appropriate.

AFWERX Prime effort will proceed along the following path: 1) investigate details regarding potential commercial markets; 2) identify technologies that are likely to result in successful prototypes and support future DAF capability needs and Operational Imperatives ; 3) create collaborative test plans potentially offering test assets and expertise; 4) leverage this campaign for near-term airworthiness as well as preparation for procurement of hardware, software, data, or services. The intent is to accelerate learning to enable early adoption, procurement, and fielding.

Blended Wing Body plans to proceed along the following path: 1) perform digital engineering conceptual design sprints with multiple industry partners; 2) identify one or more industry partners to perform prototype aircraft detailed design activities; 3) perform prototype build and flight demonstration phases, in parallel with manufacturing technology maturation suitable for both military and commercial derivative aircraft; 4) create collaborative test plans and leverage this effort for future airworthiness activities to enable more rapid acquisition of military and commercial derivative aircraft. The intent is to leverage significant private and industry investment to accelerate future optionality for aerial tanker, cargo, bomber, and other large aircraft fleets.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604009F / AFWERX Prime | <b>Project (Number/Name)</b><br>640856 / AFWERX Operations and Support |
|--|--|--|

| <b>Product Development (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Agility Prime AOI 1 Performer A             | C/FFP                  | Various : Various              | -           | -       |            | 11.127  | Apr 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Agility Prime AOI 1 Performer B             | C/FFP                  | Various : Various              | -           | -       |            | 3.128   | Jun 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Agility Prime AOI 2 Performer A             | C/FFP                  | Various : Various              | -           | -       |            | 10.902  | Mar 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Agility Prime AOI 2 Performer B             | C/FFP                  | Various : Various              | -           | -       |            | 3.223   | Apr 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Agility Prime AOI 3 Performer A             | C/FFP                  | Various : Various              | -           | -       |            | 7.127   | Apr 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Agility Prime AOI 3 Performer B             | C/FFP                  | Various : Various              | -           | -       |            | 9.133   | Mar 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Air Race Partners                           | RO                     | Various : Various              | -           | -       |            | 5.255   | Apr 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Next Gen Large Aircraft                     | MIPR                   | DUI : Mountain View, CA        | -           | -       |            | 38.000  | Jun 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Congressional Add-Agility Prime             | Various                | Various : Various              | -           | -       |            | 50.000  | Sep 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Congressional Add-AFWERX Prime Supersonic   | Various                | Various : Various              | -           | -       |            | 5.000   | May 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | -       |            | 142.895 |            | -            |            | -           |            | -             | Continuing       | Continuing | N/A                      |

| <b>Support (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item              | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Modeling and Analytics Support  | MIPR                   | Various : Various              | -           | -       |            | 1.537   | Nov 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Government Test Support         | WR                     | Various : Various              | -           | -       |            | 3.225   | Dec 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Airworthiness and Test Support  | Various                | Various : Various              | -           | -       |            | 2.137   | Nov 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Acquisition Workforce           | Allot                  | Various : Various              | -           | -       |            | -       |            | 12.988       |            | -           |            | 12.988        | Continuing       | Continuing | -                        |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604009F / AFWERX Prime | <b>Project (Number/Name)</b><br>640856 / AFWERX Operations and Support |
|--|--|--|

| <b>Support (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item              | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| <b>Subtotal</b>                 |                        |                                | -           | -       |            | 6.899   |            | 12.988       |            | -           |            | 12.988        | Continuing       | Continuing | N/A                      |

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Autonomy and Hybrid Stratfi                 | Various                | Various : Various              | -           | -       |            | 5.258   | Dec 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Autonomy and Hybrid Stratfi 2               | Various                | Various : Various              | -           | -       |            | 5.258   | Feb 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | -       |            | 10.516  |            | -            |            | -           |            | -             | Continuing       | Continuing | N/A                      |

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| AFWERX Prime Management PMA                 | Various                | Various : Various              | -           | -       |            | 6.641   | Oct 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Next Generation Large Aircraft PMA          | Various                | Various : Various              | -           | -       |            | 3.909   | Jul 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | -       |            | 10.550  |            | -            |            | -           |            | -             | Continuing       | Continuing | N/A                      |

|                            |  |  | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|--|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> |  |  | -           | -       | 170.860 | 12.988       | -           | 12.988        | Continuing       | Continuing | N/A                      |

**Remarks**

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force      | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                       | <b>R-1 Program Element (Number/Name)</b><br>PE 0604009F / AFWERX Prime |
| <b>Project (Number/Name)</b><br>640856 / AFWERX Operations and Support |  |

|  | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|  | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |                      |  |  |  |                      |  |  |  |  |  |  |  |                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|----------------------|--|--|--|----------------------|--|--|--|--|--|--|--|----------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| <b>AFWERX Prime Product Development</b>                      |                      |  |  |  |                      |  |  |  |  |  |  |  |                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Innovative Capability Opening (Air Race)                     | ██████████           |  |  |  |                      |  |  |  |  |  |  |  |                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Air Force Airworthiness Assessments (Part 1)                 | ██████████           |  |  |  |                      |  |  |  |  |  |  |  |                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Air Force Airworthiness Assessments (Part 2)                 |                      |  |  |  | ██████████           |  |  |  |  |  |  |  |                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Air Force Airworthiness Release                              | ████████████████████ |  |  |  |                      |  |  |  |  |  |  |  |                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Federal Aviation Administration Certification                |                      |  |  |  |                      |  |  |  |  |  |  |  | ████                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Department of Defense Airworthiness Certification            |                      |  |  |  |                      |  |  |  |  |  |  |  | ████                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| First Air Force Crewed Flights                               | ████                 |  |  |  |                      |  |  |  |  |  |  |  |                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Site Surveys   | ████                 |  |  |  |                      |  |  |  |  |  |  |  |                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Bed-down Planning  | ██████████           |  |  |  |                      |  |  |  |  |  |  |  |                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Base Support Agreements                                      |                      |  |  |  | ████                 |  |  |  |  |  |  |  |                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Bed-down   |                      |  |  |  | ████████████████████ |  |  |  |  |  |  |  |                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Autonomy - Advanced Air Mobility Assessments                 |                      |  |  |  |                      |  |  |  |  |  |  |  | ████████████████████ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Autonomy - Proving Group Operation                           |                      |  |  |  |                      |  |  |  |  |  |  |  | ████████████████████ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Integration and Cross Domain Kit Development                 |                      |  |  |  |                      |  |  |  |  |  |  |  | ██████               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Software Integration Sprints                                 |                      |  |  |  |                      |  |  |  |  |  |  |  | ████████████████████ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b>Blended Wing Body- Next Generation Large Aircraft</b>     |                      |  |  |  |                      |  |  |  |  |  |  |  |                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Vehicle Design, Airframe, Avionics and Flight Controls, Test |                      |  |  |  | ████████████████████ |  |  |  |  |  |  |  |                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604009F / AFWERX Prime | <b>Project (Number/Name)</b><br>640856 / AFWERX Operations and Support |

Schedule Details

| Events by Sub Project   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>AFWERX Prime Product Development</i></b>                  |         |      |         |      |
| Innovative Capability Opening (Air Race)                        | 1       | 2022 | 4       | 2022 |
| Air Force Airworthiness Assessments (Part 1)                    | 1       | 2022 | 3       | 2022 |
| Air Force Airworthiness Assessments (Part 2)                    | 2       | 2023 | 3       | 2023 |
| Air Force Airworthiness Release                                 | 2       | 2022 | 3       | 2023 |
| Federal Aviation Administration Certification                   | 4       | 2024 | 4       | 2024 |
| Department of Defense Airworthiness Certification               | 4       | 2024 | 4       | 2024 |
| First Air Force Crewed Flights                                  | 2       | 2022 | 2       | 2022 |
| Site Surveys  | 1       | 2022 | 1       | 2022 |
| Bed-down Planning   | 2       | 2022 | 4       | 2022 |
| Base Support Agreements   | 1       | 2023 | 1       | 2023 |
| Bed-down  | 4       | 2023 | 4       | 2024 |
| Autonomy - Advanced Air Mobility Assessments                    | 1       | 2024 | 1       | 2025 |
| Autonomy - Proving Group Operation                              | 1       | 2024 | 4       | 2025 |
| Integration and Cross Domain Kit Development                    | 1       | 2024 | 2       | 2024 |
| Software Integration Sprints                                    | 2       | 2024 | 4       | 2025 |
| <b><i>Blended Wing Body- Next Generation Large Aircraft</i></b> |         |      |         |      |
| Vehicle Design, Airframe, Avionics and Flight Controls, Test    | 1       | 2023 | 4       | 2023 |

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|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |  |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0604009F / AFWERX Prime |                      |                |                | <b>Project (Number/Name)</b><br>640858 / AFWERX Prime |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>   | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 640858: AFWERX Prime  | -                  | 0.000          | 0.000          | 70.348              | 0.000  | 70.348               | 6.359          | 6.511          | 6.493   | 0.000                   | Continuing              | Continuing        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -  | -                    | -              | -              | -   | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

AFWERX Prime is a new acquisition approach that uses government-specific resources to reduce risk in emerging technology markets while partnering with investors, industry, interagency, and international partners for accelerated, affordable, and agile commercial and military capability. Initial efforts of AFWERX Prime Agility Prime program provides research, development, testing, and evaluation to field transformative vertical flight technology. These systems incorporate non-traditional electric or hybrid propulsion for manned or optionally manned missions, with onboard, remote, or eventually autonomous control. Agility Prime efforts leverages commercial investment in technologies that support mobility and sustainment in benign or contested environments to enable agile, lower-cost distributed logistics, humanitarian operations, disaster response operations, and communications capabilities.

Agility Prime leverages emerging vertical lift and logistics platforms, enabling resilient basing and sustainment options. Future Prime initiatives will use the same paradigm to leverage commercial technology and investment for high returns on government participation in this sector, achieving advanced, agile, and accelerated fielding of commercial and military capability bolstering national security and domestic technological dominance. AFWERX Prime autonomy efforts aim to accelerate enabling autonomy technologies and dual-use approaches to transition autonomous capabilities into fielded capabilities.

Funding for Project 640858 AFWERX Prime under Program 64858F Tech Transition transitioned to Project 640858 AFWERX Prime under this program beginning FY 2023 per Congressional direction.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <b>Title:</b> AFWERX Prime   | -              | 0.000          | 70.348         |
| <b>Description:</b> Execution of efforts to explore and transition emerging dual-use technologies under this new acquisition approach to include evaluation of transformative vertical flight and agile logistics supporting distributed operations, autonomous capabilities, advanced energy and hybrid propulsion, and rapid commercial software capabilities. Activities include technical exchanges, research, development, certification, testing, and evaluation.  |                |                |                |
| <b>FY 2023 Plans:</b><br>Continue Agility Prime risk reduction ground testing with multiple aircraft manufacturers including wind tunnel, environmental, cyber evaluation, and Electromagnetic Interference characterization. Continue prototype testing to characterize performance, handling qualities, and mission system effectiveness. Continue airworthiness assessments aimed at providing flight certified vehicles. Establish initial base charging and infrastructure, including advanced traffic management, to support expanded test operations. Establish initial training and beddown of government piloted crewed electric vertical take off and landing operations, enabling flight tests in realistic operating environments and scenarios to provide data for business case analysis and fielding. |                |                |                |

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|---|--|---|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023                               |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604009F / AFWERX Prime | <b>Project (Number/Name)</b><br>640858 / AFWERX Prime |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p>Collaborate with the Federal Aviation Administration on operations and technical progress and insight to support their civil certification efforts. Continue to perform initial research, development, testing, and evaluation of other potential technology sectors to follow this Prime acquisition paradigm, including autonomy and software integration of capabilities.</p> <p><b>FY 2024 Plans:</b><br/>Efforts include enabling technology risk reduction with multiple manufacturers for commercial and operations assessment. For Agility Prime, continue prototype testing to characterize performance, handling qualities, and mission system effectiveness. Continue facilitating airworthiness assessments aimed at initial flight certified vehicles. Initiate and complete flight tests in realistic operating environments and scenarios to provide data for business case analysis and fielding. Continue research, development, test and evaluation for key enabling technologies of autonomous operations and vehicle collaboration along with hybrid propulsion. For Autonomy Prime, initiate a low-cost pipeline and proving ground for evaluate, iterate, and mature of autonomous capabilities for industry and government organizations, including dual-use applications. Supports commercial advancement of overlapping autonomous mission capabilities and transitioning capabilities into major Air Force autonomy programs. With Integration Prime, initiate a multi-level environment to prototype and transition integrating software capabilities with industry and non-traditional solution providers and software integration stacks to enable rapid adaptability and scalability of mission threads along with a government owned open architecture toolkit for integrating applications onto multiple platforms.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>FY 2024 funding increase of \$70.348 million is due to the realignment of funding to Project 640858 AFWERX Prime under this Program in FY 2024.</p> |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | -              | 0.000          | 70.348         |

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

AFWERX Prime effort will proceed along the following path: 1) investigate details regarding potential commercial markets; 2) identify technologies that are likely to result in successful prototypes and support future DAF capability needs and Operational Imperatives ; 3) create collaborative test plans potentially offering test assets and expertise; 4) leverage this campaign for near-term airworthiness as well as preparation for procurement of hardware, software, data, or services. The intent is to accelerate learning to enable early adoption, procurement, and fielding.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604009F / AFWERX Prime | <b>Project (Number/Name)</b><br>640858 / AFWERX Prime |
|--|--|---|

| <b>Product Development (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Agility Prime AOI 1 Performer A             | C/FFP                  | Various : Various              | -           | -       |            | -       |            | 5.000        | Dec 2023   | -           |            | 5.000         | Continuing       | Continuing | -                        |
| Agility Prime AOI 1 Performer B             | C/FFP                  | Various : Various              | -           | -       |            | -       |            | 1.000        | Feb 2024   | -           |            | 1.000         | Continuing       | Continuing | -                        |
| Agility Prime AOI 2 Performer A             | C/FFP                  | Various : Various              | -           | -       |            | -       |            | 5.000        | Dec 2023   | -           |            | 5.000         | Continuing       | Continuing | -                        |
| Agility Prime AOI 3 Performer A             | C/FFP                  | Various : Various              | -           | -       |            | -       |            | 3.500        | May 2024   | -           |            | 3.500         | Continuing       | Continuing | -                        |
| Agility Prime AOI 3 Performer B             | C/FFP                  | Various : Various              | -           | -       |            | -       |            | 3.500        | May 2024   | -           |            | 3.500         | Continuing       | Continuing | -                        |
| Autonomy Prime Line of Effort A             | C/FFP                  | Various : Various              | -           | -       |            | -       |            | 4.000        | Dec 2023   | -           |            | 4.000         | Continuing       | Continuing | -                        |
| Autonomy Prime Line of Effort B             | C/FFP                  | Various : Various              | -           | -       |            | -       |            | 4.000        | Feb 2024   | -           |            | 4.000         | Continuing       | Continuing | -                        |
| Autonomy Prime Line of Effort C             | C/FFP                  | Various : Various              | -           | -       |            | -       |            | 3.000        | May 2024   | -           |            | 3.000         | Continuing       | Continuing | -                        |
| Autonomy Prime Line of Effort D             | C/FFP                  | Various : Various              | -           | -       |            | -       |            | 4.000        | Dec 2023   | -           |            | 4.000         | Continuing       | Continuing | -                        |
| Integration Prime Capability Sprint A       | C/FFP                  | Various : Various              | -           | -       |            | -       |            | 3.500        | Jan 2024   | -           |            | 3.500         | Continuing       | Continuing | -                        |
| Integration Prime Capability Sprint B       | C/FFP                  | Various : Various              | -           | -       |            | -       |            | 3.500        | Apr 2024   | -           |            | 3.500         | Continuing       | Continuing | -                        |
| Integration Prime Capability Sprint C       | C/FFP                  | Various : Various              | -           | -       |            | -       |            | 3.500        | Jul 2024   | -           |            | 3.500         | Continuing       | Continuing | -                        |
| Integration Prime Open Architecture         | C/FFP                  | Various : Various              | -           | -       |            | -       |            | 3.000        | Dec 2023   | -           |            | 3.000         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | -       |            | -       |            | 46.500       |            | -           |            | 46.500        | Continuing       | Continuing | N/A                      |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604009F / AFWERX Prime | <b>Project (Number/Name)</b><br>640858 / AFWERX Prime |
|--|--|---|

| <b>Support (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---------------------------------|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>       | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| Modeling and Analytics Support  | MIPR                              | Various : Various                         | -                  | -              |                   | -              |                   | 1.000               | Nov 2023          | -                  |                   | 1.000                | Continuing              | Continuing        | -                               |
| Government Test Support         | MIPR                              | Various : Various                         | -                  | -              |                   | -              |                   | 5.000               | Dec 2023          | -                  |                   | 5.000                | Continuing              | Continuing        | -                               |
| Airworthiness and Test Support  | Various                           | Various : Various                         | -                  | -              |                   | -              |                   | 2.000               | Nov 2023          | -                  |                   | 2.000                | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>                 |                                   |   | -                  | -              |                   | -              |                   | 8.000               |                   | -                  |                   | 8.000                | Continuing              | Continuing        | N/A                             |

| <b>Test and Evaluation (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| Test Integration                            | Various                           | Various : Various                         | -                  | -              |                   | -              |                   | 5.000               | Feb 2024          | -                  |                   | 5.000                | Continuing              | Continuing        | -                               |
| Autonomy Test Capabilities                  | Reqn                              | Various : Various                         | -                  | -              |                   | -              |                   | 4.848               | Dec 2023          | -                  |                   | 4.848                | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>                             |                                   |   | -                  | -              |                   | -              |                   | 9.848               |                   | -                  |                   | 9.848                | Continuing              | Continuing        | N/A                             |

| <b>Management Services (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| AFWERX Prime Management PMA                 | Various                           | Various : Various                         | -                  | -              |                   | -              |                   | 6.000               | Dec 2024          | -                  |                   | 6.000                | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>                             |                                   |   | -                  | -              |                   | -              |                   | 6.000               |                   | -                  |                   | 6.000                | Continuing              | Continuing        | N/A                             |

| <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|--------------------|----------------|----------------|---------------------|--------------------|----------------------|-------------------------|-------------------|---------------------------------|
| -                  | -              | -              | 70.348              | -                  | 70.348               | Continuing              | Continuing        | N/A                             |

**Remarks**



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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604009F / AFWERX Prime | <b>Project (Number/Name)</b><br>640858 / AFWERX Prime |
|--|--|---|

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |            |
|--|------------|
| <b>AFWERX Prime Product Development</b>                      |            |
| Innovative Capability Opening (Air Race)                     | ██████████ |
| Air Force Airworthiness Assessments (Part 1)                 | ██████████ |
| Air Force Airworthiness Assessments (Part 2)                 | ██████████ |
| Air Force Airworthiness Release                              | ██████████ |
| Federal Aviation Administration Certification                | ██████████ |
| Department of Defense Airworthiness Certification            | ██████████ |
| First Air Force Crewed Flights                               | ██████████ |
| Site Surveys   | ██████████ |
| Bed-down Planning  | ██████████ |
| Base Support Agreements                                      | ██████████ |
| Bed-down   | ██████████ |
| Autonomy - Advanced Air Mobility Assessments                 | ██████████ |
| Autonomy - Proving Ground Operations                         | ██████████ |
| Integration and Cross Domain Kit Development                 | ██████████ |
| Software Integration Sprints                                 | ██████████ |
| <b>Blended Wing Body-Next Generation Large Aircraft</b>      |            |
| Vehicle Design, Airframe, Avionics and Flight Controls, Test | ██████████ |

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2024 Air Force **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604009F / AFWERX Prime | <b>Project (Number/Name)</b><br>640858 / AFWERX Prime |
|--|--|---|

Schedule Details

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>AFWERX Prime Product Development</i></b>                 |         |      |         |      |
| Innovative Capability Opening (Air Race)                       | 1       | 2022 | 4       | 2022 |
| Air Force Airworthiness Assessments (Part 1)                   | 1       | 2022 | 3       | 2022 |
| Air Force Airworthiness Assessments (Part 2)                   | 2       | 2023 | 3       | 2023 |
| Air Force Airworthiness Release                                | 3       | 2022 | 3       | 2023 |
| Federal Aviation Administration Certification                  | 4       | 2024 | 4       | 2024 |
| Department of Defense Airworthiness Certification              | 4       | 2024 | 4       | 2024 |
| First Air Force Crewed Flights                                 | 2       | 2022 | 2       | 2022 |
| Site Surveys   | 1       | 2022 | 1       | 2022 |
| Bed-down Planning  | 2       | 2022 | 4       | 2022 |
| Base Support Agreements  | 1       | 2023 | 1       | 2023 |
| Bed-down   | 4       | 2023 | 4       | 2024 |
| Autonomy - Advanced Air Mobility Assessments                   | 1       | 2024 | 1       | 2025 |
| Autonomy - Proving Ground Operations                           | 1       | 2024 | 4       | 2025 |
| Integration and Cross Domain Kit Development                   | 1       | 2024 | 2       | 2024 |
| Software Integration Sprints                                   | 2       | 2024 | 4       | 2025 |
| <b><i>Blended Wing Body-Next Generation Large Aircraft</i></b> |         |      |         |      |
| Vehicle Design, Airframe, Avionics and Flight Controls, Test   | 1       | 2023 | 4       | 2023 |

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force** **Date:** March 2023

|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604015F / <i>Long Range Strike - Bomber</i> |
|--|---|

| COST (\$ in Millions)             | Prior Years | FY 2022   | FY 2023   | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025   | FY 2026   | FY 2027   | FY 2028   | Cost To Complete | Total Cost |
|-----------------------------------|-------------|-----------|-----------|--------------|-------------|---------------|-----------|-----------|-----------|-----------|------------------|------------|
| Total Program Element             | -           | 2,775.581 | 3,143.584 | 2,984.143    | 0.000       | 2,984.143     | 2,465.817 | 2,047.838 | 1,645.873 | 1,475.913 | 0.000            | 16,538.749 |
| 643308: <i>B-21 Development</i>   | -           | 2,775.581 | 3,143.584 | 2,742.948    | 0.000       | 2,742.948     | 2,078.798 | 1,649.200 | 1,271.809 | 1,220.600 | 0.000            | 14,882.520 |
| 644044: <i>B-21 Modernization</i> | -           | 0.000     | 0.000     | 241.195      | 0.000       | 241.195       | 387.019   | 398.638   | 374.064   | 255.313   | 0.000            | 1,656.229  |

**A. Mission Description and Budget Item Justification**

This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. Program overview provided below.

The Long Range Strike - Bomber (B-21 Raider) is crucial to the nuclear modernization plan, forming the backbone of the Nation's future bomber force, providing both conventional and nuclear capability. The B-21 platform provides range, access, and payload to go anywhere needed, with the weapons required to deter and win our nation's wars. Its open system architecture will enable rapid integration of future capabilities, keeping the platform relevant and effective as the threat environment evolves. The Air Force requires a minimum of 100 B-21s as part of the long-term bomber force. The Engineering and Manufacturing Development (EMD) contract was awarded in 2015, followed by a Critical Design Review (CDR) completed in 2018. B-21s will be delivered to operational bases in the mid-2020s.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 2,872.624      | 3,253.584      | 2,322.076           | 0.000              | 2,322.076            |
| Current President's Budget                        | 2,775.581      | 3,143.584      | 2,984.143           | 0.000              | 2,984.143            |
| Total Adjustments                                 | -97.043        | -110.000       | 662.067             | 0.000              | 662.067              |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | -110.000       |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -97.043        | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 662.067             | 0.000              | 662.067              |

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force Date: March 2023

|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604015F / <i>Long Range Strike - Bomber</i> |
|--|---|

**Change Summary Explanation**

This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(A&S)/DSP.

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|   |                    |                |                |                     |  |                      |                |                |   |                         |                         |                   |
|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |  |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0604015F / Long Range Strike - Bomber |                      |                |                | <b>Project (Number/Name)</b><br>643308 / B-21 Development |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>   | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 643308: B-21 Development  | -                  | 2,775.581      | 3,143.584      | 2,742.948           | 0.000  | 2,742.948            | 2,078.798      | 1,649.200      | 1,271.809   | 1,220.600               | 0.000                   | 14,882.520        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -  | -                    | -              | -              | -   | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. Program overview provided below.

The Long Range Strike - Bomber (B-21 Raider) is crucial to the nuclear modernization plan, forming the backbone of the Nation's future bomber force, providing both conventional and nuclear capability. The B-21 platform provides range, access, and payload to go anywhere needed, with the weapons required to deter and win our nation's wars. Its open system architecture will enable rapid integration of future capabilities, keeping the platform relevant and effective as the threat environment evolves. The Air Force requires a minimum of 100 B-21s as part of the long-term bomber force. The Engineering and Manufacturing Development (EMD) contract was awarded in 2015, followed by a Critical Design Review (CDR) completed in 2018. B-21s will be delivered to operational bases in the mid-2020s.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| <b>Title:</b> Long Range Strike Bomber (B-21) Development   | 2,775.581      | 3,143.584      | 2,742.948           | 0.000              | 2,742.948            |
| <b>Description:</b> The B-21 Raider will be a dual-capable penetrating strike stealth bomber capable of delivering both conventional and nuclear munitions. Designed to operate in tomorrow's high-end threat environment, the B-21 will play a critical role in ensuring America's enduring airpower capability. |                |                |                     |                    |                      |
| <b>FY 2023 Plans:</b><br>Continue test aircraft build and scaling manufacturing infrastructure and capacity across the industrial base. This funding will keep B-21 Raider development on track in support of the program's transition toward low-rate initial production and fielding.                           |                |                |                     |                    |                      |
| <b>FY 2024 Base Plans:</b><br>Continue test aircraft build and scaling manufacturing infrastructure and capacity across the industrial base. This funding will keep B-21 Raider development on track in support of the program's transition toward low-rate initial production and fielding.                      |                |                |                     |                    |                      |
| <b>FY 2024 OCO Plans:</b>   |                |                |                     |                    |                      |

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

|  |   |  |
|--|---|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604015F / <i>Long Range Strike - Bomber</i> | <b>Project (Number/Name)</b><br>643308 / <i>B-21 Development</i> |
|--|---|--|

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   | FY 2022   | FY 2023   | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|---|-----------|-----------|--------------|-------------|---------------|
| N/A   |           |           |              |             |               |
| <b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b>   |           |           |              |             |               |
| FY 2024 decreased from FY 2023 by 400.636M in support of the programs transition into low rate initial production and fielding. Furthermore, Budget Program Activity Code (BPAC) 644044 was established to distinguish increments and activities outside of the Engineering and Manufacturing Development (EMD) baseline program. |           |           |              |             |               |
| This program is reported in accordance with Title 10, USC, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(A&S)/DSP.  |           |           |              |             |               |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 2,775.581 | 3,143.584 | 2,742.948    | 0.000       | 2,742.948     |

| <b>C. Other Program Funding Summary (\$ in Millions)</b> |                |                |                     |                    |                      |                |                |                |                |                         |                   |
|--|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| <u>Line Item</u>   | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024 Base</u> | <u>FY 2024 OCO</u> | <u>FY 2024 Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
| • MILCON PE 0604015:<br><i>Long Range Strike Bomber</i>  | 364.380        | 175.900        | 243.592             | -                  | 243.592              | 171.808        | 323.415        | 351.850        | 358.887        | 0.000                   | 1,989.832         |
| • OPAF 01 B02100: <i>B-21 Raider</i>                     | 108.027        | 1,651.596      | 2,325.093           | -                  | 2,325.093            | 3,925.806      | 4,597.182      | 4,332.387      | 5,653.717      | 0.000                   | 22,593.808        |
| • OPAF 03 0101110F: <i>N/A (2)</i>                       | -              | 5.206          | 7.020               | -                  | 7.020                | -              | -              | -              | -              | 0.000                   | 12.226            |

**Remarks**  
This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(A&S)/DSP.

**D. Acquisition Strategy**  
The B-21 philosophy to drive success has been to actively manage the program, contract and contractor; to partner with the prime and supply chain for win-win successes; and to aggressively identify and mitigate risk early. The acquisition strategy incentivizes industry partners to achieve cost, schedule and performance objectives.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604015F / Long Range Strike - Bomber | <b>Project (Number/Name)</b><br>643308 / B-21 Development |
|--|--|---|

| Product Development (\$ in Millions)   |                        |                                |             | FY 2022   |            | FY 2023   |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|-----------|------------|-----------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location | Prior Years | Cost      | Award Date | Cost      | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Actual breakout provided in Special Access Program Annual Report to Congress | Various                | Not specified. : CA            | -           | 2,775.581 |            | 3,143.584 |            | 2,742.948    |            | 0.000       |            | 2,742.948     | Continuing       | Continuing | -                        |
| <b>Subtotal</b>  |                        |                                | -           | 2,775.581 |            | 3,143.584 |            | 2,742.948    |            | 0.000       |            | 2,742.948     | Continuing       | Continuing | N/A                      |
| <b>Project Cost Totals</b>   |                        |                                | -           | 2,775.581 |            | 3,143.584 |            | 2,742.948    |            | 0.000       |            | 2,742.948     | Continuing       | Continuing | N/A                      |

**Remarks**  
 This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(A&S)/DSP.

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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |   |  |
|--|---|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604015F / <i>Long Range Strike - Bomber</i> | <b>Project (Number/Name)</b><br>643308 / <i>B-21 Development</i> |
|--|---|--|

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |  |
|--|--|
| <b><i>Long Range Strike Bomber</i></b>                                       |  |
| Actual schedule provided in Special Access Program Annual Report to Congress |  |



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**Exhibit R-4A, RDT&E Schedule Details:** PB 2024 Air Force **Date:** March 2023

|  |   |  |
|--|---|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604015F / <i>Long Range Strike - Bomber</i> | <b>Project (Number/Name)</b><br>643308 / <i>B-21 Development</i> |
|--|---|--|

Schedule Details

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Long Range Strike Bomber</i></b>                                       |         |      |         |      |
| Actual schedule provided in Special Access Program Annual Report to Congress | 1       | 2022 | 4       | 2028 |

**Note**  
This program is reported in accordance with Title 10, USC, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(A&S)/DSP.

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|   |                    |                |                |                     |  |                      |                |                |   |                         |                         |                   |
|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |  |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0604015F / Long Range Strike - Bomber |                      |                |                | <b>Project (Number/Name)</b><br>644044 / B-21 Modernization |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>   | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 644044: B-21 Modernization  | -                  | 0.000          | 0.000          | 241.195             | 0.000  | 241.195              | 387.019        | 398.638        | 374.064   | 255.313                 | 0.000                   | 1,656.229         |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -  | -                    | -              | -              | -   | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. Program overview provided below.

The Long Range Strike - Bomber (B-21 Raider) is crucial to the nuclear modernization plan, forming the backbone of the Nation's future bomber force, providing both conventional and nuclear capability. The B-21 platform provides range, access, and payload to go anywhere needed, with the weapons required to deter and win our nation's wars. Its open system architecture will enable rapid integration of future capabilities, keeping the platform relevant and effective as the threat environment evolves. The Air Force requires a minimum of 100 B-21s as part of the long-term bomber force. The Engineering and Manufacturing Development (EMD) contract was awarded in 2015, followed by a Critical Design Review (CDR) completed in 2018. B-21s will be delivered to operational bases in the mid-2020s.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| <b>Title:</b> Long Range Strike Bomber (B-21) Modernization  | -              | -              | 241.195             | -                  | 241.195              |
| <b>Description:</b> B-21 Raider will be a dual-capable penetrating strike stealth bomber capable of delivering both conventional and nuclear munitions. Designed to operate in tomorrow's high-end threat environment, the B-21 will play a critical role in ensuring America's enduring airpower capability.  |                |                |                     |                    |                      |
| <b>FY 2024 Base Plans:</b><br>FY 2024 includes funding for the continuation of modernization studies/ technical risk reduction activities. In addition, modernization activities will be supported, which includes but is not limited to, LRSO integration, modernization infrastructure support, development of enhanced technologies, incorporating modifications as required and nuclear certification. |                |                |                     |                    |                      |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>FY 2024 Modernization Budget Program Activity Code (BPAC) 644044 established to distinguish increments and activities outside of the baseline Engineering and Manufacturing Development (EMD) program.   |                |                |                     |                    |                      |
| <b>Accomplishments/Planned Programs Subtotals</b>  | -              | -              | 241.195             | -                  | 241.195              |

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

|  |   |  |
|--|---|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604015F / <i>Long Range Strike - Bomber</i> | <b>Project (Number/Name)</b><br>644044 / <i>B-21 Modernization</i> |
|--|---|--|

**C. Other Program Funding Summary (\$ in Millions)**

| <u>Line Item</u>                                  | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • MILCON 0604015: <i>Long Range Strike Bomber</i> | 364.380        | 175.900        | 243.592                       | -                            | 243.592                        | 171.808        | 323.415        | 351.850        | 358.887        | Continuing                        | Continuing        |
| • OPAF 01 B02100: <i>B-21 Raider</i>              | 108.027        | 1,651.596      | 2,325.093                     | -                            | 2,325.093                      | 3,925.806      | 4,597.182      | 4,332.387      | 5,653.717      | Continuing                        | Continuing        |
| • OPAF 03 0101110F: <i>N/A (2)</i>                | -              | 5.206          | 7.020                         | -                            | 7.020                          | -              | -              | -              | -              | Continuing                        | Continuing        |

**Remarks**

RDT&E funding increase includes Modernization funding for years 2024-2028.

This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(AT&L)/DSP.

**D. Acquisition Strategy**

The B-21 philosophy to drive success has been to actively manage the program, contract and contractor; to partner with the prime and supply chain for win-win successes; and to aggressively identify and mitigate risk early. The acquisition strategy incentivizes industry partners to achieve cost, schedule and performance objectives.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604015F / Long Range Strike - Bomber | <b>Project (Number/Name)</b><br>644044 / B-21 Modernization |
|--|--|---|

| Product Development (\$ in Millions)   |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Actual breakout provided in Special Access Program Annual Report to Congress | Various                | Not specified. : FL            | -           | -       |            | -       |            | 241.195      |            | -           |            | 241.195       | Continuing       | Continuing | -                        |
| <b>Subtotal</b>  |                        |                                | -           | -       |            | -       |            | 241.195      |            | -           |            | 241.195       | Continuing       | Continuing | N/A                      |
| <b>Project Cost Totals</b>   |                        |                                | -           | -       |            | -       |            | 241.195      |            | -           |            | 241.195       | Continuing       | Continuing | N/A                      |

**Remarks**  
 This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(A&S)/DSP.

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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |   |  |
|--|---|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604015F / <i>Long Range Strike - Bomber</i> | <b>Project (Number/Name)</b><br>644044 / <i>B-21 Modernization</i> |
|--|---|--|

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |            |
|--|------------|
| <b><i>Long Range Strike Bomber</i></b>                                       |            |
| Actual schedule provided in Special Access Program Annual Report to Congress | [REDACTED] |

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2024 Air Force **Date:** March 2023

|  |   |  |
|--|---|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604015F / <i>Long Range Strike - Bomber</i> | <b>Project (Number/Name)</b><br>644044 / <i>B-21 Modernization</i> |
|--|---|--|

Schedule Details

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Long Range Strike Bomber</i></b>                                       |         |      |         |      |
| Actual schedule provided in Special Access Program Annual Report to Congress | 1       | 2024 | 4       | 2028 |

**Note**  
 This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(A&S)/DSP.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604025F / <i>Rapid Defense Experimentation Reserve (RDER)</i> |
|--|---|

| COST (\$ in Millions)       | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|-----------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element       | -           | 0.000   | 0.000   | 154.300      | 0.000       | 154.300       | 0.000   | 0.000   | 0.000   | 0.000   | Continuing       | Continuing |
| 640858: <i>AFWERX Prime</i> | -           | 0.000   | 0.000   | 154.300      | 0.000       | 154.300       | 0.000   | 0.000   | 0.000   | 0.000   | Continuing       | Continuing |
| Quantity of RDT&E Articles  | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

The Department of the Air Force's component of the Rapid Defense Experimentation Reserve (RDER) is executed within this program element (PE). To facilitate rapid modernization of the force, the Rapid Defense Experimentation Reserve (RDER) initiative was established in the Defense Planning Guidance for Fiscal Years 2023-2027, to encourage multi-component experimentation through a campaign of learning. Services, Agencies, and other participating organizations are to identify "best of breed" capabilities developed among the DoD prototyping programs, and execute approved projects through large-scale, cross-service experiments in order to refine and/or validate the Joint Warfighting Concept (JWC). Organizations nominate proposals to the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) that are multi-component — involving Joint Services, International partners and/or other government agencies and link to one or more of the four key supporting concepts ("functional battles") of the Joint Warfighting Concept: Joint Concept for Fires, Joint Concept for Command and Control, Joint Concept for Contested Logistics, and Joint Concept for Information Advantage.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024 Base</u> | <u>FY 2024 OCO</u> | <u>FY 2024 Total</u> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 0.000          | 0.000          | 0.000               | 0.000              | 0.000                |
| Current President's Budget                        | 0.000          | 0.000          | 154.300             | 0.000              | 154.300              |
| Total Adjustments                                 | 0.000          | 0.000          | 154.300             | 0.000              | 154.300              |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 154.300             | 0.000              | 154.300              |

**Change Summary Explanation**

FY 2024 increased from FY 2023, by \$154.300 million (based on funding in PE 0604858F, Tech Transition Program.  
 FY 2024 moved from PE 0604858F, Tech Transition Program, Experimentation Project, 645350, per Congressional Direction.

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|  |                         |
|--|-------------------------|
| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604025F / <i>Rapid Defense Experimentation Reserve (RDER)</i> |
|--|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p><b>Title:</b> Rapid Defense Experimentation Reserve</p> <p><b>Description:</b> The Department of Defense implement multiple RDER experimentation series through Service nominated projects with execution timelines ranging from one to two years. The USD (R&amp;E) will review project progress, and recommend new focus areas at least annually with the goal of quickly incorporating the most promising innovative prototypes into experiments, and promptly terminating projects that fail to achieve expectations. To incentivize a disciplined approach to rapidly identify, incorporate, and execute projects largely through the Military Services, the Department will fund approved Service projects for the upcoming fiscal year out of the Department reserves. Funding decisions on additional funds in follow-on years for new projects, and funding decrements for project terminations will be incorporated in budgets annually based on emerging requirements and periodic assessments of project viability. Services will execute these funds under oversight of the OSD in a manner consistent with the experimentation scenario for which individual projects were selected. Service experimentation outcomes will be designed to validate required capabilities enabling the JWC by evaluating and integrating prototyped technologies in operationally relevant, multi-domain environments. Experimentation results will facilitate Joint Staff analysis in the evaluation of the Joint Warfighting Concept, assist the Joint Requirements Oversight Counsel in requirements determination, and inform the Deputy's Management Action Group to make budget decisions that effect changes throughout the Department.</p> <p><b>FY 2023 Plans:</b><br/>RDER efforts include the following efforts: VADR, TURUL, Global Thunder, and RDER Classified Effort # 2 (further details available on the appropriate forum).<br/>                     - VADR: will develop and flight demonstrate precision RF synchronization open-architecture prototypes for enhanced sensing and disruptive electromagnetic spectrum (EMS) capability. VADR expands on methods developed under the Retroactive Arrays for Coherent Transmission (ReACT) program (previously budgeted in PE 0603766E Network Centric Warfare Technology) to advance EMS dominance. Specific plans for FY 2023 include developing advanced hardware and waveforms to raise the technology readiness level (TRL) of this disruptive EMS capability. Design and purchase advanced hardware system; Mature methods for acquiring threat radar waveforms; Mature and analyze enhanced waveforms.<br/>                     - Turul: will deliver a minimum viable product software that will enable the warfighter to make requests and receive information from a variety of commercial space providers. These data products will be utilized to automatically generate information products that the warfighter can leverage in their find, fix, track, target, engage, and assess (F2T2EA) workflows. In FY 2023 TURUL will deliver graphical User Interface accessible unclassified via the cloud that the warfighter can utilize to task, collect, and view data products from commercial space sensors.<br/>                     - Global Thunder: will prototype, integrate and perform operational experimentation on advanced satellite</p> | -              | 0.000          | 154.300        |



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|  |                         |
|--|-------------------------|
| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604025F / <i>Rapid Defense Experimentation Reserve (RDER)</i> |
|--|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p>communications terminals for selected aircraft. The terminals will follow the Global Lightning design architecture with the capability to dynamically switch between communications spacecraft in low-Earth orbit (LEO, 500-km), medium-Earth orbit (MEO, 8,000 km), and geosynchronous orbit (GEO, 36,000 km), utilizing a multi-modem design that allows connectivity to both commercial and protected government satellites. Global Thunder FY 2023 efforts include receiver terminal prototyping and initial aircraft integration.</p> <p>Due to Congressionally mandated PE creation timing and database locking the FY 2023 funds for RDER were mistakenly placed into Tech Transition PE (0604858F) Prototyping BPAC (645351). This issue is known and will be addressed during tech adjust.</p> <p><b>FY 2024 Plans:</b><br/>RDER Efforts for 24-1:</p> <ul style="list-style-type: none"> <li>- Extended Range Hybrid eVTOL: Leverages Agility Prime government / industry partnership developing hybrid eVTOL aircraft with increased range (500 mi).</li> <li>- Aerial Port of the Future APOF</li> <li>- Large Area Runway Repair Gone Expeditionary (LAARGE): Large crater runway repair using nanomaterials.</li> <li>- Rapid Infrastructure Deployment: Rapidly deployable "base" that leverages alternative energy sources, secure comms, and modular structures.</li> <li>- Amphibious Contested Logistics Solutions: C-130 modification to enable takeoff and landing from water and amphibious employment of SEAD/DEAD, comms/C2 and logistics</li> <li>- Software Programmable Agile RF Tactical Aerial Network (SPARTAN2): Enhance connectivity, agility, and robustness of localized comm networks with low-cost wideband electronically-steered antennae for SPARTAN Software Radio with air and ground configurations and new beacon discovery waveform.</li> <li>- Classified Projects (more information available in appropriate forums)</li> </ul> <p>RDER Efforts for 24-2:</p> <ul style="list-style-type: none"> <li>- Control Systems for Coordinated Operations (CoSyCo): Validated and rapidly field-able datalinks and C2 networks, along with CONOPS and TTPs, for coordinated Autonomous Collaborative Platform (ACP) operations. 10M or possibly</li> <li>- LTAMDS-V: Low cost (lower than 3DELRR or LTAMDS), smaller form factor sensor with extended range allowing longer distance engagements than fielded Sentinels. Leverages significant Raytheon investment designed to be smaller version of Army LTAMDS.</li> <li>- Joint Tactical Edge Network (JTEN): Persistent information sharing across dissimilar message formats and heterogeneous data links (both IP and non-IP). JTEN architecture modular, non-proprietary, and based on Open Mission Systems (OMS) and Universal Command and Control (UCI) standards</li> </ul> |                |                |                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604025F / <i>Rapid Defense Experimentation Reserve (RDER)</i> |
|--|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | FY 2022 | FY 2023 | FY 2024 |
|---|---------|---------|---------|
| - Low Cost Threat Emitter (LCTE): Tactical, multi-band, SDR-based threat emissions simulator (threat emitter) Portable, programmable, disposable, modular and 5G connected<br>- (GLADIATR) Rapidly Deployable Hypervelocity Gun Weapon System: Cost curve flipping (100k per shot) counter cruise missile system (highly mobile, C-130 transportable) More tactical config, expanded magazine, upgraded gun and fire control; capable of addressing larger threat space than existing systems<br>- Classified Projects (more information available in appropriate forums) |         |         |         |
| <b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b>   |         |         |         |
| FY 2024 funding increased compared to FY 2023 by \$154.300 million (based on funding in Program Element 0604858F, Tech Transition Program) in support of Air Force RDER activities, and per Congressional Direction to break out into independent program element.  |         |         |         |
| <b>Accomplishments/Planned Programs Subtotals</b>   | -       | 0.000   | 154.300 |

| <b>D. Other Program Funding Summary (\$ in Millions)</b> |                |                |                               |                              |                                |                |                |                |                |                         |                          |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-------------------------|--------------------------|
| <u>Line Item</u>   | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To Complete</u> | <u>Total Cost</u>        |
| • RDTE 04 0604858F:<br><i>Tech Transition Program</i>    | -              | 64.000         | -                             | -                            | -                              | -              | -              | -              | -              | -                       | Continuing<br>Continuing |

**Remarks**

**E. Acquisition Strategy**

Various

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604025F / Rapid Defense Experimentation Reserve (RDER) | <b>Project (Number/Name)</b><br>640858 / AFWERX Prime |
|--|--|---|

| <b>Product Development (\$ in Millions)</b>                                  |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| RDER 24-1 Extended Range Hybrid eVTOL  | Various                | Various : TBD                  | -           | -       |            | -       |            | 20.000       | Dec 2023   | -           |            | 20.000        | Continuing       | Continuing | -                        |
| RDER 24-1 Rapid Infrastructure Deployment                                    | Various                | Various : TBD                  | -           | -       |            | -       |            | 6.300        | Oct 2023   | -           |            | 6.300         | Continuing       | Continuing | -                        |
| RDER 24-1 Amphibious Contested Logistics Solutions                           | Various                | Various : TBD                  | -           | -       |            | -       |            | 20.000       | Oct 2023   | -           |            | 20.000        | Continuing       | Continuing | -                        |
| RDER 24-1 Software Programmable Agile RF Tactical Aerial Network (SPARTAN 2) | Various                | Various : TBD                  | -           | -       |            | -       |            | 6.700        | Dec 2023   | -           |            | 6.700         | Continuing       | Continuing | -                        |
| RDER 24-1 Classified   | Various                | Various : TBD                  | -           | -       |            | -       |            | 25.000       | Oct 2023   | -           |            | 25.000        | Continuing       | Continuing | -                        |
| RDER 24- 1 Aerial-Port of the Future   | Various                | Various : TBD                  | -           | -       |            | -       |            | 1.500        | Dec 2023   | -           |            | 1.500         | Continuing       | Continuing | -                        |
| RDER 24 -2 LTAMDS V  | Various                | Various : TBD                  | -           | -       |            | -       |            | 17.000       | Nov 2023   | -           |            | 17.000        | Continuing       | Continuing | -                        |
| RDER 24-2 Joint Tactical Edge Network (JTEN)                                 | Various                | Various : TBD                  | -           | -       |            | -       |            | 13.000       | Oct 2023   | -           |            | 13.000        | Continuing       | Continuing | -                        |
| RDER 24-2 GLADIATR Rapidly Deployable Hypervelocity Gun Weapon System        | Various                | Various : TBD                  | -           | -       |            | -       |            | 20.000       | Dec 2023   | -           |            | 20.000        | Continuing       | Continuing | -                        |
| RDER 24-2 Low Cost Threat Emitter  | Various                | Various : TBD                  | -           | -       |            | -       |            | 4.800        | Dec 2023   | -           |            | 4.800         | Continuing       | Continuing | -                        |
| RDER 24-2 Classified   | Various                | Various : TBD                  | -           | -       |            | -       |            | 10.000       | Oct 2023   | -           |            | 10.000        | Continuing       | Continuing | -                        |
| RDER 24-2 Control Systems for Coordinated Operations (CoSyCo)                | Various                | Various : TBD                  | -           | -       |            | -       |            | 10.000       | Dec 2023   | -           |            | 10.000        | Continuing       | Continuing | -                        |
| <b>Subtotal</b>  |                        |                                | -           | -       |            | -       |            | 154.300      |            | -           |            | 154.300       | Continuing       | Continuing | N/A                      |
| <b>Project Cost Totals</b>   |                        |                                | -           | -       |            | -       |            | 154.300      |            | -           |            | 154.300       | Continuing       | Continuing | N/A                      |

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|--|--------------------|----------------|---|---------------------|--------------------|--|-------------------------|-------------------|---------------------------------|--|
| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2024 Air Force |                    |                |   |                     |                    |  | <b>Date:</b> March 2023 |                   |                                 |  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                       |                    |                | <b>R-1 Program Element (Number/Name)</b><br>PE 0604025F / <i>Rapid Defense Experimentation Reserve (RDER)</i> |                     |                    | <b>Project (Number/Name)</b><br>640858 / <i>AFWERX Prime</i> |                         |                   |                                 |  |
|  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b>  | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b>   | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |  |

Remarks

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023                                      |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604025F / <i>Rapid Defense Experimentation Reserve (RDER)</i> | <b>Project (Number/Name)</b><br>640858 / <i>AFWERX Prime</i> |

|  | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|  | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |
| <b><i>Rapid Defense Experimentation Reserve</i></b>    |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| RDER   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Extended Range Hybrid eVTOL                            |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Aerial Port of the Future                              |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Large Area Runway Repair Gone Expeditionary            |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Rapid Infrastructure Deployment                        |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Amphibious Contested Logistics Solutions               |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Software Programmable Agile RF Tactical Aerial Network |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Classified   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Control Systems for Coordinated Operations             |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| LTAMDS V Low Cost                                      |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Joint Tactical Edge Network                            |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Low Cost Threat Emitter                                |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023                                      |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604025F / <i>Rapid Defense Experimentation Reserve (RDER)</i> | <b>Project (Number/Name)</b><br>640858 / <i>AFWERX Prime</i> |

Schedule Details

| Events by Sub Project                                  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Rapid Defense Experimentation Reserve</i></b>    |         |      |         |      |
| RDER   | 1       | 2024 | 4       | 2024 |
| Extended Range Hybrid eVTOL                            | 1       | 2024 | 4       | 2024 |
| Aerial Port of the Future                              | 1       | 2024 | 4       | 2024 |
| Large Area Runway Repair Gone Expeditionary            | 1       | 2024 | 4       | 2024 |
| Rapid Infrastructure Deployment                        | 1       | 2024 | 4       | 2024 |
| Amphibious Contested Logistics Solutions               | 1       | 2024 | 4       | 2024 |
| Software Programmable Agile RF Tactical Aerial Network | 1       | 2024 | 4       | 2024 |
| Classified   | 1       | 2024 | 4       | 2024 |
| Control Systems for Coordinated Operations             | 1       | 2024 | 4       | 2024 |
| LTAMDS V Low Cost                                      | 1       | 2024 | 4       | 2024 |
| Joint Tactical Edge Network                            | 1       | 2024 | 4       | 2024 |
| Low Cost Threat Emitter                                | 1       | 2024 | 4       | 2024 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |  |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604032F / <i>Directed Energy Prototyping</i> |
|--|--|

| COST (\$ in Millions)         | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|-------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element         | -           | 15.498  | 4.269   | 1.246        | 0.000       | 1.246         | 4.106   | 4.209   | 4.294   | 4.449   | 0.000            | 38.071     |
| 640200: <i>DE Prototyping</i> | -           | 15.498  | 4.269   | 1.246        | 0.000       | 1.246         | 4.106   | 4.209   | 4.294   | 4.449   | 0.000            | 38.071     |
| Quantity of RDT&E Articles    | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**A. Mission Description and Budget Item Justification**

The Air Force Life Cycle Management Center, Architecture and Integration Directorate Directed Energy Prototyping Program acquires and evaluates prototype high energy laser, high power microwave and/or other electromagnetic radiation or particle beam technologies as a future integral component of the Airbase defense mission. The Directed Energy Prototyping Program bridges the gap between lab based technology demonstration under a controlled environment, and demonstration of a system in realistic environments with the intent of establishing successful acquisition, and operation or operational capability implementation.

This prototyping effort enables the ability to integrate the directed energy prototype systems with other operational systems required for the mission (e.g. radar, command and control, etc.), conduct test and evaluation activities, and mature emerging directed energy technology systems based on prototyping activities to enable rapid fielding to the warfighter. The Directed Energy Prototyping Program allows acquisition program managers (capability developers) and warfighters (capability recipients and end users) to prototype, integrate, evaluate, and demonstrate candidate weapon technologies and assess them in an operational environment with the intent of iteratively maturing directed energy technologies to a production representative design.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In Prior Years \$0.852M was expended for civilian pay expenses in this program element, and in CY 2022 \$0.973M is forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P) | <b>R-1 Program Element (Number/Name)</b><br>PE 0604032F I Directed Energy Prototyping |
|---|---|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 15.820         | 4.269          | 4.080               | 0.000              | 4.080                |
| Current President's Budget                        | 15.498         | 4.269          | 1.246               | 0.000              | 1.246                |
| Total Adjustments                                 | -0.322         | 0.000          | -2.834              | 0.000              | -2.834               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -0.322         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | -2.834              | 0.000              | -2.834               |

**Change Summary Explanation**

FY 2024 decrease due to higher Air Force priorities.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| <b>Title:</b> Directed Energy Capabilities  | 15.498         | 4.269          | 1.246               | 0.000              | 1.246                |
| <b>Description:</b> Prototypes and evaluates Directed energy weapon technologies for Airbase Defense against unmanned aerial vehicles and cruise missiles, Precision Strike against electronic and conventional targets and Aircraft Defense against incoming threats.  |                |                |                     |                    |                      |
| <b>FY 2023 Plans:</b><br>Initiate government capability/ field effectiveness testing. Complete acquisition of contracted high energy laser counter small Unmanned aerial system. Continue to work with Air Force futures, the Joint counter small Unmanned Ariel System Office, and others to refine requirements and architecture for defense of critical infrastructure and base defense. Continue coordinating with major/combatant commands to incorporate new directed energy prototypes into integration and testing. Initiate test data analyze to determine reliability, manufacturability, maintainability and mission effectiveness. In conjunction with major/combatant commands, determine if these systems are ready for another round of improvement for transition to a program of record. |                |                |                     |                    |                      |
| <b>FY 2024 Base Plans:</b><br>Continue field effectiveness testing of Directed Energy Counter Unmanned Aerial System effectors to OCONUS locations. Continue to work with Air Force futures, the Joint counter small Unmanned Ariel System Office, and others to refine requirements and architecture for defense of critical infrastructure and base defense. Continue   |                |                |                     |                    |                      |



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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|  |  |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604032F / <i>Directed Energy Prototyping</i> |
|--|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|--|---------|---------|--------------|-------------|---------------|
| coordinating with major/combatant commands to incorporate new directed energy prototypes into integration and testing. Continue test data and initiate fielded data analysis to determine reliability, manufacturability, maintainability and mission effectiveness. In conjunction with major/combatant commands, determine if these systems are ready for another round of improvement for transition to a program of record.<br><br><b>FY 2024 OCO Plans:</b><br>N/A<br><br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Decrease of \$3.023M from FY 2023 to FY 2024 reflects completion of testing activities with current generation of counter-Unmanned Aerial System Prototypes |         |         |              |             |               |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 15.498  | 4.269   | 1.246        | 0.000       | 1.246         |

**D. Other Program Funding Summary (\$ in Millions)**  
N/A

**Remarks**  
Not Applicable

**E. Acquisition Strategy**  
 During FY 2020, the Air Force Life Cycle Management Center, Architecture and Integration Directorate, Wright-Patterson Air Force Base, Ohio conducted a source selection evaluating eight (8) ground-based Counter unmanned Aerial Systems for prototype development. In Fourth Quarter FY 2020, three (3) vendors were selected for award using Other Transaction Authority based on a best value determination with Technical being the most important factor. During FY 2021, these three (3) prototypes were selected based on operational capability/suitability assessment supporting the Airbase defense mission. In FY 2022, a high energy laser system was transferred into the program from AFRL/RS 0604858F. In FY 2023, a congressional interest item added an upgraded unit that will be deliver in early FY 2024. Acceptance testing and characterization test will occur from FY 2022 through early FY 2023. Prototypes will undergo field assessment in FY 2023 and FY 2024 at OCONUS locations. In FY 2023 with potential updates in FY 2024, an acquisition readiness assessment will be made while documenting design, sustainment, and initial operational concepts of operation information to inform a production representative unit in FY 2025. This will lead to a decision for a program of record in FY 2027. The program will also seek to leverage industry and sister service prototypes for field evaluation and acquisition readiness assessments in the best interest of the Air Force.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |  |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604032F / <i>Directed Energy Prototyping</i> | <b>Project (Number/Name)</b><br>640200 / <i>DE Prototyping</i> |
|--|--|--|

| <b>Product Development (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| High Energy Laser Prototypes                | C/FFP                  | Various : Various              | -           | 6.800   | Mar 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| High Power Microwave Prototypes             | C/CPAF                 | Not specified. : Various       | -           | 4.395   | Jul 2022   | 1.000   | Jun 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 11.195  |            | 1.000   |            | -            |            | -           |            | -             | Continuing       | Continuing | N/A                      |

**Remarks**  
Other Transactions Authorities used for High Energy Laser Prototype contracts.

| <b>Test and Evaluation (\$ in Millions)</b>                           |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Directed Energy C-UAS Prototype Technical Maturation and Improvements | Various                | Various : Various              | -           | 2.697   | Apr 2022   | 2.000   | Apr 2023   | 0.596        | Jan 2024   | -           |            | 0.596         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>   |                        |                                | -           | 2.697   |            | 2.000   |            | 0.596        |            | -           |            | 0.596         | Continuing       | Continuing | N/A                      |

| <b>Management Services (\$ in Millions)</b>        |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                                 | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Directed Energy Prototyping Program Administration | Various                | AFLCMC : Various               | -           | 0.678   | Oct 2021   | 0.419   | Oct 2022   | 0.650        | Oct 2023   | -           |            | 0.650         | Continuing       | Continuing | -                        |
| Direct Cite Authority                              | TBD                    | AFLCMC : Various               | -           | 0.928   | Oct 2021   | 0.850   | Oct 2022   | 0.000        | Oct 2023   | -           |            | 0.000         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                                    |                        |                                | -           | 1.606   |            | 1.269   |            | 0.650        |            | -           |            | 0.650         | Continuing       | Continuing | N/A                      |

|                            |  |  | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|--|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> |  |  | -           | 15.498  | 4.269   | 1.246        | -           | 1.246         | Continuing       | Continuing | N/A                      |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |  |
|--|--|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604032F / <i>Directed Energy Prototyping</i> | <b>Project (Number/Name)</b><br>640200 / <i>DE Prototyping</i> |
|--|--|--|

|  | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|

**Remarks**  
 FY 2022 - FY 2028 will concentrate on prototyping and maturing high energy laser and high power microwave systems for base area defense in preparation for transition to program of record. The program makes use of Other Transactional Authorities (OTA). Continued support will be provided by the Directed Energy Transition Management Office, Kirtland Air Force Base, New Mexico.

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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |  |  |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604032F / <i>Directed Energy Prototyping</i> | <b>Project (Number/Name)</b><br>640200 / <i>DE Prototyping</i> |
|--|--|--|

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   |  |
|---|--|
| <b>Field Suitability Assessment</b>   |  |
| Government assessment of suitability and effectiveness for field operations   | ████████████████████   |
| <b>Directed Energy Counter-Unmanned System (C-UAS) technical maturation</b>   |  |
| Incremental improvements to of Directed Energy C-UAS Prototype systems to provide increased Airbase defense c-UAS capability to warfighter  | ██   |
| <b>Directed Energy Base Defense technical maturation</b>  |  |
| Mature Directed Energy technologies to enhance the Airbase defense layered architecture. Increasing defensive capabilities to include cruise missiles and other airborne threats. | ██ |
| <b>Field Assessments</b>  |  |
| Government assessment of suitability and effectiveness for acquired c-UAS prototype systems   | ██ |
| <b>Directed Energy Acquisition Readiness Assessment</b>   |  |
| Analyze field data to determine reliability, maintainability and suitability for transition to program of record  | ██ |

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2024 Air Force **Date:** March 2023

|  |  |  |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604032F / <i>Directed Energy Prototyping</i> | <b>Project (Number/Name)</b><br>640200 / <i>DE Prototyping</i> |
|--|--|--|

Schedule Details

| Events by Sub Project   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b>Field Suitability Assessment</b>   |         |      |         |      |
| Government assessment of suitability and effectiveness for field operations   | 1       | 2023 | 2       | 2024 |
| <b>Directed Energy Counter-Unmanned System (C-UAS) technical maturation</b>   |         |      |         |      |
| Incremental improvements to of Directed Energy C-UAS Prototype systems to provide increased Airbase defense c-UAS capability to warfighter  | 1       | 2022 | 1       | 2024 |
| <b>Directed Energy Base Defense technical maturation</b>  |         |      |         |      |
| Mature Directed Energy technologies to enhance the Airbase defense layered architecture. Increasing defensive capabilities to include cruise missiles and other airborne threats. | 4       | 2023 | 4       | 2027 |
| <b>Field Assessments</b>  |         |      |         |      |
| Government assessment of suitability and effectiveness for acquired c-UAS prototype systems   | 3       | 2023 | 4       | 2027 |
| <b>Directed Energy Acquisition Readiness Assessment</b>   |         |      |         |      |
| Analyze field data to determine reliability, maintainability and suitability for transition to program of record  | 1       | 2023 | 4       | 2027 |

**Note**

FY 2022 - FY 2028 will concentrate on maturing high energy laser and high power microwave systems for base area defense in preparation for transition of prototype weapon systems to program(s) of record. The program makes use of Other Transactional Authorities (OTA). Continued support will be provided by the Directed Energy Transition Management Office, Kirtland Air Force Base, New Mexico.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |  |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604033F / <i>Hypersonics Prototyping</i> |
|--|--|

| COST (\$ in Millions)                                    | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                                    | -           | 308.089 | 114.981 | 150.340      | 0.000       | 150.340       | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 573.410    |
| 643882: <i>Air-Launched Rapid Response Weapon (ARRW)</i> | -           | 308.089 | 114.981 | 150.340      | 0.000       | 150.340       | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 573.410    |

**Note**

In FY 2022, PE 0101101F, Project ARRW00/AGM-183A Air-Launched Rapid Response Weapon, efforts were transferred to PE 0604033F, Hypersonics Prototyping, Project 643882, Air-Launched Rapid Response Weapon, in order to mitigate the testing shortfall.

In FY 2024, HACM funding under PE0604033F, Project 643883 Hypersonic Attack Cruise Missile, efforts were transferred to PE 0604183F, Project 644183 Hypersonic Attack Cruise Missile.

**A. Mission Description and Budget Item Justification**

The Hypersonics Prototyping program enables integration and demonstration of emerging hypersonic technologies in an operational or operational-like environment to capitalize on successful laboratory hypersonic research and development efforts with high warfighter priority. Integration and demonstration of hypersonic prototypes also allows leadership to make informed strategy and resource decisions for future programs based on the results of such hypersonic prototype demonstrations.

Hypersonic Prototyping enables a key linkage between research and development in the lab and fielding advanced technologies to the warfighter. Under this program, Air-Launched Rapid Response Weapon (ARRW) will accelerate the technology transfer of hypersonic technologies to enable a responsive, long range strike capability.

Throughout this program element will be future hypersonic development, which will incubate and mature new technologies, processes, and resources for the development and demonstration of hypersonic technology including, but not limited to, infrastructure advancements, digital engineering, open systems architecture, modeling and simulation, analytics, and high performance computing environments.

Investing in hypersonics development enables the collection of valuable data, builds capacity and capability, allows hypersonic programs to leverage and build upon each other, and projects the overall technology forward.

The total cost of the ARRW Rapid Prototyping Middle Tier of Acquisition effort is 1,649.19 million, including RDT&E. ARRW is fully funded across the Future Years Defense Program.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2022 3.729 million was expended for civilian pay expenses in this program element, in FY 2023 4.332 million is forecasted for civilian pay expenses.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|  |  |
|--|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604033F / <i>Hypersonics Prototyping</i> |
|--|--|

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 318.687        | 431.868        | 270.240             | 0.000              | 270.240              |
| Current President's Budget                        | 308.089        | 114.981        | 150.340             | 0.000              | 150.340              |
| Total Adjustments                                 | -10.598        | -316.887       | -119.900            | 0.000              | -119.900             |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | -316.887       |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -10.598        | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | -119.900            | 0.000              | -119.900             |

**Change Summary Explanation**

In FY 2022, funding decreased \$10.598M for SIBR in PE 0604033, Project 643882 Air-Launched Rapid Response Weapon.

In FY 2023, \$316.887M from PE0604033F, Project 643883 Hypersonic Attack Cruise Missile, Congressional Direct transfer to PE 0604183F, Project 644183 Hypersonic Attack Cruise Missile.

In FY 2024, \$270.240M from PE0604033F, Project 643883 Hypersonic Attack Cruise Missile, transferred to PE 0604183F, Project 644183 Hypersonic Attack Cruise Missile and funding increased \$150.340M in Project 643882 Air-Launched Rapid Response Weapon to complete flight testing and rapid prototyping program.



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|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |  |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0604033F / <i>Hypersonics Prototyping</i> |                      |                |                | <b>Project (Number/Name)</b><br>643882 / <i>Air-Launched Rapid Response Weapon (ARRW)</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>   | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 643882: <i>Air-Launched Rapid Response Weapon (ARRW)</i>                | -                  | 308.089        | 114.981        | 150.340             | 0.000  | 150.340              | 0.000          | 0.000          | 0.000   | 0.000                   | 0.000                   | 573.410           |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -  | -                    | -              | -              | -   | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

The Air-Launched Rapid Response Weapon (ARRW) project integrates Air Force and DARPA enabled system technologies into a prototype that will demonstrate the viability of this concept to be fielded as a long range prompt strike capability. ARRW will design, develop, manufacture, and test, a number of prototype vehicles to inform decisions concerning ARRW acquisition and production.

Future hypersonics development will incubate and mature new technology, processes, and resources for the development and demonstration of hypersonic technology including, but not limited to, infrastructure advancements, digital engineering, open systems architecture, modeling and simulation, analytics, and high performance computing environments.

Investing in hypersonics development will enable the collection of valuable data, building of capacity and capability, allowing hypersonic programs to leverage and build upon each other, and project the overall technology forward.

In FY 2022, PE 0101101F, Project ARRW00/AGM-183A Air-Launched Rapid Response Weapon, efforts were transferred to PE 0604033F, Hypersonics Prototyping, Project 643882, Air-Launched Rapid Response Weapon, in order to mitigate the testing shortfall.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2022 \$3.729 million was expended for civilian pay expenses in this program element, FY 2023 \$4.332 million is forecasted for civilian pay expenses in this program element.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <b>Title:</b> Air Launched Rapid Response Weapon (ARRW)  | 308.089        | 114.981        | 150.340        |
| <b>Description:</b> Integrates Air Force and DARPA enabled system technologies into a prototype that will demonstrate the viability of this concept to be fielded as a long range prompt strike capability. ARRW will design, develop, manufacture, and test, a number of prototype vehicles to inform decisions concerning ARRW acquisition, production, and leave behind capability. |                |                |                |
| <b>FY 2023 Plans:</b>  |                |                |                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604033F / <i>Hypersonics Prototyping</i> | <b>Project (Number/Name)</b><br>643882 / <i>Air-Launched Rapid Response Weapon (ARRW)</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| Continued flight test of AUR test missiles, Production Readiness Reviews (PRRs), and Early Operational Capability (EOC) activities.  |                |                |                |
| <b><i>FY 2024 Plans:</i></b><br>Complete the rapid prototyping program and flight testing. The testing will enable ARRW to collect valuable data, build capacity and capability, allow hypersonics programs to leverage and build upon each other, and project the overall technology forward. Additionally, ARRW will complete contract closeout, finalize documentation and analysis, and activities to support the leave behind capability. |                |                |                |
| <b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br>Funding increased to complete the rapid prototyping program and flight testing.   |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 308.089        | 114.981        | 150.340        |

| <b>C. Other Program Funding Summary (\$ in Millions)</b> |                |                |                               |                              |                                |                |                |                |                |                         |                   |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| <u>Line Item</u>   | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
| • MPAF 02 0101101F: N/A                                  | 0.000          | 0.000          | 0.000                         | -                            | 0.000                          | 0.000          | 0.000          | 0.000          | -              | 0.000                   | 0.000             |

**Remarks**

**D. Acquisition Strategy**

Acquisition Decision Memorandum (signed 3 May 2018) designated Air-Launched Rapid Response Weapon (ARRW) as Section 804 Rapid Prototyping Program.

The Air Force awarded in August 2018 an undefinitized contract in order to complete a critical design review and procure all long lead parts and materials. The ARRW Program definitized this contract December 2019 to include the entire RDT&E effort (through the end of flight test). The cost type contract includes schedule incentives. The government agency responsible for managing this program is the Air Force Life Cycle Management Center, Armament Directorate, Eglin AFB, FL.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604033F / <i>Hypersonics Prototyping</i> | <b>Project (Number/Name)</b><br>643882 / <i>Air-Launched Rapid Response Weapon (ARRW)</i> |
|--|--|---|

| <b>Product Development (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| ARRW - Contract                             | C/CPFF                 | LMCO: Various : Various        | -           | 217.703 | Feb 2022   | 43.076  | Dec 2022   | 91.318       | Dec 2023   | -           |            | 91.318        | 0.000            | 352.097    | -                        |
| ARRW - Mission Planning                     | C/CPFF                 | Boeing: Tapestry : TBD         | -           | 0.944   | Mar 2022   | 0.856   | Dec 2022   | 0.800        | Dec 2023   | -           |            | 0.800         | 0.000            | 2.600      | -                        |
| ARRW - Aircraft Integration                 | Various                | Various : Various              | -           | 10.572  | Jan 2022   | 0.640   | Dec 2022   | -            |            | -           |            | -             | 0.000            | 11.212     | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 229.219 |            | 44.572  |            | 92.118       |            | -           |            | 92.118        | 0.000            | 365.909    | N/A                      |

| <b>Support (\$ in Millions)</b>    |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|------------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                 | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Direct Cite Authority Civilian Pay | Allot                  | Not specified. : TBD           | -           | 3.729   | Oct 2021   | 4.332   | Oct 2022   | 4.967        | Oct 2023   | -           |            | 4.967         | 0.000            | 13.028     | -                        |
| <b>Subtotal</b>                    |                        |                                | -           | 3.729   |            | 4.332   |            | 4.967        |            | -           |            | 4.967         | 0.000            | 13.028     | N/A                      |

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| ARRW - Government Test                      | Various                | Various : TBD                  | -           | 66.978  | May 2022   | 56.200  | Dec 2022   | 45.340       | Dec 2023   | -           |            | 45.340        | 0.000            | 168.518    | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 66.978  |            | 56.200  |            | 45.340       |            | -           |            | 45.340        | 0.000            | 168.518    | N/A                      |

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| ARRW - Program Management Administration    | Various                | Multiple : TBD                 | -           | 8.163   | Sep 2022   | 9.877   | Oct 2022   | 7.915        | Oct 2023   | -           |            | 7.915         | 0.000            | 25.955     | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 8.163   |            | 9.877   |            | 7.915        |            | -           |            | 7.915         | 0.000            | 25.955     | N/A                      |

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|--|--|--|--|--|--|--|--|--|--|---|-------------------------|--|--|
| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2024 Air Force</b> |  |  |  |  |  |  |  |  |  |   | <b>Date:</b> March 2023 |  |  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                       |  |  |  |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604033F / <i>Hypersonics Prototyping</i> |  |  |  |  | <b>Project (Number/Name)</b><br>643882 / <i>Air-Launched Rapid Response Weapon (ARRW)</i> |                         |  |  |

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |

**Remarks**  
Includes A&AS support requirements plus TDY, and office supplies.

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | -           | 308.089 | 114.981 | 150.340      | -           | 150.340       | 0.000            | 573.410    | N/A                      |

**Remarks**  
Additional details on Hypersonics prototyping concepts can be provided in the appropriate forum.

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604033F / <i>Hypersonics Prototyping</i> | <b>Project (Number/Name)</b><br>643882 / <i>Air-Launched Rapid Response Weapon (ARRW)</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

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| <b><i>Air Launched Rapid Response Weapon (ARRW)</i></b> |  |
| ARRW- Contract  |  |
| Flight Tests  |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604033F / <i>Hypersonics Prototyping</i> | <b>Project (Number/Name)</b><br>643882 / <i>Air-Launched Rapid Response Weapon (ARRW)</i> |

Schedule Details

| Events by Sub Project                                   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Air Launched Rapid Response Weapon (ARRW)</i></b> |         |      |         |      |
| ARRW- Contract  | 1       | 2022 | 1       | 2025 |
| Flight Tests  | 1       | 2022 | 3       | 2024 |

**Note**  
Further schedule details can be provided in the appropriate forum.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604183F / <i>Hypersonics Prototyping - Hypersonic Attack Cruise Missile (HACM)</i> |
|--|--|

| COST (\$ in Millions)                                  | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                                  | -           | 183.889 | 423.359 | 381.528      | 0.000       | 381.528       | 557.138 | 451.667 | 277.505 | 205.269 | 0.000            | 2,480.355  |
| 644183: <i>Hypersonic Attack Cruise Missile (HACM)</i> | -           | 183.889 | 423.359 | 381.528      | 0.000       | 381.528       | 557.138 | 451.667 | 277.505 | 205.269 | 0.000            | 2,480.355  |
| Quantity of RDT&E Articles                             | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**A. Mission Description and Budget Item Justification**

Hypersonic Attack Cruise Missile (HACM) is a hypersonic air-launched weapon that will enable the U.S. to hold fixed, high value, time-sensitive targets at risk in contested environments from standoff distances. The Air Force is developing an air-launched boost-glide hypersonic weapon - the AGM-183A Air-launched Rapid Response Weapon (ARRW) - as well as the air-breathing HACM capability. ARRW and HACM are complementary. HACM offers a smaller form factor than ARRW for fighter integration and expanded bomber capacity, and thereby imposes cost on potential adversaries with additional complexity with vastly different trajectories than boost glide.

The program leverages Southern Cross Integrated Flight Research Experiment (SCIFiRE) investment, a bi-lateral U.S./Australian air-breathing hypersonic cruise missile prototyping effort which is a prelude to HACM. The HACM program will integrate advanced technologies and mature designs into an All-Up Round (AUR) prototype that will demonstrate a field-able long range prompt strike capability. HACM will design, develop, manufacture, and test (testing will occur in both the U.S. and Australia) a number of prototype vehicles to inform future HACM acquisition decisions. HACM will mature hypersonic technologies and processes to include: subsystem integration, infrastructure and testing advancements, Digital Engineering (DE), Weapons Open Systems Architecture (WOSA), modeling and simulation, analytics, and high performance computing environments.

Implements Digital Acquisition tenants of Open, Agile, and Digital; builds and establishes industrial base innovation around the program's enterprise for modularity and adaptability for the life cycle of the weapons system. Leverages common component development, in collaboration with other weapon systems, to reduce redundant costs between systems with similar subsystems requirements. Invests in analytical, data management, digital environments, networks, facilities, and security infrastructure upgrades supporting development of this program's capabilities, while leveraging DoD and DAF enterprise IT solutions. Expands program office staff, facilities, and security infrastructure to support the required classification levels for this program's activities. Engages with DoD, DAF, and industry stakeholders to refine threat analysis, refine inventory requirements, and plan upgrade requirements. Capitalizes on and incorporates successful laboratory research and development efforts applicable to this program's capability.

The total cost of the HACM Middle Tier of Acquisition effort is 1901.59 million, including RDT&E. The HACM is fully funded across the Future Years Defense Program.

This PE is not a new start. HACM was previously listed under both 0604033F/BPAC 643883 and PE 0604183F/BPAC 644183 and was consolidated to this PE (0604183F/BPAC 644183).

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604183F / <i>Hypersonics Prototyping - Hypersonic Attack Cruise Missile (HACM)</i> |
|--|--|

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2022 1.151M was expensed for civilian pay expenses in this program element, and in FY 2023 8.208M, and FY 2024 8.381M is forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 190.116        | 144.891        | 117.282             | 0.000              | 117.282              |
| Current President's Budget                        | 183.889        | 423.359        | 381.528             | 0.000              | 381.528              |
| Total Adjustments                                 | -6.227         | 278.468        | 264.246             | 0.000              | 264.246              |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -6.227         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 278.468        | 264.246             | 0.000              | 264.246              |

**Change Summary Explanation**

HACM was listed under PE 0604183F/BPAC 644183 in FY 2022 and in FY 2023 0604033F/BPAC 643883 and 0604183F/BPAC 644183. Funding was consolidated to this PE (0604183F/ BPAC 644183) during the FY 2023 Omnibus Appropriation Bill.

FY23 \$316.887M tech adjustment from PE 0604033F/BPAC 643883, -\$38.000M Mark in FY23 Omnibus Appropriation Act, \$0.419M FFRDC reduction.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <b>Title:</b> HACM Development   | 152.714        | 370.791        | 303.923        |
| <b>Description:</b> A single performer purchasing hardware and completing a critical design, and initial long-lead flight test asset hardware, to include aircraft integration assets.   |                |                |                |
| <b>FY 2023 Plans:</b><br>Effort will utilize a single industry performer to build upon preliminary design activities and mature HACM to critical design. The effort will continue model-based engineering activities and the DE ecosystem to complete critical design analysis, design |                |                |                |



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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force  |  | <b>Date:</b> March 2023  |                |                |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>  |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604183F / <i>Hypersonics Prototyping - Hypersonic Attack Cruise Missile (HACM)</i> |                |                |
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   |  | <b>FY 2022</b>   | <b>FY 2023</b> | <b>FY 2024</b> |
| <p>verification testing, systems integration, lab development, initial qualification testing, initial flight test hardware orders, aircraft integration assets, and WOSA compliance evaluation.</p> <p><b>FY 2024 Plans:</b><br/>Effort will utilize a single industry performer to build upon preliminary design activities and mature HACM to critical design. The effort will continue model-based engineering activities and the DE ecosystem to complete critical design analysis, design verification testing, systems integration, lab development, initial qualification testing, initial flight test hardware orders, aircraft integration assets, and WOSA compliance evaluation.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>FY2024 decreased compared to FY 2023 by \$66.868 million. Funding decreased due to phasing of hardware requirements. Significant hardware purchases were planned in FY23.</p>   |  |  |                |                |
| <p><b>Title:</b> Integration, Qualification, and Test</p> <p><b>Description:</b> This effort includes the government costs associated to assembly, integration and test of subsystems for qualification testing as well as prototype systems for system qualification, ground test and flight testing. The effort includes the planning, execution and analysis to complete the defined HACM test strategy.</p> <p><b>FY 2023 Plans:</b><br/>Effort continues the assembly, integration and test of subsystems for qualification testing as well as prototype systems for system qualification, ground test and flight testing.</p> <p><b>FY 2024 Plans:</b><br/>Effort continues the assembly, integration and test of subsystems for qualification testing as well as prototype systems for system qualification, ground test and flight testing.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>FY 2024 increased compared to FY 2023 by \$25.829 million. Funding increased due to Inert Measurement Vehicle (IMV) flight testing and other testing requirements leading up to the first All Up Round (AUR) flight test.</p> |  | 7.186  | 26.824         | 52.653         |
| <p><b>Title:</b> Program Support</p> <p><b>Description:</b> Program Support Cost (PSC) includes contractor services: Engineering, Professional, and Administrative Support Services (EPASS) and or/other contract support. May also include mission planning, travel, Government Purchase Card (GPC), Direct Cite Authority (DCA) civilian pay, costs associated to meet future security upgrades/requirements, and/or other government costs.</p> <p><b>FY 2023 Plans:</b></p>   |  | 23.989   | 25.744         | 24.952         |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|--|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604183F / <i>Hypersonics Prototyping - Hypersonic Attack Cruise Missile (HACM)</i> |
|--|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| Efforts include DE, WOSA development/support, DE Infrastructure, mission planning, tech orders and DCA civilian pay.   |                |                |                |
| <b>FY 2024 Plans:</b><br>Efforts include DE, WOSA development/support, DE Infrastructure, mission planning, tech orders and DCA civilian pay.  |                |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>FY2024 decreased compared to FY 2023 by \$0.792 million. Funding increased due to additional contractor and government manpower costs. |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 183.889        | 423.359        | 381.528        |

| <b>D. Other Program Funding Summary (\$ in Millions)</b> |                |                |                               |                              |                                |                |                |                |                |                                   |                   |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| <u>Line Item</u>   | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
| • MPAF 02 0101101F: N/A                                  | -              | -              | -                             | -                            | -                              | -              | -              | 245.715        | 250.952        | 0.000                             | 496.667           |

**Remarks**

**E. Acquisition Strategy**  
The program leverages the Southern Cross Integrated Flight Research Experiment (SCIFiRE) investment, a bi-lateral U.S. / Australia effort which matures air-breathing cruise missile technology. Through SCIFiRE, HACM leverages efforts from the DARPA / Air Force Hypersonic Air-breathing Weapon Concept (HAWC) and the OUSD(R&E) Hypersonics Flight Demonstration (HyFly2) science and technology demonstrations. The HACM prototype will demonstrate a multi-mission weapon concept to be fielded as a long range prompt strike capability. Includes scope to develop/test/demonstrate prototype weapon through Digital Model-Based System Engineering (MBSE) process, implementing WOSA and Agile Software Development. The program will prioritize integration on the F-15E platform to enable quick entry into flight test.

Acquisition Strategy approved Dec 2021 which designated HACM as a Section 804 Middle Tier of Acquisition (MTA) Pathway (Rapid Prototyping). In Feb 2022 the OSD MTA Advisory Board concurred with HACM designation as a Rapid Prototyping MTA Pathway. The Air Force awarded a Cost Plus Fixed Fee (CPFF) contract in Sep 2022 to Raytheon Missiles and Defense to procure all long lead parts, materials and labor for HACM Critical Design Review, development, integration, qualification, and fight testing of AURs.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604183F / <i>Hypersonics Prototyping - Hypersonic Attack Cruise Missile (HACM)</i> | <b>Project (Number/Name)</b><br>644183 / <i>Hypersonic Attack Cruise Missile (HACM)</i> |
|--|--|---|

| <b>Product Development (\$ in Millions)</b>  |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| HACM Prime Contractor Support, Analysis, Technical Risk Reduction, and Development | C/CPFF                 | Raytheon: Tucson : TBD         | -           | 152.714 | Sep 2022   | 370.791 | Mar 2023   | 303.923      | Dec 2023   | -           |            | 303.923       | Continuing       | Continuing | -                        |
| <b>Subtotal</b>  |                        |                                | -           | 152.714 |            | 370.791 |            | 303.923      |            | -           |            | 303.923       | Continuing       | Continuing | N/A                      |

| <b>Support (\$ in Millions)</b>    |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|------------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                 | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Development & Prototyping          | C/CPFF                 | Multiple: TBD: Various : TBD   | -           | 8.128   | Jun 2022   | 7.993   | Mar 2023   | 9.210        | Dec 2023   | -           |            | 9.210         | Continuing       | Continuing | -                        |
| Direct Cite Authority Civilian Pay | Allot                  | Not specified: TBD : TBD       | -           | 1.151   | Sep 2022   | 8.208   | Oct 2022   | 8.381        | Oct 2023   | -           |            | 8.381         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                    |                        |                                | -           | 9.279   |            | 16.201  |            | 17.591       |            | -           |            | 17.591        | Continuing       | Continuing | N/A                      |

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Test & Evaluation                           | C/TBD                  | Multiple: TBD: Various : TBD   | -           | 7.186   | Aug 2022   | 26.824  | Mar 2023   | 52.653       | Dec 2023   | -           |            | 52.653        | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 7.186   |            | 26.824  |            | 52.653       |            | -           |            | 52.653        | Continuing       | Continuing | N/A                      |

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Management Services                         | C/TBD                  | Multiple: TBD: Various : TBD   | -           | 14.710  | Jun 2022   | 9.543   | Oct 2022   | 7.361        | Oct 2023   | -           |            | 7.361         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 14.710  |            | 9.543   |            | 7.361        |            | -           |            | 7.361         | Continuing       | Continuing | N/A                      |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604183F / <i>Hypersonics Prototyping - Hypersonic Attack Cruise Missile (HACM)</i> | <b>Project (Number/Name)</b><br>644183 / <i>Hypersonic Attack Cruise Missile (HACM)</i> |
|--|--|---|

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |

**Remarks**  
Includes A&AS support requirements plus TDY and office supplies.

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | -           | 183.889 | 423.359 | 381.528      | -           | 381.528       | Continuing       | Continuing | N/A                      |

**Remarks**

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|   |  |  |                         |  |  |   |  |  |  |
|---|--|--|-------------------------|--|--|---|--|--|--|
| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |  |  | <b>Date: March 2023</b> |  |  |   |  |  |  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604183F / <i>Hypersonics Prototyping - Hypersonic Attack Cruise Missile (HACM)</i> |                         |  |  | <b>Project (Number/Name)</b><br>644183 / <i>Hypersonic Attack Cruise Missile (HACM)</i> |  |  |  |

|   | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|   | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |
| <b><i>Hypersonic Attack Cruise Missile (HACM)</i></b> |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Preliminary Design                                    |         |   |   | ■ |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Critical Design                                       |         |   |   | ■ | ■       | ■ | ■ | ■ |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| HACM Development                                      |         |   |   | ■ | ■       | ■ | ■ | ■ | ■       | ■ | ■ | ■ | ■       | ■ | ■ | ■ | ■       | ■ | ■ | ■ | ■       | ■ | ■ | ■ | ■       | ■ | ■ | ■ |
| Integration, Qualification, and Test                  |         |   |   | ■ | ■       | ■ | ■ | ■ | ■       | ■ | ■ | ■ | ■       | ■ | ■ | ■ | ■       | ■ | ■ | ■ | ■       | ■ | ■ | ■ | ■       | ■ | ■ | ■ |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604183F / <i>Hypersonics Prototyping - Hypersonic Attack Cruise Missile (HACM)</i> | <b>Project (Number/Name)</b><br>644183 / <i>Hypersonic Attack Cruise Missile (HACM)</i> |

Schedule Details

| Events by Sub Project                                 | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Hypersonic Attack Cruise Missile (HACM)</i></b> |         |      |         |      |
| Preliminary Design                                    | 4       | 2022 | 4       | 2022 |
| Critical Design                                       | 4       | 2022 | 4       | 2023 |
| HACM Development                                      | 4       | 2022 | 2       | 2027 |
| Integration, Qualification, and Test                  | 4       | 2022 | 2       | 2027 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604201F / <i>PNT Resiliency, Mods, and Improvements</i> |
|--|---|

| COST (\$ in Millions)                   | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                   | -           | 46.022  | 12.010  | 18.041       | 0.000       | 18.041        | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 76.073     |
| 641030: <i>GPS Receiver Development</i> | -           | 46.022  | 12.010  | 18.041       | 0.000       | 18.041        | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 76.073     |

**A. Mission Description and Budget Item Justification**

PE 0604201F, Project 641030 covers the research, development, qualification, and testing of Enhanced Anti-Jam (EAJ) Military Code (M-Code) Global Positioning System (GPS) receivers for Air Force and joint weapon systems. This includes updates to weapon mission planning software to support new M-Code and EAJ receiver development. These acquisitions will enable the Air Force to increase its operational Positioning, Navigation, and Timing (PNT) resiliency while satisfying the DoD and civil mandates. Fielding of EAJ M-Code weapons requires research, development, qualification and testing of M-Code receivers across the Air Force Program Executive Officer (AFPEO) Weapons portfolio. Funds may be used to address emerging and short notice Diminishing Manufacturing Sources and Material Shortages (DMSMS) issues.

This requirement supports performance of a full financial audit as required by title 10 U.S.C. Chapter 9A, Sec 240-D.

The total cost of the Resilient Embedded GPS/INS (R-EGI) Middle Tier of Acquisition effort is 249.57 million, including RDT&E. The R-EGI is fully funded across the Future Years Defense Program.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 0.459M was expended for civilian pay expenses in this program element, and in FY23 0.0M is forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604201F / <i>PNT Resiliency, Mods, and Improvements</i> |
|--|---|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 39.742         | 12.010         | 0.000               | 0.000              | 0.000                |
| Current President's Budget                        | 46.022         | 12.010         | 18.041              | 0.000              | 18.041               |
| Total Adjustments                                 | 6.280          | 0.000          | 18.041              | 0.000              | 18.041               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 7.670          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -1.390         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 18.041              | 0.000              | 18.041               |

**Change Summary Explanation**

FY22- Below Threshold Reprogramming (BTR) of \$7.670M to fund M-Code for the continuation of design, development, ground qualification, of the High Anti-Jam Miniature M-Code Enhanced Receiver (HAMMER) and to achieve the objectives for M-Code Receiver, Enhanced Anti-Jam of the Common Architecture for Assured Position, Navigation, and Timing (PNT)(CAAP).

The FY24 increase of \$18.000M is for the continuation of design, development, ground qualification, of HAMMER and to achieve the objectives for M-Code Receiver, Enhanced Anti-Jam of CAAP.



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|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |  |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0604201F / PNT Resiliency, Mods, and Improvements |                      |                |                | <b>Project (Number/Name)</b><br>641030 / GPS Receiver Development |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>   | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 641030: GPS Receiver Development  | -                  | 46.022         | 12.010         | 18.041              | 0.000  | 18.041               | 0.000          | 0.000          | 0.000   | 0.000                   | 0.000                   | 76.073            |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -  | -                    | -              | -              | -   | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

This munitions receiver development project includes development of a GPS M-code receiver with EAJ and analysis efforts. M-code receivers with EAJ provide advanced Positioning, Navigation, and Timing (PNT) capabilities required for weapons to operate in Adversarial Anti-access/Area Denial (A2/AD) environments. M-Code receivers with EAJ also provide increased accuracy, better signal acquisition, and advanced security.

M-code receivers with EAJ capability assures continued weapon system precision and lethality.

Fielding EAJ M-Code weapons requires research, development, qualification, testing, and mission planning of M-Code receivers across the weapons portfolio. This will include all systems, subsystems, software, fuzing, and support activities associated with the development and implementation of M-Code receivers.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 \$0.459M was expended for civilian pay expenses in this program element, and in FY23 \$0.0 is forecasted for civilian pay expenses in this program element.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| <b>Title:</b> M-Code EAJ   | 46.022         | 12.010         | 18.041              | 0.000              | 18.041               |
| <b>Description:</b> M-Code/EAJ receivers provide an enhanced anti-jam capability. M-Code/EAJ receivers provide the capability to operate in increasing adversarial A2/AD jamming environment. M-Code/EAJ receivers also provide increased accuracy, better signal acquisition, and advanced security.                    |                |                |                     |                    |                      |
| <b>FY 2023 Plans:</b><br>Continue performing design and development of multiple cross-platform M-Code receivers, to include the High Anti-Jam Miniature M-Code Enhanced Receiver (HAMMER), for USAF SDB II and USN's Tactical Tomahawk and the Strategic Anti-jam Beamforming Receiver Military-code (SABR-M) for JASSM. |                |                |                     |                    |                      |
| <b>FY 2024 Base Plans:</b>   |                |                |                     |                    |                      |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604201F / PNT Resiliency, Mods, and Improvements | <b>Project (Number/Name)</b><br>641030 / GPS Receiver Development |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| Continuation of design, development, ground qualification, and production readiness of a High Anti-Jam Miniature M-Code Enhanced Receiver (HAMMER). Complete preliminary integration, prepare for production cut-in, and prepare for fielding in order to achieve the objectives (M-Code Receiver, M-Code Integration, Enhanced Anti-Jam, Exportability). Continuation of the Common Architecture for Assured Position, Navigation, and Timing (PNT)(CAAP).<br><br><b>FY 2024 OCO Plans:</b><br>N/A<br><br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funding increased to provide funds needed for continuation of M-Code development activities for SDB II and JASSM. |                |                |                     |                    |                      |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 46.022         | 12.010         | 18.041              | 0.000              | 18.041               |

| <b>C. Other Program Funding Summary (\$ in Millions)</b>                 |                |                |                     |                    |                      |                |                |                |                |                         |                   |
|--|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| <u>Line Item</u>   | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024 Base</u> | <u>FY 2024 OCO</u> | <u>FY 2024 Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
| • RDTE 07 0207327F: <i>Small Diameter Bomb (SDB)</i>                     | 13.227         | 17.327         | 13.520              | -                  | 13.520               | -              | -              | -              | -              | 0.000                   | 44.074            |
| • RDTE 07 0207325F: <i>Joint Air-to-Surface Standoff Missile (JASSM)</i> | 8.567          | 23.507         | 1.076               | -                  | 1.076                | 2.812          | -              | -              | -              | 0.000                   | 35.962            |

**Remarks**  
Other Program Funds reference what is allocated towards internal program M-Code requirements.

**D. Acquisition Strategy**  
M-Code/EAJ effort uses a Family of Systems (FoS) approach where the weapons prime contractors develop receivers capable of operating in any of their Air Force weapons. The receivers are based on a common, internally-developed Interface Requirements Specification (IRS), Technology Requirement Document (TRD), and threat scenarios. This approach uses a combination of contract types based on acquisition phase (Technology Maturation & Risk Reduction (TMRR), Development, Production) and risk. The weapons system program offices share a common development Program Element (PE) to allow flexibility in funding and planning, switching to individual PEs for receiver integration, operational testing, and production. The M-Code/EAJ weapons receiver development effort leverages technology currently under development by the Military GPS User Equipment (MGUE) program and will provide the warfighter with unmatched capability to operate in future A2/AD environments.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604201F / PNT Resiliency, Mods, and Improvements | <b>Project (Number/Name)</b><br>641030 / GPS Receiver Development |
|--|--|---|

| <b>Product Development (\$ in Millions)</b>                       |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> |                         |                   |                                 |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b>     | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| Common Weapons M-Code Receiver Development (SDB II)               | Various                           | Raytheon : Tucson, AZ                         | -                  | 37.417         | May 2022          | 8.970          | Jan 2023          | 14.901              | Nov 2023          | -                  |                   | 14.901               | Continuing              | Continuing        | -                               |
| Common Weapons M-Code Receiver Development (CAAP ASIC)            | MIPR                              | DMEA/Global Foundries : Hopewell Junction, NY | -                  | 2.236          | May 2022          | -              |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 2.236             | -                               |
| Common Weapons M-Code Receiver Development (JASSM C+ + Phase II)  | Various                           | Lockheed Martin : Orlando, FL                 | -                  | 3.358          | Sep 2022          | -              |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 3.358             | -                               |
| Common Weapons M-Code Receiver Development (JASSM GPS Receiver)   | Various                           | Consortium Management Gp : Washington, DC     | -                  | 1.803          | Aug 2022          | 3.040          | Feb 2023          | 3.140               | Feb 2024          | -                  |                   | 3.140                | Continuing              | Continuing        | -                               |
| Common Weapons M-Code Receiver Development (JASSM GPS - Receiver) | Various                           | SERCO Inc : Herndon, VA                       | -                  | 0.746          | May 2022          | -              |                   | -                   |                   | -                  |                   | -                    | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>   |                                   |   | -                  | 45.560         |                   | 12.010         |                   | 18.041              |                   | -                  |                   | 18.041               | Continuing              | Continuing        | N/A                             |

| <b>Support (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> |                         |                   |                                 |
|---------------------------------|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>       | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| DCA CIV PAY                     | Allot                             | Allotment : Eglin AFB, FL                 | -                  | 0.459          | Apr 2022          | 0.000          | Jan 2023          | -                   |                   | -                  |                   | -                    | 0.000                   | 0.459             | -                               |
| <b>Subtotal</b>                 |                                   |   | -                  | 0.459          |                   | 0.000          |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 0.459             | N/A                             |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604201F / PNT Resiliency, Mods, and Improvements | <b>Project (Number/Name)</b><br>641030 / GPS Receiver Development |
|--|--|---|

| <b>Management Services (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> |                         |                   |                                 |  |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|--|
| <b>Cost Category Item</b>                   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |  |
| Travel                                      | Various                           | Not specified. : Eglin AFB, FL            | -                  | 0.003          | May 2022          | 0.000          | Jan 2023          | -                   |                   | -                  |                   | -                    | Continuing              | Continuing        | -                               |  |
| <b>Subtotal</b>                             |                                   |   | -                  | 0.003          |                   | 0.000          |                   | -                   |                   | -                  |                   | -                    | Continuing              | Continuing        | N/A                             |  |
| <b>Project Cost Totals</b>                  |                                   |   | -                  | 46.022         |                   | 12.010         |                   | 18.041              |                   | -                  |                   | 18.041               | Continuing              | Continuing        | N/A                             |  |

**Remarks**  
Common Weapons M-Code Receiver Development (SDB II) funding increased from FY23 to FY24 due to HAMMER and CAAP ASIC development and integration into SDB II and TACTICAL Tomahawk.

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604201F / PNT Resiliency, Mods, and Improvements | <b>Project (Number/Name)</b><br>641030 / GPS Receiver Development |

|  | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|  | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|                                   |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| <b>M-Code/EAJ Receivers</b>       |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| M-Code/EAJ Research & Development | [REDACTED] |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| M-Code/EAJ Test and Qualification | [REDACTED] |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604201F / PNT Resiliency, Mods, and Improvements | <b>Project (Number/Name)</b><br>641030 / GPS Receiver Development |

Schedule Details

| Events by Sub Project             | Start   |      | End     |      |
|-----------------------------------|---------|------|---------|------|
|                                   | Quarter | Year | Quarter | Year |
| <b>M-Code/EAJ Receivers</b>       |         |      |         |      |
| M-Code/EAJ Research & Development | 1       | 2022 | 3       | 2025 |
| M-Code/EAJ Test and Qualification | 1       | 2022 | 3       | 2025 |

**Note**  
Efforts outside existing funding dependent on prior year's funds.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604257F / <i>Advanced Technology and Sensors</i> |
|--|--|

| COST (\$ in Millions)  | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element  | -           | 23.745  | 12.311  | 27.650       | 0.000       | 27.650        | 24.161  | 49.678  | 50.994  | 11.278  | Continuing       | Continuing |
| 642001: <i>Next Gen Sensors Tech Maturation/Risk Reduction</i> | -           | 0.000   | 0.000   | 12.461       | 0.000       | 12.461        | 8.726   | 33.964  | 35.070  | 0.000   | Continuing       | Continuing |
| 644818: <i>Imaging and Targeting Support</i>                   | -           | 14.641  | 12.311  | 15.189       | 0.000       | 15.189        | 15.435  | 15.714  | 15.924  | 11.278  | 0.000            | 100.492    |
| 645148: <i>Common Airborne Sense and Avoid (C-ABSAA)</i>       | -           | 9.104   | 0.000   | 0.000        | 0.000       | 0.000         | 0.000   | 0.000   | 0.000   | 0.000   | Continuing       | Continuing |

**Note**

FY2023, PE 0604257F (Advanced Technology and Sensors), Project 645148, (Common Airborne Sense and Avoid) funds were transferred to align funding with Air Force project priorities and requirements. FY2024 Next Generation Sensors moved from ARS PE 0305206F Project 672001 to ATS PE 0604257F Project 642001 for continued development, tech maturation, and risk reduction.

**A. Mission Description and Budget Item Justification**

The Advanced Technology and Sensors (ATS) program coordinates the development of platform-agile advanced technologies (sensors, low-cost, low-SWAP attributable ISR sensors, data links, targeting support, and quick reaction capabilities) in support of High Altitude Long Endurance (HALE) platforms, manned and unmanned airborne reconnaissance platforms, Autonomous Collaborative Platforms, and Collaborative Combat Aircraft. Its objectives are to develop, demonstrate, and rapidly transition advanced, interoperable, multi-platform solutions to reduce the find, fix, target, and track kill chain timeline. This program coordinates the development of common collection, processing, and dissemination solutions for near-real time intelligence, surveillance, and reconnaissance. The ATS program also increases interoperability by developing common standards and interfaces.

The funds in this program are distributed in priority order for the goal of building a comprehensive Geospatial Intelligence (GEOINT) capability for the USAF. On an annual basis, developmental technologies are reviewed against warfighter capabilities and requirements based on strategic roadmaps and on the results of the Airborne Sensors for ISR Analysis of Alternatives, as prefaced in the Challenging Targets Initial Capabilities Document. Efforts advancing the technological maturity of promising sensors and processing capabilities are reviewed and prioritized into a recommended list for senior executive direction to implement in the coming year. The program office has the ability to rapidly initiate an Imaging & Targeting Support (I&TS) project in order to expedite development and acquisition of urgently needed capabilities for the warfighter.

Next Generation Sensor (NGS) is a platform-agile suite of sensor technologies defined for the best flexibility and capability for an ever-changing scale of ISR missions. NGS will further technology maturation and risk reduction of selected technologies initiated under I&TS culminating in an operational prototype demonstrated in an AgilePod. Execution of the NGS activities are founded upon three pillars: Open Standards, Artificial Intelligence (AI)/Machine Learning(ML) algorithms, and Advanced Platform-Agile Sensors. The power behind the NGS program is an open architectural system design that enables rapid third-party software and LRU insertion/

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b>   | <b>R-1 Program Element (Number/Name)</b>             |
| 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | PE 0604257F <i>I Advanced Technology and Sensors</i> |

replacement allowing for DevSecOps execution, onboard multi-modal and multi-INT processing real-time, sensor cross-cueing, and AI/ML application. The AI/ML algorithms will be used to enable assisted target detection and identification. NGS will anticipate and more quickly counter adversaries' future improvements in their abilities to hide from and defeat ISR sensors. NGS efforts include, but are not limited to: Multi-Intelligence Common Open Architecture Reconnaissance Programs Standard (MI-COARPS), Advanced Platform-Agile Sensors, Assisted Target Recognition for ISR (ATRI), and Digital Engineering (DE), to include Model-Based Systems Engineering (MBSE).

The Open Standards pillar of next generation capabilities is supported through Sensors Open Systems Architecture (SOSA) which coordinates advanced technologies and open architecture development for multi-INT sensor modalities. Consistent with NDS, algorithms are multi-INT sensor agile that are submitted for formal adoption by the DOD-Intelligence Community (IC) Joint Enterprise Standards Committee (JESC) GEOINT and SIGINT standards groups. Platform agile sensors pillar of next-generation capabilities will be supported by developing scalable sensors using both on-the-shelf and emerging sensors suites from the labs, industry, and other Government agencies.

This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver the ATS program for emergent or unanticipated weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 23.745         | 13.311         | 10.155              | 0.000              | 10.155               |
| Current President's Budget                        | 23.745         | 12.311         | 27.650              | 0.000              | 27.650               |
| Total Adjustments                                 | 0.000          | -1.000         | 17.495              | 0.000              | 17.495               |
| • Congressional General Reductions                | 0.000          | -1.000         |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 17.495              | 0.000              | 17.495               |

**Change Summary Explanation**

FY24 increased due to Next Generation Sensors move from ARS PE 0305206F Project 672001 to ATS PE 0604257F Project 642001 for continued development, tech maturation, and risk reduction. Also, increased I&TS funding to support Air Force and GCWG ISR prioritized efforts (such as radar improvement, next-generation HSI, LIDAR, ISR Standards, EO/IR, and data mitigation technologies).



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|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |  |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0604257F / <i>Advanced Technology and Sensors</i> |                      |                |                | <b>Project (Number/Name)</b><br>642001 / <i>Next Gen Sensors Tech Maturation/Risk Reduction</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>   | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 642001: <i>Next Gen Sensors Tech Maturation/Risk Reduction</i>          | -                  | 0.000          | 0.000          | 12.461              | 0.000  | 12.461               | 8.726          | 33.964         | 35.070  | 0.000                   | Continuing              | Continuing        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -  | -                    | -              | -              | -   | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

The Next Generation Sensors (NGS) program seeks to change the paradigm of Intelligence, Surveillance, and Reconnaissance (ISR) sensor acquisitions to deliver mission critical technology more quickly and cost effectively. NGS is a platform-agile suite of sensor technologies defined for the best flexibility and capability for an ever-changing scale of ISR missions. The power behind the NGS program is an open architectural system design that enables individual sensor upgrades and enhancements and mission-specific mode and algorithm applications, establishing a path to on-board multimodal and multi-INT processing, sensor cross-cueing, and artificial intelligence applications. NGS efforts include, but are not limited to: Multi-INT Common Open Architecture Reconnaissance Programs Standard (MI-COARPS), Advanced Platform-Agile Sensors, Assisted Target Recognition for ISR (ATRI), and Digital Engineering (DE), to include Model Based Systems Engineering (MBSE). The focus is on maturing platform agile, low-SWAP attritable ISR sensors developed under Imaging and Targeting Support culminating in a fieldable prototype demonstration using an AgilePod in support of integration with High Altitude Long Endurance (HALE) platforms, manned and unmanned airborne reconnaissance platforms, Autonomous Collaborative Platforms, and Collaborative Combat Aircraft.

NGS program efforts are set by capability gaps within the Challenging Targets Initial Capabilities Document and as approved by the Capabilities Decision Memorandum (Signed Jan 2019). These requirements have been further verified, modeled, and developed through the Airborne Sensors for ISR (ASI) Analysis of Alternatives (AoA). Program requirements were further defined in the NGS Draft Capability Development Document (DCDD) approved on 21 February 2021.

This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver Next Gen Sensors Tech Maturation/Risk Reduction for emergent or unanticipated weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Next Gen Sensors Tech Maturation/Risk Reduction   | -              | 0.000          | 12.461         |
| <b>Description:</b> Mold current and future ISR into a platform-agile, non-proprietary, autonomous multi-INT cross cueing solution that is designed based on mission requirements. Sensors will have to penetrate up to highly contested domains and survive to operate. This project will also increase interoperability by developing common standards and interfaces for mission and sensor systems. |                |                |                |
| <b>FY 2023 Plans:</b>   |                |                |                |

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|---|--|---|----------------|----------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force   |  | <b>Date:</b> March 2023   |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604257F / <i>Advanced Technology and Sensors</i> | <b>Project (Number/Name)</b><br>642001 / <i>Next Gen Sensors Tech Maturation/Risk Reduction</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   |  | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| N/A   |  |   |                |                |
| <p><b>FY 2024 Plans:</b></p> <ul style="list-style-type: none"> <li>- Further development of real-time multi-domain battlespace awareness in highly contested environments. Mature open architectures for ISR systems including cybersecurity analysis, industry standardization, and open architecture demonstrations.</li> </ul> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b></p> <p>FY24 Next Generation Sensors moved from ARS PE 0305206F Project 672001 to ATS PE 0604257F Project 642001 for continued development, tech maturation, and risk reduction. Increased USAF priority in FY2024 to mature ISR systems and further develop real-time multi-domain battlespace awareness in highly contested environments.</p> <p>Due to higher AF priorities, the following activities were strategically paused in FY23 and will resume in FY24:</p> <ul style="list-style-type: none"> <li>- Development and maturation of sensor technology for electro-optical/infrared (EO/IR), radar and other sensor modalities</li> <li>- Development, integration, and testing of dual-band EO/IR and LiDAR prototype sensor</li> <li>- Development of edge artificial intelligence (AI)/machine learning (ML) algorithms to identify (ID) critical mobile targets (CMTs)</li> </ul> |  |   |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>   |  | -   | 0.000          | 12.461         |
| <b>C. Other Program Funding Summary (\$ in Millions)</b>  |  |   |                |                |
| N/A   |  |   |                |                |
| <b>Remarks</b>  |  |   |                |                |
| FY2024 Next Generation Sensors moved from ARS PE 0305206F Project 672001 to ATS PE 0604257F Project 642001 for continued development, tech maturation, and risk reduction.  |  |   |                |                |
| <b>D. Acquisition Strategy</b>  |  |   |                |                |
| NGS activities will leverage parallel development activities and integrate them with a risk-informed approach to develop and demonstrate NGS capabilities that meet military needs under operationally-relevant environments and conditions. This program has established a forum of stakeholders, consisting of multiple Other Government Agencies (OGAs), end-users, and MAJCOMs to ensure that the program deliverables are answering identified warfighter needs, to ensure a clear and concise technology transition path.   |  |   |                |                |
| Acquisition strategy is to maximize commercial and national development efforts and investment through multiple contracting methods, including the use of engineering change proposals to modify existing contracts and new contracts that were awarded both competitively or on a sole source basis.   |  |   |                |                |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604257F / <i>Advanced Technology and Sensors</i> | <b>Project (Number/Name)</b><br>642001 / <i>Next Gen Sensors Tech Maturation/Risk Reduction</i> |
|--|--|---|

| <b>Product Development (\$ in Millions)</b>                      |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| NGS Standards (OA)   | Various                | Various: TBD : TBD             | -           | -       |            | -       |            | 5.291        | Mar 2024   | -           |            | 5.291         | Continuing       | Continuing | -                        |
| Digital Engineering (DE), Model Based Systems Engineering (MBSE) | Various                | Various: TBD : TBD             | -           | -       |            | -       |            | 4.010        | Mar 2024   | -           |            | 4.010         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>  |                        |                                | -           | -       |            | -       |            | 9.301        |            | -           |            | 9.301         | Continuing       | Continuing | N/A                      |

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| PMA: Other Govt Cost                        | Various                | Various: TBD : TBD             | -           | -       |            | -       |            | 3.160        | Apr 2024   | -           |            | 3.160         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | -       |            | -       |            | 3.160        |            | -           |            | 3.160         | Continuing       | Continuing | N/A                      |

|                            |  |  | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|--|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> |  |  | -           | -       | -       | 12.461       | -           | 12.461        | Continuing       | Continuing | N/A                      |

**Remarks**  
 FY24 Next Generation Sensors moved from ARS PE 0305206F BPAC 672001 to ATS PE 0604257F BPAC 642001 for continued development, tech maturation, and risk reduction.

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604257F / <i>Advanced Technology and Sensors</i> | <b>Project (Number/Name)</b><br>642001 / <i>Next Gen Sensors Tech Maturation/Risk Reduction</i> |

|  | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|  | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   |  |
|---|--|
| <b>NGS Tech Maturation &amp; Risk Reduction</b> |  |
| Standards (Open Architecture)                   |  |
| Model Based Systems Engineering                 |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604257F / <i>Advanced Technology and Sensors</i> | <b>Project (Number/Name)</b><br>642001 / <i>Next Gen Sensors Tech Maturation/Risk Reduction</i> |

Schedule Details

| Events by Sub Project                           | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b>NGS Tech Maturation &amp; Risk Reduction</b> |         |      |         |      |
| Standards (Open Architecture)                   | 1       | 2024 | 4       | 2028 |
| Model Based Systems Engineering                 | 1       | 2024 | 4       | 2028 |

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|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |  |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0604257F / <i>Advanced Technology and Sensors</i> |                      |                |                | <b>Project (Number/Name)</b><br>644818 / <i>Imaging and Targeting Support</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>   | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 644818: <i>Imaging and Targeting Support</i>                            | -                  | 14.641         | 12.311         | 15.189              | 0.000  | 15.189               | 15.435         | 15.714         | 15.924  | 11.278                  | 0.000                   | 100.492           |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -  | -                    | -              | -              | -   | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

In support of AF Operational Imperative (OI) 3, the purpose of the I&TS project is to develop, mature, demonstrate, and rapidly transition next-generation, persistent, wide area surveillance and common imagery reconnaissance sensor capabilities (active and passive systems), including sensor data processing, for multiple airborne platforms, as well as sensor products to aid in rapid targeting and sense-making (e.g., geolocation models, sensor-based exploitation tools, sensor networking capabilities). Includes multi-INT integration efforts intended to cross-cue or fuse with SIGINT products in order to create a holistic ISR picture for warfighters and the Intelligence Community.

Developmental efforts pursued include improved sensor performance, new and improved sensor capabilities and modes, new and/or unique modalities, and enabling technologies. Improved sensor performance includes but is not limited to: increased geolocation accuracy, increased dismount detection capability, and advanced sensor data correlation. New and improved sensor capabilities include but are not limited to: Hyperspectral Imagery (HSI), Polarimetric Imaging (PI), Ground and Dismount Moving target indicator (GMTI/ DMTI), maritime search/track (MMTI), Inverse Synthetic Aperture Radar, Foliage Penetration (FOPEN), and nuclear event detection. New and improved sensor modes include but are not limited to: high resolution imagery, Ground and Dismount Moving Target Indicator (GMTI/DMTI), persistent surveillance, wide area motion imagery, and Spectral Identification. New and unique sensor modalities include but are not limited to: low frequency SAR, Hyperspectral Imagery (HSI), and Light Detection And Ranging (LIDAR). Enabling Technologies include but are not limited to: automated and assisted target detection/recognition, Artificial Intelligence (AI), Machine Learning (ML), network centric warfare, integrated multi-sensor capabilities to detect and identify obscured targets, TCPED (Tasking, Collection, Planning, Exploitation, and Dissemination) improvements related to sensors, automated registration, and imagery product quality assurance. New and improved sensor capabilities that involve massed sensing involving SUASs and low-cost sensors for Attributable aircraft.

These efforts are intended to accelerate delivery of data from sensor to user for both target search and target engagement (kill-chain) activities. This project will also increase interoperability by developing and advancing common standards (e.g. Open Mission Systems (OMS), Sensor Open System Architecture (SOSA), Common Open Architecture Radar Programs (COARPS), National Imagery Transmission Format, AgilePod and data reduction) and interfaces.

I&TS funding also supports innovation activities to include studies, analyses, requirements definition, and quick-reaction capability prototypes/demonstrations to accelerate planning for technology transition, technology insertion and future acquisition programs.

Activities also include studies and analysis to support both current program planning and execution and future program planning. This program element may include necessary civilian pay expenses required to manage, execute, and deliver technology and sensor capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F.

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604257F / <i>Advanced Technology and Sensors</i> | <b>Project (Number/Name)</b><br>644818 / <i>Imaging and Targeting Support</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p><b>Title:</b> Imaging &amp; Targeting Support (I&amp;TS)</p> <p><b>Description:</b> Corporately prioritized Air Force Multi-INT Portfolio of projects to develop and demonstrate next generation airborne sensors and processing technologies to further the art of the possible and/or transition ISR capabilities (ex: radar improvement, next-generation HSI, LIDAR, ISR Standards, EO/IR, and data mitigation technologies).</p> <p><b>FY 2023 Plans:</b><br/>Continue to develop, modernize, and demonstrate lower TRL projects into transition ready efforts. The following FY22 efforts continuing into FY23:<br/>                     - MAGIC Heat<br/>                     - Agile ATR in Highly-Contested Environment (HCE) (BirdBox V2)<br/>                     - Automated On-Board GEOINT ATR and SIGINT Sensor Fusion<br/>                     - Massed Sensing<br/>                     - GMTI Mode<br/>                     - Automatic Image Registration<br/>                     - Aether Spy Digital T/R Module (DSTIC) Maturation</p> <p>These efforts and new proposed projects will be approved through the GEOINT Capabilities Working Group (GCWG) Executive Element process. Efforts are approved in the summer prior to the start of the new fiscal year.</p> <p><b>FY 2024 Plans:</b><br/>Will continue to develop, modernize, and demonstrate lower TRL projects into transition ready efforts. The following FY23 efforts will continue into FY24:<br/>                     - Massed Sensing<br/>                     - GMTI Mode<br/>                     - Automatic Image Registration<br/>                     - Aether Spy Digital T/R Module (DSTIC) Maturation</p> <p>These efforts and new proposed projects will be approved through the GEOINT Capabilities Working Group (GCWG) Executive Element process. Efforts are approved in the summer prior to the start of the new fiscal year.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>FY24 funding increase due to a return to normal funding levels geared toward developing low cost/low SWAP multi-int capabilities in contested battlespace based on Air Force prioritization.</p> | 14.641         | 12.311         | 15.189         |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 14.641         | 12.311         | 15.189         |

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| Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force |   | Date: March 2023   |
| Appropriation/Budget Activity<br>3600 / 4                    | R-1 Program Element (Number/Name)<br>PE 0604257F / <i>Advanced Technology and Sensors</i> | Project (Number/Name)<br>644818 / <i>Imaging and Targeting Support</i> |

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

Imaging and Targeting Support efforts are prioritized on an annual basis by the GCWG, in accordance with the validated gaps in the Challenging Targets Initial Capabilities Document. Resulting funded efforts are then contracted for and/or executed by either various program offices, laboratories, industry, and/or other government agencies.

Acquisition strategy is to maximize commercial and national development efforts and investment through multiple contracting methods, including the use of Engineering Change Proposals to modify existing contracts and new contracts that were awarded both competitively or on a sole source basis.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604257F / <i>Advanced Technology and Sensors</i> | <b>Project (Number/Name)</b><br>644818 / <i>Imaging and Targeting Support</i> |
|--|--|---|

| <b>Product Development (\$ in Millions)</b>                          |                        |  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location               | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| AgilePod   | SS/CPFF                | Various : Various                            | -           | 2.798   | Sep 2022   | 0.000   |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Automated Electro-Optical Mobile Target Classification Deep Learning | SS/CPFF                | Ball Aerospace : Dayton, OH                  | -           | 0.812   | Mar 2022   | 0.000   |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Aether Spy DSTIC Maturation  | SS/CPFF                | Northrup Grumman, various : Falls Church, VA | -           | 0.500   | Mar 2023   | 3.000   | Dec 2022   | 2.800        | Dec 2023   | -           |            | 2.800         | Continuing       | Continuing | -                        |
| MOTIF  | SS/CPFF                | SRI : Ann Arbor, MN                          | -           | 0.709   | Sep 2022   | 0.000   |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| AUTOMATE   | SS/CPFF                | SRI : Ann Arbor, MN                          | -           | 0.459   | Aug 2022   | 0.000   |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| MAGIC Heat   | SS/CPFF                | BAE Systems : Durham, NC                     | -           | 1.595   | Aug 2022   | 1.453   | Dec 2022   | 1.052        | Jan 2024   | -           |            | 1.052         | Continuing       | Continuing | -                        |
| BirdBox V2 ATR in HCE  | SS/CPFF                | AFRL, Multiple Vendors : Dayton, OH          | -           | 1.596   | Feb 2022   | 1.910   | Nov 2022   | 0.265        | Jan 2024   | -           |            | 0.265         | Continuing       | Continuing | -                        |
| Auto On-board GEOINT ATR and SIGINT Sensor Fusion                    | SS/CPFF                | Lockheed Martin : Arlington, VA              | -           | 2.770   | Aug 2022   | 0.000   | Mar 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Massed Sensing   | SS/CPFF                | AFRL, Multiple vendors : Dayton, OH          | -           | 0.000   | Mar 2023   | 1.000   | Dec 2022   | 0.750        | Jan 2024   | -           |            | 0.750         | Continuing       | Continuing | -                        |
| GMTI   | SS/CPFF                | Lockheed Martin : Arlington, VA              | -           | 0.000   | Jan 2023   | 2.000   | Dec 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Automatic Image Registration   | SS/CPFF                | Lockheed Martin : Arlington, VA              | -           | 0.000   | Jan 2023   | 1.500   | Dec 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| I&TS Demonstrator  | SS/CPAF                | TBD upon approval 16 Feb : TBD               | -           | 1.327   | Mar 2023   | 0.890   | Mar 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| New Technology Efforts (Prioritized by GCWG)                         | Various                | Various : Various                            | -           | 0.000   | Jul 2023   | 0.000   | Jul 2023   | 8.422        | Oct 2023   | -           |            | 8.422         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>  |                        |  | -           | 12.566  |            | 11.753  |            | 13.289       |            | -           |            | 13.289        | Continuing       | Continuing | N/A                      |



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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604257F / <i>Advanced Technology and Sensors</i> | <b>Project (Number/Name)</b><br>644818 / <i>Imaging and Targeting Support</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   | FY 2022 |  |  |  | FY 2023 |  |  |  | FY 2024 |  |  |  | FY 2025 |  |  |  | FY 2026 |  |  |  | FY 2027 |  |  |  | FY 2028 |  |  |  |
|---|---------|--|--|--|---------|--|--|--|---------|--|--|--|---------|--|--|--|---------|--|--|--|---------|--|--|--|---------|--|--|--|
| <b><i>Imaging and Targeting Support</i></b>       |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |
| Automated E/O Target Deep Learning                |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |
| Aether Spy  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |
| AgilePod  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |
| MOTIF   |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |
| AUTOMATE  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |
| MAGIC Heat  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |
| BirdBox V2 ATR in HCE                             |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |
| Auto On-board GEOINT ATR and SIGINT Sensor Fusion |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |
| Massed Sensing                                    |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |
| GMTI  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |
| Automatic Image Registration                      |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |
| GCWG Technology Efforts                           |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604257F / <i>Advanced Technology and Sensors</i> | <b>Project (Number/Name)</b><br>644818 / <i>Imaging and Targeting Support</i> |

Schedule Details

| Events by Sub Project                             | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Imaging and Targeting Support</i></b>       |         |      |         |      |
| Automated E/O Target Deep Learning                | 1       | 2022 | 1       | 2023 |
| Aether Spy  | 1       | 2022 | 2       | 2025 |
| AgilePod  | 1       | 2022 | 4       | 2026 |
| MOTIF   | 1       | 2022 | 3       | 2023 |
| AUTOMATE  | 1       | 2022 | 3       | 2023 |
| MAGIC Heat  | 4       | 2022 | 4       | 2024 |
| BirdBox V2 ATR in HCE                             | 2       | 2022 | 2       | 2024 |
| Auto On-board GEOINT ATR and SIGINT Sensor Fusion | 4       | 2022 | 1       | 2024 |
| Massed Sensing                                    | 4       | 2022 | 3       | 2024 |
| GMTI  | 4       | 2022 | 4       | 2024 |
| Automatic Image Registration                      | 4       | 2022 | 4       | 2024 |
| GCWG Technology Efforts                           | 2       | 2022 | 4       | 2028 |

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|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |  |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0604257F / <i>Advanced Technology and Sensors</i> |                      |                |                | <b>Project (Number/Name)</b><br>645148 / <i>Common Airborne Sense and Avoid (C-ABSAA)</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>   | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 645148: <i>Common Airborne Sense and Avoid (C-ABSAA)</i>                | -                  | 9.104          | 0.000          | 0.000               | 0.000  | 0.000                | 0.000          | 0.000          | 0.000   | 0.000                   | Continuing              | Continuing        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -  | -                    | -              | -              | -   | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

The Common-Airborne Sense and Avoid (C-ABSAA) project provides Group 4 and 5 Remotely Piloted Aircraft (RPA) with the ability to safely and effectively operate in all classes of airspace worldwide. The C-ABSAA project acts as a replacement for the sense and avoid capability of the pilot on board a manned aircraft.

The Air Force is pursuing a software intensive approach to maintain safe separation, avoid collisions, and provide the ability to safely integrate with other airspace users. The software solutions identified in this Information System Capability Development Document (IS-CDD) are open and modular and accept inputs from any type of sensor or data link and will operate any legacy and future Group 4 and 5 RPA. The effort includes technology maturation, risk reduction, and software processes and initiatives, such as: 1) prototyping activities, 2) system integration, test and implementation of software, 3) development of open system architecture using modular design, standards-based interfaces, and widely-supported consensus-based standards, 4) development of model based system engineering processes, standards and documentation and, 5) collaboration with the Federal Aviation Agency (FAA), National Aeronautics and Space Administration (NASA), and other services to develop national policy and standards.

This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver CABSAA for emergent or unanticipated weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Sense and Avoid (SAA)-Related Activities  | 9.104          | 0.000          | 0.000          |
| <b>Description:</b> - FY22 Funding used for closeout actions and program office requirements. |                |                |                |
| <b>FY 2023 Plans:</b><br>- Program complete.  |                |                |                |
| <b>FY 2024 Plans:</b><br>- Program complete.  |                |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>N/A                                 |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 9.104          | 0.000          | 0.000          |

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| Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force |   | Date: March 2023   |
| Appropriation/Budget Activity<br>3600 / 4                    | R-1 Program Element (Number/Name)<br>PE 0604257F / <i>Advanced Technology and Sensors</i> | Project (Number/Name)<br>645148 / <i>Common Airborne Sense and Avoid (C-ABSAA)</i> |

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

Program complete. Pre-milestone B information archived for future use when needed.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604257F / <i>Advanced Technology and Sensors</i> | <b>Project (Number/Name)</b><br>645148 / <i>Common Airborne Sense and Avoid (C-ABSAA)</i> |
|--|--|---|

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Program Management Administration (PMA)     | Various                | Various : Various              | -           | 9.104   | Jan 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 9.104      | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 9.104   |            | -       |            | -            |            | -           |            | -             | 0.000            | 9.104      | N/A                      |

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | -           | 9.104   | -       | -            | -           | -             | 0.000            | 9.104      | N/A                      |

**Remarks**  
Program complete.

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604257F / <i>Advanced Technology and Sensors</i> | <b>Project (Number/Name)</b><br>645148 / <i>Common Airborne Sense and Avoid (C-ABSAA)</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   |  |
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| <b><i>Common-Airborne Sense and Avoid</i></b> |  |
| Program Data Archived for future use          |  |



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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604257F / <i>Advanced Technology and Sensors</i> | <b>Project (Number/Name)</b><br>645148 / <i>Common Airborne Sense and Avoid (C-ABSAA)</i> |

Schedule Details

| Events by Sub Project                         | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Common-Airborne Sense and Avoid</i></b> |         |      |         |      |
| Program Data Archived for future use          | 1       | 2022 | 4       | 2022 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604288F / <i>Survivable Airborne Operations Center (SAOC)</i> |
|--|---|

| COST (\$ in Millions)                                       | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025   | FY 2026   | FY 2027   | FY 2028   | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|-----------|-----------|-----------|-----------|------------------|------------|
| Total Program Element                                       | -           | 91.378  | 98.213  | 888.829      | 0.000       | 888.829       | 1,883.971 | 1,864.448 | 1,828.992 | 1,667.306 | 0.000            | 8,323.137  |
| 646507: <i>Survivable Airborne Operations Center (SAOC)</i> | -           | 91.378  | 98.213  | 888.829      | 0.000       | 888.829       | 1,883.971 | 1,864.448 | 1,828.992 | 1,667.306 | 0.000            | 8,323.137  |
| Quantity of RDT&E Articles                                  | -           | -       | -       | -            | -           | -             | -         | -         | -         | -         | -                | -          |

**A. Mission Description and Budget Item Justification**

The Survivable Airborne Operations Center (SAOC) will replace the aging E-4B fleet which faces capability gaps, diminishing manufacturing sources, increased maintenance costs, and parts obsolescence as it approaches the end of its serviceable life. SAOC will provide POTUS, SECDEF and the CJCS a worldwide, survivable, and enduring node of the National Military Command System (NMCS) to fulfill national security requirements throughout all stages of conflict. As a command, control and communications center directing US forces, executing emergency war orders and coordinating the activities of civil authorities including national contingency plans, this capability ensures continuity of operations and continuity of government as required in a national emergency or after negation/destruction of ground command and control centers. SAOC will fulfill the requirements of the AF Nuclear Mission by providing Nuclear Command, Control and Communications (NC3) capabilities to enable the exercise of authority and direction by the President to command and control US military nuclear weapons operations.

Program funding includes funds for requirements to support program office operations, management services (Federally Funded Research and Development Centers [FFRDC], Advisory and Assistance Services [A&AS], etc.), Program Management Support (PMS), security, facilities, prototyping, equipment, and to integrate Digital Engineering and other required program office capabilities. Funding will also support all activities required to award and execute development contract(s) for the SAOC Weapon System to include test activities and prototype development, sustainment, and integration of NC3 and other DoD/AF programs into the SAOC weapon system.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 \$1.950M was expended for civilian pay expenses in this program element, and in FY23 \$4.282M is forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |  |
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| <b>Appropriation/Budget Activity</b><br>3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P) | <b>R-1 Program Element (Number/Name)</b><br>PE 0604288F I Survivable Airborne Operations Center (SAOC) |
|---|--|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 95.788         | 203.213        | 609.966             | 0.000              | 609.966              |
| Current President's Budget                        | 91.378         | 98.213         | 888.829             | 0.000              | 888.829              |
| Total Adjustments                                 | -4.410         | -105.000       | 278.863             | 0.000              | 278.863              |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | -105.000       |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | -1.500         | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -2.910         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 278.863             | 0.000              | 278.863              |

**Change Summary Explanation**

FY 2022 decreased by \$4.410M total, \$2.190M reduction for SBIR/\$1.500M reduction for BTR to E-4B Aircraft Mobile User Objective System.  
 FY 2023 Congressional Mark for \$105.000M for early to need  
 FY 2024 increase for SAOC to meet Independent Cost Estimate

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
|---|----------------|----------------|----------------|

|   |        |        |         |
|---|--------|--------|---------|
| <b>Title:</b> SAOC  | 91.378 | 98.213 | 888.829 |
| <b>Description:</b> The SAOC weapon system will be comprised of a Commercial Derivative Aircraft (CDA), mission system, and ground support systems. The CDA will be hardened to protect against nuclear and electromagnetic effects and modified with an aerial refueling capability to enable sustained airborne operations. The mission system will integrate secure communications and planning capabilities on modern information technology (IT) infrastructure based on a Modular Open System Approach (MOSA). The ground systems include aircrew trainers, mission crew trainers, maintenance training devices, ground support equipment, test and sustainment system integration laboratories, and other ground systems to enable the operations, sustainment, and future modifications of the SAOC weapon system across the lifecycle. |        |        |         |
| <b>FY 2023 Plans:</b>   |        |        |         |
| -Conduct Source Selection activities and prepare and coordinate Milestone B requirements  |        |        |         |
| -Continue supporting development and modernization of required NC3, Command, Control and Communications (C3), Cryptographic, Open Architecture/Open Mission System, and other capabilities to ensure systems are sustainable and available to integrate into the SAOC Weapon System   |        |        |         |
| -Support test planning and preparation activities, and establish the SAOC Integrated Test Team  |        |        |         |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604288F / <i>Survivable Airborne Operations Center (SAOC)</i> |
|--|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p>-Continue to develop and implement the infrastructure, tools, and training necessary for the SAOC Integrated Digital Environment, which will enable the SAOC Program Office to execute and support the development and lifecycle sustainment of the SAOC Weapon System</p> <p>-Continue program office manning growth-path required to support the SAOC system development</p> <p><b>FY 2024 Plans:</b></p> <p>-Conclude Source Selection activities, complete Milestone requirements in anticipation of favorable Milestone B decision, and award the SAOC contract(s) to begin executing Engineering and Manufacturing Development (EMD) development activities</p> <p>-Continue supporting development and modernization of required NC3, C3, Cryptographic, Open Architecture/Open Mission System, and other capabilities to ensure systems are sustainable and available to integrate into the SAOC Weapon System</p> <p>-Continue to develop and implement the infrastructure, tools, and training necessary for the SAOC Integrated Digital Environment, which will enable the SAOC Program Office to execute and support the development and lifecycle sustainment of the SAOC Weapon System</p> <p>-Continue test and evaluation (T&amp;E) planning and preparation activities; including manning, procurement of long-lead test equipment, training, and facility modifications</p> <p>-Continue program office manning growth-path required to support the SAOC system development</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b></p> <p>-Significant investment increase from FY 2023 to FY 2024 due to the award of the SAOC EMD contract</p> |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 91.378         | 98.213         | 888.829        |

**D. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**E. Acquisition Strategy**

Based on the Acquisition Strategy approved by Under Secretary of Defense for Acquisition and Sustainment on 30 June 2022, the SAOC will enter the acquisition framework at MS-B and award a competitive Development contract with Production and Interim Contractor Support (ICS) Options. This contract will require the offeror(s) to buy the required aircraft, bring each aircraft to a common configuration, make required modifications, develop and integrate the mission system into each aircraft, provide required ground support systems and conduct contract support operations for fielded systems until Operations and Support Phase.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |  |
|--|---|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604288F / <i>Survivable Airborne Operations Center (SAOC)</i> | <b>Project (Number/Name)</b><br>646507 / <i>Survivable Airborne Operations Center (SAOC)</i> |
|--|---|--|

| <b>Product Development (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Pre-Development Contract Activities/Studies | C/Various              | TBD : TBD                      | -           | 59.066  | Jan 2022   | 28.521  | Oct 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Mission Systems/ Subsystems Development     | C/Various              | Various : TBD                  | -           | -       |            | 26.255  | Jan 2023   | 22.729       | Jan 2024   | -           |            | 22.729        | Continuing       | Continuing | -                        |
| Prime - EMD                                 | C/TBD                  | TBD : TBD                      | -           | -       |            | -       |            | 789.147      | Feb 2024   | -           |            | 789.147       | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 59.066  |            | 54.776  |            | 811.876      |            | -           |            | 811.876       | Continuing       | Continuing | N/A                      |

| <b>Support (\$ in Millions)</b> |                        |                                  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---------------------------------|------------------------|----------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item              | Contract Method & Type | Performing Activity & Location   | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Direct Mission Support          | C/Various              | Various : Bedford, MA : TBD      | -           | 12.149  | Oct 2021   | 15.176  | Oct 2022   | 7.373        | Oct 2023   | -           |            | 7.373         | Continuing       | Continuing | -                        |
| Direct Cite Civilian Pay        | TBD                    | Not specified. : Hanscom AFB, MA | -           | 1.950   | Oct 2021   | 4.282   | Oct 2022   | 4.368        | Oct 2023   | -           |            | 4.368         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                 |                        |                                  | -           | 14.099  |            | 19.458  |            | 11.741       |            | -           |            | 11.741        | Continuing       | Continuing | N/A                      |

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Test and Evaluation                         | C/CPIF                 | Not specified. : TBD           | -           | 0.000   | Oct 2021   | 0.000   | Oct 2022   | 25.314       | Oct 2023   | -           |            | 25.314        | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 0.000   |            | 0.000   |            | 25.314       |            | -           |            | 25.314        | Continuing       | Continuing | N/A                      |

| <b>Management Services (\$ in Millions)</b> |                        |   |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|---|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location          | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| FFRDC                                       | SS/CPFF                | Various : Bedford, MA : Hanscom AFB, MA | -           | 9.589   | Oct 2021   | 8.599   | Oct 2022   | 21.590       | Oct 2023   | -           |            | 21.590        | Continuing       | Continuing | -                        |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604288F / <i>Survivable Airborne Operations Center (SAOC)</i> | <b>Project (Number/Name)</b><br>646507 / <i>Survivable Airborne Operations Center (SAOC)</i> |
|--|---|--|

| <b>Management Services (\$ in Millions)</b> |                        |   |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|---|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location          | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| A&AS  | C/CPFF                 | Various : Bedford, MA : Hanscom AFB, MA | -           | 6.374   | Jul 2022   | 12.255  | Jul 2023   | 15.193       | Jul 2024   | -           |            | 15.193        | Continuing       | Continuing | -                        |
| PMA - Other                                 | Various                | Various : Bedford, MA : Hanscom AFB, MA | -           | 2.250   | Oct 2021   | 3.125   | Oct 2022   | 3.115        | Oct 2023   | -           |            | 3.115         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |   | -           | 18.213  |            | 23.979  |            | 39.898       |            | -           |            | 39.898        | Continuing       | Continuing | N/A                      |

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |     |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|-----|
| <b>Project Cost Totals</b> |             | -       | 91.378  | 98.213       | 888.829     | -             | 888.829          | Continuing | Continuing               | N/A |

**Remarks**

Product Development:  
 -FY22 Pre-Development Contract Activities/Studies accelerates pre-development activities by investing in necessary product development to prepare program for execution  
 -FY23 decrease in Pre-Development Contract Activities/Studies is due to concluding pre-EMD preparatory activities  
 -FY23 increase in Mission Systems/Subsystems development is due to continuing support of development and modernization of required NC3, Command, control, and Communications (C3) Cryptographic, Open Architecture/Open Mission System, and other capabilities to ensure systems are sustainable and available to integrate into the SAOC Weapon System  
 -FY24 increase in Prime Contract due to award of SAOC EMD Contract

Support:  
 -FY22 Direct Mission Support continues implementation of digital engineering infrastructure efforts  
 -FY23 and FY24 decreases in Direct Mission Support is due to finalizing deployment of digital engineering infrastructure  
 -FY23 and FY24 increase in DCA continues office manning growth path required to support SAOC EMD

Test and Evaluation:  
 -FY24 increase in Test and Evaluation is due to continuing test and evaluation (T&E) planning and preparation activities; including manning, procurement of long-lead test equipment, training, and facility modifications

Management Services:  
 -FY23 and FY24 increases in FFRDC and EPASS (A&AS) attributed to continuing program office ramp up to support SAOC EMD

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604288F / <i>Survivable Airborne Operations Center (SAOC)</i> | <b>Project (Number/Name)</b><br>646507 / <i>Survivable Airborne Operations Center (SAOC)</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   |  |
|---|--|
| <b><i>Survivable Airborne Operations Center Development</i></b> |  |
| Acquisition Strategy Refinement and RFP Development             |  |
| Pre-EMD Contract Activities, Studies & Prototyping              |  |
| Source Selection  |  |
| Milestone B   |  |
| EMD   |  |



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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604288F / <i>Survivable Airborne Operations Center (SAOC)</i> | <b>Project (Number/Name)</b><br>646507 / <i>Survivable Airborne Operations Center (SAOC)</i> |

Schedule Details

| Events by Sub Project   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Survivable Airborne Operations Center Development</i></b> |         |      |         |      |
| Acquisition Strategy Refinement and RFP Development             | 2       | 2022 | 1       | 2023 |
| Pre-EMD Contract Activities, Studies & Prototyping              | 1       | 2022 | 4       | 2023 |
| Source Selection  | 1       | 2023 | 2       | 2024 |
| Milestone B   | 2       | 2024 | 2       | 2024 |
| EMD   | 2       | 2024 | 4       | 2028 |

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604317F / <i>Technology Transfer</i> |
|--|--|

| COST (\$ in Millions)                                | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                                | -           | 36.574  | 35.430  | 26.638       | 0.000       | 26.638        | 8.637   | 8.851   | 9.032   | 9.423   | Continuing       | Continuing |
| 64317A: <i>64317A Technology Transfer Add</i>        | -           | 0.000   | 2.672   | 0.113        | 0.000       | 0.113         | 0.099   | 0.101   | 0.101   | 0.170   | Continuing       | Continuing |
| 646003: <i>Partnership Intermediary Agreement(s)</i> | -           | 24.180  | 22.000  | 3.404        | 0.000       | 3.404         | 3.479   | 3.566   | 3.640   | 3.771   | Continuing       | Continuing |
| 646030: <i>AFwerX</i>                                | -           | 12.394  | 10.758  | 23.121       | 0.000       | 23.121        | 5.059   | 5.184   | 5.291   | 5.482   | 0.000            | 67.289     |

**A. Mission Description and Budget Item Justification**

Technology Transfer is a critical strategy for the NDS and DoD that makes the best possible use of national scientific, technical resources and information to enhance the effectiveness of DoD forces and warfighting capability systems. The Air Force Technology Transfer program oversees all Air Force inventions/patents and technology transfer agreements.

In FY 2012, DoD devolved management of OSD sponsored Partnership Intermediaries (PIAs) to the Air Force (AF). The Air Force Technology Transfer & Transition Office manages the Montana State University's TechLink & MilTech PIAs as well as AF PIAs. TechLink brokered 70% of DoD licenses over the past 10 years. The 646003 project includes the management of DoD/AF PIAs, Federal Lab Consortium Fees, invention disclosure & patent fees, information management data base, travel, training, outreach and tech scouting events. This program impacts virtually all technology fields, including biotechnology, quantum science, autonomy, advanced materials, microelectronics, energy generation and storage technologies, and more. This effort support our mission to innovate and modernize DoD weapon systems through collaborative teamwork and strategic partnerships.

The AFWERX mission is to transition agile, affordable, and accelerated capabilities by teaming innovative technology developers with Airmen and Guardian talent. AFWERX leverages Spark (the Airmen and Guardian talent base), AFVentures (the dual-use expanded technology base), and Prime (technology transitions) to scale and accelerate the capability. Funding in this project supports AFWERX research and development, innovation hubs, and information technology, public affairs, and marketing. The Spark mission is to inspire and enable Airmen and Guardians to unleash their potential and to drive capability development that increases the efficiency, effectiveness and quality of life of the warfighter. AFWERX uses Spark to discover and translate innovative talent into executable projects by facilitating stakeholder alignment through workshops and challenges. This connection brings together the creativity, innovation, and entrepreneurial spirit of our Airmen and Guardians to solve Air and Space Force technology and capability gaps.

A portion of funding for Project 646030 AFWERX and Project 64317A Technology Transfer Add under Program 0604317F Technology Transfer transitioned to Project 640856 under this Program beginning FY 2024.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |  |
|--|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604317F / <i>Technology Transfer</i> |
|--|--|

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Technology Transfer capabilities. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 56.768         | 16.759         | 13.671              | 0.000              | 13.671               |
| Current President's Budget                        | 36.574         | 35.430         | 26.638              | 0.000              | 26.638               |
| Total Adjustments                                 | -20.194        | 18.671         | 12.967              | 0.000              | 12.967               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 18.671         |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | -20.000        | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | -0.194         | 0.000          | 12.967              | 0.000              | 12.967               |

**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

|   | <b>FY 2022</b> | <b>FY 2023</b> |
|---|----------------|----------------|
| <b>Project:</b> 646003: <i>Partnership Intermediary Agreement(s)</i>                                  |                |                |
| Congressional Add: <i>Program Increase- Technology Transfer</i>                                       | 7.000          | -              |
| Congressional Add: <i>Program Increase- Academic partnership intermediary agreements</i>              | 10.000         | -              |
| Congressional Add: <i>Program Increase - Partnership intermediary agreements</i>                      | 4.000          | -              |
| Congressional Add: <i>Program increase- academic partnership intermediary agreement tech transfer</i> | -              | 10.000         |
| Congressional Add: <i>Program Increase- technology transfer (1)</i>                                   | -              | 3.671          |
| Congressional Add: <i>Program increase - partnership intermediary program</i>                         | -              | 5.000          |
| Congressional Add Subtotals for Project: 646003   | 21.000         | 18.671         |
| Congressional Add Totals for all Projects   | 21.000         | 18.671         |

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force Date: March 2023

|  |  |
|--|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604317F / <i>Technology Transfer</i> |
|--|--|

**Change Summary Explanation**

FY 2022 Reprogramming decrease transferred congressional add funding to Program 0708051F. FY 2024 Funding increase of \$12.967 million due to increased emphasis for AFWERX core operations and funds programs to empower and expand the DAF innovation ecosystem.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

|  |  |  |
|--|--|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604317F / <i>Technology Transfer</i> | <b>Project (Number/Name)</b><br>64317A / <i>64317A Technology Transfer Add</i> |
|--|--|--|

| COST (\$ in Millions)                         | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 64317A: <i>64317A Technology Transfer Add</i> | -           | 0.000   | 2.672   | 0.113        | 0.000       | 0.113         | 0.099   | 0.101   | 0.101   | 0.170   | Continuing       | Continuing |
| Quantity of RDT&E Articles                    | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

The AFWERX mission is to transition agile, affordable, and accelerated capabilities by teaming innovative technology developers with Airmen and Guardian talent. AFWERX leverages Spark (the Airmen and Guardian talent base), AFVentures (the dual-use expanded technology base), and Prime (technology transitions) to scale and accelerate the capability. Funding in this project supports AFWERX research and development, innovation hubs, and information technology, public affairs, and marketing. The Spark mission is to inspire and enable Airmen and Guardians to unleash their potential and to drive capability development that increases the efficiency, effectiveness and quality of life of the warfighter. AFWERX uses Spark to discover and translate innovative talent into executable projects by facilitating stakeholder alignment through workshops and challenges. This connection brings together the creativity, innovation, and entrepreneurial spirit of our Airmen and Guardians to solve Air and Space Force technology and capability gaps.

A portion of funding for Project 646030 AFWERX and Project 64317A Technology Transfer Add under Program 0604317F Technology Transfer transitioned to Project 640856 under this Program beginning FY 2024.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | FY 2022 | FY 2023 | FY 2024 |
|--|---------|---------|---------|
| <b>Title:</b> Civilian Pay   | 0.000   | 2.672   | 0.113   |
| <b>Description:</b> Provide professional government civilian workforce in support of AFWERX programs and activities.   |         |         |         |
| <b>FY 2023 Plans:</b><br>Funds civilian pay for AFWERX program listed above.   |         |         |         |
| <b>FY 2024 Plans:</b><br>Funds civilian positions across all of the AFWERX charged missions. Supports AFWERX Prime, Ventures, Spark, Integration, Operations, Finance, and Contracting Divisions.        |         |         |         |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>FY 2024 decreased compared to FY 2023 by \$2.559 million due to funding being realigned to Project 640856 under the Program beginning FY 2024. |         |         |         |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 0.000   | 2.672   | 0.113   |

**C. Other Program Funding Summary (\$ in Millions)**

N/A

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|--|---|---|
| Exhibit R-2A, RDT&E Project Justification: PB 2024 Air Force |   | Date: March 2023  |
| Appropriation/Budget Activity<br>3600 / 4                    | R-1 Program Element (Number/Name)<br>PE 0604317F / <i>Technology Transfer</i> | Project (Number/Name)<br>64317A / <i>64317A Technology Transfer Add</i> |

**C. Other Program Funding Summary (\$ in Millions)**

**Remarks**

**D. Acquisition Strategy**

Not applicable





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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |  |  | <b>Date:</b> March 2023 |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604317F / <i>Technology Transfer</i> | <b>Project (Number/Name)</b><br>64317A / <i>64317A Technology Transfer Add</i> |                         |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|                     |  |
|---------------------|--|
| <b>Civilian Pay</b> |  |
| Civilian Pay        |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604317F / <i>Technology Transfer</i> | <b>Project (Number/Name)</b><br>64317A / <i>64317A Technology Transfer Add</i> |

Schedule Details

| Events by Sub Project      | Start   |      | End     |      |
|----------------------------|---------|------|---------|------|
|                            | Quarter | Year | Quarter | Year |
| <b><i>Civilian Pay</i></b> |         |      |         |      |
| Civilian Pay               | 1       | 2023 | 4       | 2028 |

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|   |                    |                |                |                     |  |                      |                |                |   |                         |                         |                   |
|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |  |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0604317F / <i>Technology Transfer</i> |                      |                |                | <b>Project (Number/Name)</b><br>646003 / <i>Partnership Intermediary Agreement(s)</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>   | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 646003: <i>Partnership Intermediary Agreement(s)</i>                    | -                  | 24.180         | 22.000         | 3.404               | 0.000  | 3.404                | 3.479          | 3.566          | 3.640   | 3.771                   | Continuing              | Continuing        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -  | -                    | -              | -              | -   | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

In FY 2012, DoD devolved management of OSD sponsored Partnership Intermediaries (PIs) to the Air Force (AF). The Air Force Technology Transfer & Transition Office manages the Montana State University's TechLink & MilTech Partnership Intermediary Agreements (PIAs) as well as Air Force Partnership Intermediary Agreements (PIAs). TechLink brokered 70% of DoD licenses over the past 10 years. Technology Transfer is a critical strategy for the National Defense Strategy and DoD that makes the best possible use of national scientific, technical resources and information to enhance the effectiveness of DoD forces and warfighting capability systems. The Air Force Technology Transfer program oversees all AF inventions/patents and technology transfer agreements. This project includes the management of DoD/AF PIAs, Federal Lab Consortium Fees, invention disclosure & patent fees, information management data base, travel, training, outreach and tech scouting events. This program impacts virtually all technology fields, including biotechnology, quantum science, autonomy, advanced materials, microelectronics, energy generation and storage technologies, and more. This effort supports our mission to innovate and modernize DoD weapon systems through collaborative teamwork and strategic partnerships.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Technology Transfer   | 3.180          | 3.329          | 3.404          |
| <b>Description:</b> Enhance and expand transfer of technologies between DoD and the commercial sector.  |                |                |                |
| <b>FY 2023 Plans:</b><br>Continue implementing new cost-effective approaches to further increase and accelerate transfer of technologies developed at DoD laboratories and facilitate their transition to the warfighter. Continue evaluation of and market DoD laboratory inventions and broker technology transfer agreements/Cooperative Research and Development Agreements (CRADAs), to include commercial licenses, that will support the US defense mission and benefit the US economy. Continue to engage with the innovative capabilities of non-traditional defense contractors in developing and commercializing new dual-use products and services. |                |                |                |
| <b>FY 2024 Plans:</b><br>Continue implementing new cost-effective approaches to further increase and accelerate transfer of technologies developed at DoD laboratories and facilitate their transition to the warfighter. Continue evaluation of and market DoD laboratory inventions and broker technology transfer agreements/Cooperative Research and Development Agreements (CRADAs), to include commercial licenses, that will support the US defense mission and benefit the US economy. Continue to engage with the innovative capabilities of non-traditional defense contractors in developing and commercializing new dual-use products and services. |                |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b>  |                |                |                |

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604317F / <i>Technology Transfer</i> | <b>Project (Number/Name)</b><br>646003 / <i>Partnership Intermediary Agreement(s)</i> |
|--|--|---|

|   |                |                |                |
|---|----------------|----------------|----------------|
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
| Not applicable  |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>           | 3.180          | 3.329          | 3.404          |

|  | <b>FY 2022</b> | <b>FY 2023</b> |
|--|----------------|----------------|
| <b>Congressional Add:</b> Program Increase- Technology Transfer<br><i>FY 2022 Accomplishments:</i> Conduct Congressionally directed effort                             | 7.000          | -              |
| <b>Congressional Add:</b> Program Increase- Academic partnership intermediary agreements<br><i>FY 2022 Accomplishments:</i> Conduct Congressionally directed effort    | 10.000         | -              |
| <b>Congressional Add:</b> Program Increase - Partnership intermediary agreements<br><i>FY 2022 Accomplishments:</i> Conduct Congressionally directed effort            | 4.000          | -              |
| <b>Congressional Add:</b> Program increase- academic partnership intermediary agreement tech transfer<br><i>FY 2023 Plans:</i> Conduct Congressionally directed effort | -              | 10.000         |
| <b>Congressional Add:</b> Program Increase- technology transfer (1)<br><i>FY 2023 Plans:</i> Conduct Congressionally directed effort                                   | -              | 3.671          |
| <b>Congressional Add:</b> Program increase - partnership intermediary program<br><i>FY 2023 Plans:</i> Conduct Congressionally directed effort                         | -              | 5.000          |
| <b>Congressional Adds Subtotals</b>  | 21.000         | 18.671         |

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

N/A

**D. Acquisition Strategy**

This effort uses a Partnership Intermediary Agreement (PIA) with TechLink at Montana State University. Through this agreement TechLink helps the Department of Defense to establish licensing and other technology transfer agreements with US industry. The effort is run through the Air Force Research Laboratory/Small Business office at Wright Patterson Air Force Base.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604317F / <i>Technology Transfer</i> | <b>Project (Number/Name)</b><br>646003 / <i>Partnership Intermediary Agreement(s)</i> |
|--|--|---|

| <b>Support (\$ in Millions)</b>   |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| License DoD inventions for conversion into new products and services        | PO                     | TechLink : Bozeman, MT         | -           | 3.180   |            | 3.329   |            | 3.404        |            | -           |            | 3.404         | Continuing       | Continuing | -                        |
| Congressional Add-technology transfer                                       | PO                     | TechLink : Bozeman, MT         | -           | 7.000   |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Congressional Add-academic partnership intermediary agreements              | PO                     | APEX : Dayton, OH              | -           | 10.000  |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Congressional Add-partnership intermediary agreements                       | PO                     | TechLink : Bozeman, MT         | -           | 4.000   |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Congressional Add-partnership intermediary program                          | PO                     | MilTech : Bozeman, MT          | -           | -       |            | 5.000   |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Congressional Add-academic partnership intermediary agreement tech transfer | PO                     | APEX : Dayton, OH              | -           | -       |            | 10.000  |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Congressional Add-technology transfer                                       | PO                     | TechLink : Bozeman, MT         | -           | -       |            | 3.671   |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>   |                        |                                | -           | 24.180  |            | 22.000  |            | 3.404        |            | -           |            | 3.404         | Continuing       | Continuing | N/A                      |
| <b>Project Cost Totals</b>  |                        |                                | -           | 24.180  |            | 22.000  |            | 3.404        |            | -           |            | 3.404         | Continuing       | Continuing | N/A                      |

**Remarks**

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604317F / <i>Technology Transfer</i> | <b>Project (Number/Name)</b><br>646003 / <i>Partnership Intermediary Agreement(s)</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |  |
|--|--|
| <b>Partnership Intermediary</b>        |  |
| Tech Transfer Partnership Intermediary |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604317F / <i>Technology Transfer</i> | <b>Project (Number/Name)</b><br>646003 / <i>Partnership Intermediary Agreement(s)</i> |

Schedule Details

| Events by Sub Project                  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Partnership Intermediary</i></b> |         |      |         |      |
| Tech Transfer Partnership Intermediary | 1       | 2022 | 4       | 2028 |

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|   |                    |                |                |                     |  |                      |                |                |  |                         |                         |                   |
|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|--|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |  |                      |                |                |  | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0604317F / <i>Technology Transfer</i> |                      |                |                | <b>Project (Number/Name)</b><br>646030 / <i>AFwerX</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>   | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>   | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 646030: <i>AFwerX</i>   | -                  | 12.394         | 10.758         | 23.121              | 0.000  | 23.121               | 5.059          | 5.184          | 5.291  | 5.482                   | 0.000                   | 67.289            |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -  | -                    | -              | -              | -  | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

The AFWERX mission is to transition agile, affordable, and accelerated capabilities by teaming innovative technology developers with Airmen and Guardian talent. AFWERX leverages Spark (the Airmen and Guardian talent base), AFVentures (the dual-use expanded technology base), and Prime (technology transitions) to scale and accelerate the capability. Funding in this project supports AFWERX research and development, innovation hubs, and information technology, public affairs, and marketing. The Spark mission is to inspire and enable Airmen and Guardians to unleash their potential and to drive capability development that increases the efficiency, effectiveness and quality of life of the warfighter. AFWERX uses Spark to discover and translate innovative talent into executable projects by facilitating stakeholder alignment through workshops and challenges. This connection brings together the creativity, innovation, and entrepreneurial spirit of our Airmen and Guardians to solve Air and Space Force technology and capability gaps.

A portion of funding for Project 646030 AFWERX and Project 64317A Technology Transfer Add under Program 0604317F Technology Transfer transitioned to Project 640856 under this Program beginning FY 2024.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <b>Title:</b> AFWERX   | 12.394         | 10.758         | 23.121         |
| <b>Description:</b> Transition affordable and accelerated capabilities by teaming innovative technology developers with Airmen and Guardian talent.  |                |                |                |
| <b>FY 2023 Plans:</b><br>Continue development and sustainment of the Acquisition Workforce and organizational capabilities. Continue to develop increasingly integrated technology transition pathways between the AFWERX core activities. Planned activities include increasing interagency and international partner collaboration, expanded technology transition opportunities, and increased integration across Department of the Air Force innovation capabilities. Continue Prime technology transition programs and increase small targeted technology transitions through Airmen/Guardian-provided innovations. |                |                |                |
| <b>FY 2024 Plans:</b><br>Continue development and sustainment of the Acquisition Workforce and organizational capabilities. Core operations include civilian billets, expanded Spark engagement, and dynamic hubs, and site initiatives. Spark funding delivers development and fielding of Airmen and Guardian centric program management tools to connect the innovation ecosystem, establishes a Joint Spark innovation incubator. Dynamic hub and site initiatives seeks to establish a dynamic hub/site posturing strategy that is  |                |                |                |



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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|---|-------------------------|

|  |  |  |
|--|--|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604317F / <i>Technology Transfer</i> | <b>Project (Number/Name)</b><br>646030 / <i>AFwerX</i> |
|--|--|--|

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   | FY 2022 | FY 2023 | FY 2024 |
|---|---------|---------|---------|
| consistent with the DIAL-In (Defense, Industry, Academia, and Local Government Investment) model, with phased expanded growth across the innovation/commercial ecosystem.   |         |         |         |
| <b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br>FY 2024 Funding increased compared to FY 2023 by \$12.363 millions due to increased emphasis for AFWERX core operations and funds programs to empower and expand the DAF innovation ecosystem. |         |         |         |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 12.394  | 10.758  | 23.121  |

**C. Other Program Funding Summary (\$ in Millions)**  
N/A

**Remarks**

**D. Acquisition Strategy**

The Innovation Hubs, Products and Training, and Innovation Facilitation are awarded through a combination of Partnership Intermediary Agreements and competitive contract vehicles, some of which are directly awarded by AFWERX and others are executed through federal partnerships as appropriate.



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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |  |  |
|--|--|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604317F / <i>Technology Transfer</i> | <b>Project (Number/Name)</b><br>646030 / <i>AFwerX</i> |
|--|--|--|

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|               |  |
|---------------|--|
| <b>AFWERX</b> |  |
| AFWERX        |  |

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2024 Air Force **Date:** March 2023

|  |  |  |
|--|--|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604317F / <i>Technology Transfer</i> | <b>Project (Number/Name)</b><br>646030 / <i>AFwerX</i> |
|--|--|--|

Schedule Details

| Events by Sub Project | Start   |      | End     |      |
|-----------------------|---------|------|---------|------|
|                       | Quarter | Year | Quarter | Year |
| <b>AFWERX</b>         |         |      |         |      |
| AFWERX                | 1       | 2022 | 4       | 2028 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604327F / <i>Hard and Deeply Buried Target Defeat System (HDBTDS) Program</i> |
|--|---|

| COST (\$ in Millions)                           | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                           | 0.000       | 12.826  | 141.826 | 19.266       | 0.000       | 19.266        | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 173.918    |
| 645341: <i>Direct Strike Penetrator Systems</i> | 0.000       | 12.826  | 141.826 | 19.266       | 0.000       | 19.266        | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 173.918    |
| Quantity of RDT&E Articles                      | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**A. Mission Description and Budget Item Justification**

The Direct Strike Penetrator Systems program develops and modifies a family of advanced precision-guided penetrator munitions to include evaluation of integrated technologies for the development/integration of advanced position, navigation, and timing (PNT) capabilities (i.e., Global Positioning System (GPS), non-GPS, optical, passive, active, etc.) and smart fuze systems, and all penetrator components, that will provide the Air Force with improved ability to attack Hard and Deeply Buried Targets (HDBT), such as bunker and tunnel facilities, using air-to-surface conventional munitions. Systems developed include, but are not limited to Massive Ordnance Penetrator (MOP), GBU-72 Advanced 5,000-lb Penetrator Weapon System (A5K), and Section 804 Rapid Prototype/Rapid Fielding activities. Systems developed will be integrated onto current and future platforms to reduce the number of weapons required to hold HDBTs at risk and will result in more targets engaged per mission flown. Direct Strike Penetrators will provide critical global strike capability not met by inventory conventional weapons and will hold at risk the best protected high value assets essential to an enemy's war fighting ability. The project also provides an opportunity to quickly insert emerging technologies into existing and developing aircraft munitions and fuzes.

A Hard Target Munitions (HTM) Analysis-of-Alternatives (AoA) was conducted in 2014 to determine the best weapons and/or development efforts for addressing the HDBT mission area. The HTM AoA determined that it was necessary to develop a family of HTMs in order to apply effects to the entire range of HDBT sets. The Air Force is using the AoA to develop, produce and modify HDBT weapons identified as the most effective and affordable. Modeling and simulation is used to assess and characterize current inventory and to drive design and explore the utility of new classes of penetrator munitions.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 0.192M was expended for civilian pay expenses in this program element, and in FY23 0.0M is forecasted for civilian pay expenses in this program element.

This program leverages Digital acquisition tenets of open, agile, and digital. Common component development, in collaboration with other weapon systems, to reduce redundant costs between systems with similar subsystems requirements. Invests in analytical, information management, data management, digital environments, networks, facilities, and security infrastructure upgrades directly supporting development and sustainment of this program's capabilities, while leveraging DoD and DAF enterprise IT solutions.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|   |  |
|---|--|
| <b>Appropriation/Budget Activity</b><br>3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P) | <b>R-1 Program Element (Number/Name)</b><br>PE 0604327F I Hard and Deeply Buried Target Defeat System (HDBTDS) Program |
|---|--|

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 12.886         | 106.826        | 19.222              | 0.000              | 19.222               |
| Current President's Budget                        | 12.826         | 141.826        | 19.266              | 0.000              | 19.266               |
| Total Adjustments                                 | -0.060         | 35.000         | 0.044               | 0.000              | 0.044                |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 35.000         |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | -0.060         | 0.000          | 0.044               | 0.000              | 0.044                |

**Change Summary Explanation**

FY22 decreased by \$0.060 due to SBIR.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <b>Title:</b> Massive Ordnance Penetrator (MOP) Modification   | 4.587          | 139.251        | 19.266         |
| <b>Description:</b> Modify the Massive Ordnance Penetrator (MOP) weapon for enhanced capability to hold additional Hard and Deeply Buried Targets at risk in multiple Combatant Commands (COCOMs). The modification will be primarily software-based and the existing inventory of Guided Bomb Unit (GBU)-57E/B will be retrofitted. Construct relevant hard and deeply buried targets for testing. Execute MOP testing in support of modification efforts to included sub-scale and full-scale ground and flight tests. Analyze MOP weapon effectiveness. |                |                |                |
| <b>FY 2023 Plans:</b><br>Continue long-lead target build and test & evaluation of MOP Modification for enhanced capability as well as accuracy enhancement effort to hold hard and deeply buried targets at risk.  |                |                |                |
| <b>FY 2024 Plans:</b><br>Continue long-lead target build and test & evaluation of MOP Modification for enhanced capability as well as accuracy enhancement efforts to hold hard and deeply buried targets at risk. Effort projected for completion in FY2024.  |                |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b>   |                |                |                |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |  |
|---|--|
| <b>Appropriation/Budget Activity</b><br>3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P) | <b>R-1 Program Element (Number/Name)</b><br>PE 0604327F I Hard and Deeply Buried Target Defeat System (HDBTDS) Program |
|---|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| Funding decreased due to program moving out of EMD phase.   |                |                |                |
| <b>Title:</b> Advanced 5,000 lb (A5K) Penetrator  | 8.239          | 2.575          | 0.000          |
| <b>Description:</b> GBU-72 Advanced 5,000 lb (A5K) Penetrator is an improved 5,000 lb class penetrator to address capability gaps identified in the HTM AoA. Conduct A5K design, development, integration, modeling and simulation, and testing to improve performance against increasingly hardened targets. This effort utilizes existing and improved technologies to field an integrated penetrator weapon system to include: an improved penetrator warhead, a smart fuze system that can detect layers/voids, and a modified Joint Direct Attack Munition (JDAM) tail kit for all weather, precision guidance, navigation, and control. |                |                |                |
| <b>FY 2023 Plans:</b><br>Continuation to support the finalization of DT/OT testing, remediation activities, integration, and modeling/simulation to improve the performance against increasingly hardened targets for the Advanced 5,000 pound (A5K) Penetrator weapon system.  |                |                |                |
| <b>FY 2024 Plans:</b><br>No A5K activity in FY24.   |                |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funding decreased due to program moving out of EMD phase.   |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 12.826         | 141.826        | 19.266         |

| <b>D. Other Program Funding Summary (\$ in Millions)</b> |                |                |                               |                              |                                |                |                |                |                |                                   |                   |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| <u>Line Item</u>   | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
| • PAAF 01 353190: Massive Ordnance Penetrator (MOP)      | 15.500         | 19.743         | 14.047                        | -                            | 14.047                         | 8.752          | 0.000          | 0.000          | 0.000          | 0.000                             | 58.042            |
| • PAAF 01 353020: General Purpose Bombs                  | 160.976        | 148.102        | 142.118                       | -                            | 142.118                        | 144.453        | 180.435        | 176.511        | 180.323        | 0.000                             | 1,132.918         |
| • RDTE 05 0604602F: Armament/ Ordnance Development       | 8.821          | 5.279          | 5.918                         | -                            | 5.918                          | 7.144          | 7.324          | 7.474          | 7.745          | 0.000                             | 49.705            |
| • RDTE 04 0604201F: PNT Resiliency                       | 46.022         | 12.010         | 18.041                        | -                            | 18.041                         | 0.000          | 0.000          | 0.000          | 0.000          | 0.000                             | 76.073            |

**Remarks**  
Program Support Costs (PSC) Other Government Costs: Travel, Government Purchase Card (GPC), Program Support Personnel.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

| <b>Appropriation/Budget Activity</b>   | <b>R-1 Program Element (Number/Name)</b>  |
|--|---|
| 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | PE 0604327F <i>I Hard and Deeply Buried Target Defeat System (HDBTDS) Program</i> |

**E. Acquisition Strategy**

MOP uses sole source cost type contracts to complete development, test, and evaluation activities.

The initial GBU-72/A5K penetrator design was accomplished through modeling, simulation, and analysis producing potential designs. The designs were developed based on the performance parameters of survivability, lethality, accuracy and penetration. The Government determined the optimum A5K design to then manufacture production representative prototypes to include warheads, fuzes and modified JDAM kits. These assets will be used to conduct and successfully complete qualification testing and integration.



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| Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force |                        |                                     |             |  |            |         |            |   |            |             |            | Date: March 2023 |                  |            |                          |
|---|------------------------|-------------------------------------|-------------|--|------------|---------|------------|---|------------|-------------|------------|------------------|------------------|------------|--------------------------|
| Appropriation/Budget Activity                               |                        |                                     |             | R-1 Program Element (Number/Name)  |            |         |            | Project (Number/Name)                     |            |             |            |                  |                  |            |                          |
| 3600 / 4  |                        |                                     |             | PE 0604327F / Hard and Deeply Buried Target Defeat System (HDBTDS) Program |            |         |            | 645341 / Direct Strike Penetrator Systems |            |             |            |                  |                  |            |                          |
| Product Development (\$ in Millions)                        |                        |                                     |             | FY 2022  |            | FY 2023 |            | FY 2024 Base                              |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location      | Prior Years | Cost   | Award Date | Cost    | Award Date | Cost                                      | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |
| MOP Modification and Integration                            | SS/<br>Various         | Boeing : St Louis, MO               | 0.000       | 2.000  | Jun 2022   | -       |            | -   |            | -           |            | -                | Continuing       | Continuing | -                        |
| MOP Test Asset, Replenish (Cong Add \$)                     | SS/CPFF                | Boeing : St Louis, MO               | 0.000       | -  |            | 35.000  | Sep 2023   | -   |            | -           |            | -                | 0.000            | 35.000     | -                        |
| <b>Subtotal</b>   |                        |                                     | 0.000       | 2.000  |            | 35.000  |            | -   |            | -           |            | -                | Continuing       | Continuing | N/A                      |
| Support (\$ in Millions)                                    |                        |                                     |             | FY 2022  |            | FY 2023 |            | FY 2024 Base                              |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location      | Prior Years | Cost   | Award Date | Cost    | Award Date | Cost                                      | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |
| MOP System Contractor Support                               | MIPR                   | DOTC : Albuquerque, NM              | 0.000       | 0.000  | Sep 2022   | -       |            | 2.143                                     | Dec 2023   | -           |            | 2.143            | Continuing       | Continuing | -                        |
| A5K System T&E Contractor Support                           | MIPR                   | DOTC/ARA/NGIS : Albuquerque, NM     | 0.000       | 0.162  | May 2022   | -       |            | -   |            | -           |            | -                | 0.000            | 0.162      | -                        |
| A5K System T&E Government Support                           | MIPR                   | MCAAP : McAlester, OK               | 0.000       | 0.331  | Nov 2022   | -       |            | -   |            | -           |            | -                | 0.000            | 0.331      | -                        |
| DCA Civ Pay   | Allot                  | AFLCMC/EBD : Eglin AFB, FL          | 0.000       | 0.192  | Oct 2021   | -       |            | -   |            | -           |            | -                | 0.000            | 0.192      | -                        |
| <b>Subtotal</b>   |                        |                                     | 0.000       | 0.685  |            | -       |            | 2.143                                     |            | -           |            | 2.143            | Continuing       | Continuing | N/A                      |
| Test and Evaluation (\$ in Millions)                        |                        |                                     |             | FY 2022  |            | FY 2023 |            | FY 2024 Base                              |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location      | Prior Years | Cost   | Award Date | Cost    | Award Date | Cost                                      | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |
| MOP Test & Evaluation                                       | Various                | AFLCMC : Eglin, Holloman, Edw, FL   | 0.000       | 1.000  | Sep 2022   | 25.634  | Dec 2022   | 4.669                                     | Dec 2023   | -           |            | 4.669            | Continuing       | Continuing | -                        |
| MOP Target Construction and Instrumentation                 | Various                | DTRA : Albuquerque, NM              | 0.000       | 1.195  | Mar 2023   | 76.904  | Jan 2023   | 11.204                                    |            | -           |            | 11.204           | Continuing       | Continuing | -                        |
| A5K Developmental Test & Evaluation                         | Various                | 96 TW, 780 TS : Eglin, Holloman, FL | 0.000       | 6.000  | Jul 2022   | 0.508   | Jan 2023   | -   |            | -           |            | -                | 0.000            | 6.508      | -                        |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604327F / <i>Hard and Deeply Buried Target Defeat System (HDBTDS) Program</i> | <b>Project (Number/Name)</b><br>645341 / <i>Direct Strike Penetrator Systems</i> |
|--|---|--|

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                   |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|-----------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location    | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| A5K Operational Test & Evaluation           | Various                | 96 TW, Det 1 :<br>Eglin, WSMR, FL | 0.000       | 1.461   | Dec 2022   | 0.416   | May 2023   | -            |            | -           |            | -             | 0.000            | 1.877      | -                        |
| <b>Subtotal</b>                             |                        |                                   | 0.000       | 9.656   |            | 103.462 |            | 15.873       |            | -           |            | 15.873        | Continuing       | Continuing | N/A                      |

| <b>Management Services (\$ in Millions)</b>    |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                             | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| MOP Program Management Administration (PMA)    | Various                | AFLCMC/EBD : Eglin AFB, FL     | 0.000       | 0.200   | Mar 2022   | 3.220   | Oct 2022   | 1.250        | Dec 2023   | -           |            | 1.250         | Continuing       | Continuing | -                        |
| A5K Program Management Administration (PMA)    | Various                | AFLCMC/EBD : Eglin AFB, FL     | 0.000       | 0.285   | Mar 2022   | 0.144   | Jan 2023   | -            |            | -           |            | -             | 0.000            | 0.429      | -                        |
| M-Code Program Management Administration (PMA) | Various                | AFLCMC/EBD : Eglin AFB, FL     | 0.000       | -       |            | -       |            | -            |            | -           |            | -             | 0.000            | 0.000      | -                        |
| <b>Subtotal</b>                                |                        |                                | 0.000       | 0.485   |            | 3.364   |            | 1.250        |            | -           |            | 1.250         | Continuing       | Continuing | N/A                      |

**Remarks**  
Program Management Administration (PMA) funding increased to support additional MOP Modification testing activities.

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | 0.000       | 12.826  | 141.826 | 19.266       | -           | 19.266        | Continuing       | Continuing | N/A                      |

**Remarks**  
Program Support Costs (PSC) Other Government Costs: Travel, Government Purchase Card (GPC), Program Support Personnel.



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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604327F / <i>Hard and Deeply Buried Target Defeat System (HDBTDS) Program</i> | <b>Project (Number/Name)</b><br>645341 / <i>Direct Strike Penetrator Systems</i> |

Schedule Details

| Events by Sub Project                          | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Direct Strike Penetrator Systems</i></b> |         |      |         |      |
| MOP Modification Analysis and Testing          | 1       | 2022 | 4       | 2025 |
| A5K Design, Development and Testing            | 1       | 2022 | 4       | 2024 |
| M-Code/EAJ Development/Integration             | 1       | 2022 | 4       | 2024 |

**Note**  
M-code will be fielded through the individual A5K procurement funding line.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i> |
|--|---|

| COST (\$ in Millions)                                  | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                                  | -           | 69.143  | 43.372  | 37.121       | 0.000       | 37.121        | 60.818  | 62.587  | 64.007  | 67.545  | Continuing       | Continuing |
| 642812: <i>Acquisition/System Security Engineering</i> | -           | 26.775  | 20.227  | 17.137       | 0.000       | 17.137        | 25.291  | 35.733  | 36.466  | 37.785  | Continuing       | Continuing |
| 642834: <i>Mitigations</i>                             | -           | 34.907  | 17.119  | 14.261       | 0.000       | 14.261        | 28.539  | 19.691  | 20.232  | 22.186  | Continuing       | Continuing |
| 642836: <i>Mission Risk Analysis</i>                   | -           | 7.461   | 6.026   | 5.723        | 0.000       | 5.723         | 6.988   | 7.163   | 7.309   | 7.574   | Continuing       | Continuing |

**A. Mission Description and Budget Item Justification**

This program funds activities at the Cyber Resiliency Office for Weapon Systems (CROWS), which provides cyber capabilities and acquisition support to weapon system programs across the Department of the Air Force (DAF). CROWS increases the cyber resiliency of DAF weapon systems to maintain mission effective capability in a contested cyberspace environment. Its goals are to integrate cyber resiliency into new weapon systems and mitigate critical vulnerabilities in fielded weapon systems. The CROWS' mission aligns with the DAF's cyber survivability approach and strategic guidance, including the National Defense Strategy (NDS). The NDS highlights integrated deterrence as vital to safeguarding U.S. national interests from aggression and strategic attacks by building a resilient, survivable Joint Force in the cyber domain. This strategic guidance requires the Department of Defense to prioritize investments in cyber defense, resilience, and the continued integration of cyber capabilities into the full spectrum of military operations.

This program addresses cyber resiliency to improve survivability and address mission risks in three primary activities to meet these goals. The first activity is to develop systems security engineering tools, techniques, and procedures with associated training and education to build cyber expertise within the acquisition workforce that will develop and upgrade cyber resilient and survivable systems. Notably this includes embedding centrally managed Cyber Focus Team (CFT) members within DAF Program Executive Offices and Program Management Offices and equipping them with skills and resources to enhance the cyber posture of DAF weapon systems. It also includes capabilities to enable effective sharing of cyber intelligence and vulnerability information across multiple acquisition programs and identifying emerging technologies for further development and prototyping to posture DAF weapon systems to counter emerging threats. The second activity is to conduct threat informed weapon systems solution analysis, identify and prioritize vulnerabilities, and identify, develop, and present courses of action to mature the materiel and nonmateriel mitigation trade space. The third activity is to design mitigation strategies and prototype mitigation solutions to critical vulnerabilities, with an emphasis on those vulnerabilities that affect multiple weapon systems.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, and 0606398F. In PY 2022 \$0.080 million was expended for civilian pay expenses in this program element, and in CY 2023 \$0.000 million is forecasted for civilian pay expenses in this program element.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i> |
|--|---|

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 71.229         | 44.526         | 68.668              | 0.000              | 68.668               |
| Current President's Budget                        | 69.143         | 43.372         | 37.121              | 0.000              | 37.121               |
| Total Adjustments                                 | -2.086         | -1.154         | -31.547             | 0.000              | -31.547              |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -2.086         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | -1.154         | -31.547             | 0.000              | -31.547              |

**Change Summary Explanation**

Decrease in FY 2023 of \$1.154 million is due to an appropriation-wide Federally Funded Research and Development Center reduction.

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |   |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i> |                      |                |                | <b>Project (Number/Name)</b><br>642812 / <i>Acquisition/System Security Engineering</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>  | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 642812: <i>Acquisition/System Security Engineering</i>                  | -                  | 26.775         | 20.227         | 17.137              | 0.000   | 17.137               | 25.291         | 35.733         | 36.466  | 37.785                  | Continuing              | Continuing        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -   | -                    | -              | -              | -   | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

The Acquisition/System Security Engineering (SSE) activity develops Department of the Air Force (DAF) and Department of Defense system security engineering and acquisition security processes, policies, and contracting language, and refines intelligence collection and processes to provide actionable information on cyber threats to the weapons system community. It also encompasses developing cyber resiliency training, manning strategies, and Cyber Focus Teams, which provide cyber acquisition expertise to Program Executive Offices (PEO) to address acquisition workforce gaps in cyber resiliency/security manpower, experience, and knowledge. This project hones workforce expertise and skills required to counter weapon system-unique cyber threats, which exceed the knowledge needed to secure Internet Protocol based systems against traditional network-based cyber threats. Such expertise is critical for acquisition professionals to ensure cyber resiliency/security design tenets are integrated into the weapon system's life cycle. The project also enables rapid response to emerging threats by identifying early Technology Readiness Level (TRL) efforts, via non-traditional industry partners, for accelerated maturation activities leading to quicker fielded cyber resilient technologies for operational users. This project also includes identification, evaluation, and prioritization of emerging cyber techniques, products, and technologies for further development and prototyping to posture DAF weapon systems to counter emerging threats. This activity bolsters DAF cyber resiliency/security by supporting common secure environments for Program Offices to share information on classified weapon system cyber intelligence, threats, and vulnerabilities. Finally, this activity supports Defense Industrial Base data protection efforts and DAF program offices with program protection efforts including hardware assurance, software assurance, supply chain risk management, and other weapon system cybersecurity/resiliency activities as required.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <b>Title:</b> Acquisition/System Security Engineering  | 26.775         | 20.227         | 17.137         |
| <b>Description:</b> Evaluates, transitions, and applies cyber resiliency activities into policy, processes, and products to enhance weapon system cybersecurity.   |                |                |                |
| <b>FY 2023 Plans:</b><br>Continue to evolve the Acquisition/SSE requirements, processes, policies, and contracting language to influence cyber resiliency in all phases of the acquisition process. Refine intelligence collection and processes to provide actionable information on cyber threats to the weapons system community. Continue supporting common security environments to enable program offices to collaborate/share information on classified weapon system cyber intelligence threats and vulnerabilities as well as the necessary verification and validation infrastructure (technology, hardware/software modeling and lab resources) to understand, reconcile, and program against emerging cyber resiliency attack vectors. Enable delivery of cyber expertise to PEOs through Cyber Focus Team (CFT) manpower, continue to identify acquisition cyber resiliency training gaps, analyze required knowledge and skill sets, |                |                |                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i> | <b>Project (Number/Name)</b><br>642812 / <i>Acquisition/System Security Engineering</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <p>and develop increasingly more technical and hands on training to support the acquisition workforce. Continue identification, evaluation, and prioritization of emerging cyber techniques, products, and technologies for further development and prototyping to posture DAF weapon systems to counter emerging threats.</p> <p><b><i>FY 2024 Plans:</i></b><br/>Continue to evolve the Acquisition/SSE requirements, processes, policies, and contracting language to influence cyber resiliency in all phases of the acquisition process. Focus and consolidate intelligence collection and processes to provide actionable information on cyber threats to the weapons system community. Transition common security environments to system and mission owners to enable program offices to collaborate/share information on classified weapon system cyber intelligence threats and vulnerabilities as well as the necessary verification and validation infrastructure (technology, hardware/software modeling and lab resources) to understand, reconcile, and program against emerging cyber resiliency attack vectors. Continue delivery of cyber expertise to PEOs through Cyber Focus Team (CFT) manpower, continue to identify acquisition cyber resiliency training gaps, analyze required knowledge and skill sets, and develop increasingly more technical and hands on training to support the acquisition workforce. Identify, evaluate, and prioritize emerging cyber techniques, products, and technologies for further development and prototyping to posture DAF weapon systems to counter emerging threats.</p> <p><b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br/>FY 2024 decreased compared to FY 2023 by \$3.090 million. The FY 2024 funding request was reduced by \$3.090 million to account for the availability of prior year execution balances. The request reduction was also due to higher Air Force priorities. In response to the funding decrease, resourcing and primary oversight of common secure environments will be transitioned to system and mission owners. This project will decrease emphasis in identifying, assessing, and supporting low TRL technologies for their potential to form the foundation as an emerging cyber resiliency capability. Furthermore, declined strength will be given to intelligence collection skill development and methods to identify cyber threats and enemy exploitation opportunities to weapon systems.</p> |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 26.775         | 20.227         | 17.137         |

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

When possible, activities in this effort will leverage current competitively-awarded contracts. Additional necessary contracts funded in this program element will be awarded using either competitive or sole source procedures, whichever is most appropriate. The government agency responsible for managing the program is



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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force  |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i> | <b>Project (Number/Name)</b><br>642812 / <i>Acquisition/System Security Engineering</i> |
| the Air Force Life Cycle Management Center, Cyber Resiliency Office for Weapon Systems, Wright-Patterson Air Force Base, Ohio and Hanscom Air Force Base, Massachusetts. |   |   |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i> | <b>Project (Number/Name)</b><br>642812 / <i>Acquisition/System Security Engineering</i> |
|--|---|---|

| <b>Product Development (\$ in Millions)</b>                         |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Common Secure Environment   | Various                | Various : Various              | -           | 6.250   | Nov 2021   | 2.600   | Nov 2022   | 0.000        | Nov 2023   | -           |            | 0.000         | Continuing       | Continuing | -                        |
| Intel collection skills to identify cyber threats to weapon systems | Various                | Various : Various              | -           | 2.000   | Dec 2021   | 2.000   | Dec 2022   | 3.000        | Dec 2023   | -           |            | 3.000         | Continuing       | Continuing | -                        |
| Education and Training  | Various                | Various : Various              | -           | 1.050   | Jan 2022   | 1.600   | Jan 2023   | 1.500        | Jan 2024   | -           |            | 1.500         | Continuing       | Continuing | -                        |
| Cyber Resiliency Technologies Development                           | Various                | Various : Various              | -           | 9.589   | Nov 2021   | 6.627   | Nov 2022   | 4.381        | Nov 2023   | -           |            | 4.381         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>   |                        |                                | -           | 18.889  |            | 12.827  |            | 8.881        |            | -           |            | 8.881         | Continuing       | Continuing | N/A                      |

| <b>Support (\$ in Millions)</b>  |                        |  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location         | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| System Security Engineering requirements, policy and guidance documents (DTIC) | Various                | Various : Various                      | -           | 0.456   | Jan 2022   | 0.456   | Jan 2023   | 0.456        | Jan 2024   | -           |            | 0.456         | Continuing       | Continuing | -                        |
| MITRE  | Various                | Various : Bedford, MA                  | -           | 4.800   | Nov 2021   | 4.944   | Nov 2022   | 5.000        | Nov 2023   | -           |            | 5.000         | Continuing       | Continuing | -                        |
| CMU/SEI  | Various                | Carnegie Mellon Univ. : Pittsburgh, PA | -           | 0.800   | Dec 2021   | 0.800   | Dec 2022   | 0.800        | Dec 2023   | -           |            | 0.800         | Continuing       | Continuing | -                        |
| Direct Cite Authority - Civ Pay  | Various                | Various : Various                      | -           | 0.080   | Jan 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>  |                        |  | -           | 6.136   |            | 6.200   |            | 6.256        |            | -           |            | 6.256         | Continuing       | Continuing | N/A                      |



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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i> | <b>Project (Number/Name)</b><br>642812 / <i>Acquisition/System Security Engineering</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

| <b><i>Acquisition/System Security Engineering</i></b>                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Support common cyber security environments  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Prototype and deliver enhanced system security engineering processes and products |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Prototype and deliver cyber security design and contractual requirements          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Prototype and deliver acquisition cyber intel analysis products and techniques    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Develop weapon system cyber training  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Deploy cyber focus teams  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Prototype advanced cyber resiliency technology                                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i> | <b>Project (Number/Name)</b><br>642812 / <i>Acquisition/System Security Engineering</i> |

Schedule Details

| Events by Sub Project   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b>Acquisition/System Security Engineering</b>                                    |         |      |         |      |
| Support common cyber security environments  | 1       | 2022 | 4       | 2023 |
| Prototype and deliver enhanced system security engineering processes and products | 1       | 2022 | 4       | 2028 |
| Prototype and deliver cyber security design and contractual requirements          | 1       | 2022 | 4       | 2028 |
| Prototype and deliver acquisition cyber intel analysis products and techniques    | 1       | 2022 | 4       | 2028 |
| Develop weapon system cyber training  | 1       | 2022 | 4       | 2028 |
| Deploy cyber focus teams  | 1       | 2022 | 4       | 2025 |
| Prototype advanced cyber resiliency technology                                    | 1       | 2022 | 4       | 2028 |

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i> | <b>Project (Number/Name)</b><br>642834 / <i>Mitigations</i> |
|--|---|---|

| COST (\$ in Millions)      | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 642834: <i>Mitigations</i> | -           | 34.907  | 17.119  | 14.261       | 0.000       | 14.261        | 28.539  | 19.691  | 20.232  | 22.186  | Continuing       | Continuing |
| Quantity of RDT&E Articles | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

The Mitigations activity prototypes mitigations to high risk cyber vulnerabilities and recommends a transition path for fielded weapon systems, subsystems, and support systems. As part of the project, the Cyber Resiliency Office for Weapon Systems (CROWS) performs the engineering analysis and partners with program offices for the affected weapon systems to develop a mitigation strategy. The activity also supports the CROWS to lead the non-recurring engineering effort to prototype mitigation solutions that can be fielded on multiple weapon systems and transition the mitigation to programs for implementation and sustainment. Finally, the project enables CROWS to develop a centralized data repository that catalogs proven materiel mitigations for use across Department of the Air Force weapon system program offices to maximize return on investment in the prototyping activity.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | FY 2022 | FY 2023 | FY 2024 |
|--|---------|---------|---------|
| <b>Title:</b> Cyber Mitigation Prototyping   | 34.907  | 17.119  | 14.261  |
| <b>Description:</b> Support and evaluate weapon systems' cyber risk assessments to identify, validate, and prioritize mitigations required for cyber vulnerabilities/susceptibilities. Partner with system owners and acquisition Program Offices to develop and transition prototype mitigations.   |         |         |         |
| <b>FY 2023 Plans:</b><br>Continue developing prototyping mitigations for cyber vulnerabilities on fielded weapon systems, subsystems, and support systems in realistic, high fidelity environments and identifying threat-informed risks/vulnerabilities. Collaborate with system owners and acquisition program offices to prototype mitigation projects and implement technology transfer of prototyped solutions within the associated acquisition program office. Develop centralized data repository for mitigations addressing weapon system cyber risks and vulnerabilities. Support mitigation integration requirements by translating/mapping threats to enterprise mitigation techniques using mature methodologies for weapon system common reference architectures. Build a strategy to manage OSD's & NSA's requests regarding DAF weapon systems' cyber vulnerability and mitigation activities. |         |         |         |
| <b>FY 2024 Plans:</b><br>Narrow focus on prototyping mitigation opportunities for cyber vulnerabilities on fielded weapon systems, subsystems, and support systems in realistic, high fidelity environments and identifying threat-informed risks/vulnerabilities. Continue to collaborate with system owners and acquisition program offices to prototype mitigation projects and implement technology transfer of prototyped solutions within the associated acquisition program office, concentrating on major weapon systems. Mature centralized data repository for mitigations addressing weapon system cyber risks and vulnerabilities. Continue to support mitigation integration requirements by translating/mapping threats to enterprise mitigation techniques using mature methodologies for weapon system   |         |         |         |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023                                     |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i> | <b>Project (Number/Name)</b><br>642834 / <i>Mitigations</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p>common reference architectures. Demonstrate a strategy to manage OSD's and NSA's requests on DAF weapon systems' cyber vulnerability and mitigation activities.</p> <p><b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br/>                     FY 2024 decreased compared to FY 2023 by \$2.858 million. The FY 2024 funding request was reduced by \$2.858 million to account for the availability of prior year execution balances. The request reduction was also due to higher Air Force priorities. Decreased emphasis and support will be given to high-risk mitigation projects and those projects that are able to increase the cyber resiliency of a small number of lower priority weapon systems. The project will hone its focus and selection rigor in supporting mitigations and platform integration activities for high priority weapons that support combatant command Operational Plans (OPLANs). In particular, this project will bias investment in mitigation technologies in weapon systems supporting nuclear deterrence and strike, and long-range conventional strike missions aligning to FY21 NDAA s. 1712 Strategic Cybersecurity Program assessments.</p> |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 34.907         | 17.119         | 14.261         |

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

When possible, activities in this effort will leverage current competitively-awarded contracts. Additional necessary contracts funded in this program element will be awarded using either competitive or sole source procedures. The government agency responsible for managing the program is the Air Force Life Cycle Management Center, Cyber Resiliency Office for Weapon Systems, Wright-Patterson Air Force Base, Ohio and Hanscom Air Force Base, Massachusetts.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i> | <b>Project (Number/Name)</b><br>642834 / <i>Mitigations</i> |
|--|---|---|

| <b>Product Development (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Material Solutions for Major Weapon Systems | Various                | Various : Various              | -           | 11.567  | Jan 2022   | 3.845   | Jan 2023   | 2.271        | Jan 2024   | -           |            | 2.271         | Continuing       | Continuing | -                        |
| Material Solutions for Subsystems           | Various                | Various : Various              | -           | 7.963   | Dec 2021   | 2.530   | Dec 2022   | 1.500        | Dec 2023   | -           |            | 1.500         | Continuing       | Continuing | -                        |
| Non-Materiel Solutions                      | Various                | Various : Various              | -           | 3.957   | Dec 2021   | 1.160   | Dec 2022   | 1.000        | Dec 2023   | -           |            | 1.000         | Continuing       | Continuing | -                        |
| Centralized Data Repository                 | Various                | Various : Various              | -           | 2.730   | Dec 2021   | 0.730   | Dec 2022   | 0.500        | Dec 2023   | -           |            | 0.500         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 26.217  |            | 8.265   |            | 5.271        |            | -           |            | 5.271         | Continuing       | Continuing | N/A                      |

| <b>Support (\$ in Millions)</b>             |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| MITRE                                       | Various                | Various : Bedford, MA          | -           | 3.000   | Jan 2022   | 3.000   | Jan 2023   | 3.000        | Jan 2024   | -           |            | 3.000         | Continuing       | Continuing | -                        |
| Defense Technical Information Center (DTIC) | Various                | Various : Various              | -           | 0.240   | Jan 2022   | 0.240   | Jan 2023   | 0.240        | Jan 2024   | -           |            | 0.240         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 3.240   |            | 3.240   |            | 3.240        |            | -           |            | 3.240         | Continuing       | Continuing | N/A                      |

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| A&AS, Travel, Government Purchase Card      | Various                | Various : Various              | -           | 5.450   | Dec 2021   | 5.614   | Dec 2022   | 5.750        | Dec 2023   | -           |            | 5.750         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 5.450   |            | 5.614   |            | 5.750        |            | -           |            | 5.750         | Continuing       | Continuing | N/A                      |

|                            |  |  | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|--|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> |  |  | -           | 34.907  | 17.119  | 14.261       | -           | 14.261        | Continuing       | Continuing | N/A                      |





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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023                                     |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i> | <b>Project (Number/Name)</b><br>642834 / <i>Mitigations</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

| <b>Mitigations</b>   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Prototype cyber mitigations on known cyber vulnerabilities                     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Identify transition plan for tested mitigations to known cyber vulnerabilities |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Centralized Data Repository  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023                                     |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i> | <b>Project (Number/Name)</b><br>642834 / <i>Mitigations</i> |

Schedule Details

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b>Mitigations</b>   |         |      |         |      |
| Prototype cyber mitigations on known cyber vulnerabilities                     | 1       | 2022 | 4       | 2028 |
| Identify transition plan for tested mitigations to known cyber vulnerabilities | 1       | 2022 | 4       | 2028 |
| Centralized Data Repository  | 1       | 2022 | 4       | 2028 |

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i> | <b>Project (Number/Name)</b><br>642836 / <i>Mission Risk Analysis</i> |
|--|---|---|

| COST (\$ in Millions)                | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 642836: <i>Mission Risk Analysis</i> | -           | 7.461   | 6.026   | 5.723        | 0.000       | 5.723         | 6.988   | 7.163   | 7.309   | 7.574   | Continuing       | Continuing |
| Quantity of RDT&E Articles           | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

The Mission Risk Analysis project discovers and analyzes cyber susceptibilities/vulnerabilities to Department of the Air Force (DAF) weapon systems and characterizes their impacts based on mission risk. The project promotes the enhancement of cyber discovery methodologies and capabilities within the DAF. The focus is on assessing the gaps and seams that exist between defined weapon system boundaries and within areas that are not assigned to specific weapon system program offices. This activity builds upon existing efforts that identify and mitigate cyber vulnerabilities, and does not duplicate similar ongoing efforts or conduct redundant assessments on systems that have already been evaluated. The Cyber Focus Team (CFT) members developed under the Acquisition/System Security Engineering activity, Project 642812, contribute diverse assessment data sets from various weapon system platforms to enhance the CROWS' ability to identify and validate vulnerabilities across the fielded fleet. This activity disseminates cyber risk information to inform acquisition decisions, provides feedback to focus future assessments, and also feeds into the Mitigations activity under Project 642834.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | FY 2022 | FY 2023 | FY 2024 |
|--|---------|---------|---------|
| <b>Title:</b> Cyber Mission Risk Analysis  | 7.461   | 6.026   | 5.723   |
| <b>Description:</b> Discovers, analyzes, and coordinates information sharing of mission risk and risk discovery activities for DAF weapon systems.   |         |         |         |
| <b>FY 2023 Plans:</b><br>Coordinate cyber vulnerability assessments and develop capabilities to provide and support focused assessments where required. Continue developing solutions to find, consolidate, analyze, assess, and share cyber vulnerabilities through an enterprise-level data analysis capability and data strategy. Provide subject matter expertise through the CROWS' Cyber Resiliency Support Team (CRST) to augment DoD cyber vulnerability assessments and ongoing discovery tasks.  |         |         |         |
| <b>FY 2024 Plans:</b><br>Narrow coordination of cyber vulnerability assessments and validate, mature, and continue development of capabilities to provide focused assessments where required. Refine developing solutions to find, consolidate, analyze, assess, and share cyber vulnerabilities through an enterprise-level data analysis capability and data strategy. Continue to provide subject matter expertise through the Cyber Resiliency Support Team (CRST) to augment DoD cyber vulnerability assessments and ongoing discovery tasks. |         |         |         |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b>   |         |         |         |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i> | <b>Project (Number/Name)</b><br>642836 / <i>Mission Risk Analysis</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| FY 2024 decreased compared to FY 2023 by \$0.303 million. The FY 2024 funding request was reduced by \$0.303 million to account for the availability of prior year execution balances. The request reduction was also due to higher Air Force priorities. This project will decrease emphasis and availability of CRST support to augment cyber vulnerability assessments. |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 7.461          | 6.026          | 5.723          |

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

When possible, activities in this effort will leverage current competitively-awarded contracts. Additional necessary contracts funded in this program element will be awarded using either competitive or sole source procedures, whichever is most appropriate. The government agency responsible for managing the program is the Air Force Life Cycle Management Center, Cyber Resiliency Office for Weapon Systems, Wright-Patterson Air Force Base, Ohio and Hanscom Air Force Base, Massachusetts.



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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i> | <b>Project (Number/Name)</b><br>642836 / <i>Mission Risk Analysis</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |  |
|--|--|
| <b><i>Mission Risk Analysis</i></b>  |  |
| Develop, institutionalize and utilize a Data Capture Repository and Analytics Team (DCRA)  |  |
| Execute risk analysis and discovery on weapons systems and across mission areas. Leverage and augment existing and emerging assessment environments and tools. |  |
| Engineer solution candidates for reducing cyber risk with DAF weapon systems.  |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604414F / <i>Cyber Resiliency of Weapon Systems-ACS</i> | <b>Project (Number/Name)</b><br>642836 / <i>Mission Risk Analysis</i> |

Schedule Details

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Mission Risk Analysis</i></b>  |         |      |         |      |
| Develop, institutionalize and utilize a Data Capture Repository and Analytics Team (DCRA)  | 1       | 2022 | 4       | 2028 |
| Execute risk analysis and discovery on weapons systems and across mission areas. Leverage and augment existing and emerging assessment environments and tools. | 1       | 2022 | 4       | 2028 |
| Engineer solution candidates for reducing cyber risk with DAF weapon systems.  | 1       | 2022 | 4       | 2028 |



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604534F / <i>Adaptive Engine Transition Program (AETP)</i> |
|--|--|

| COST (\$ in Millions)                                    | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                                    | -           | 0.000   | 286.096 | 0.000        | 0.000       | 0.000         | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 286.096    |
| 640866: <i>Advanced Engine Transition Program (AETP)</i> | -           | 0.000   | 286.096 | 0.000        | 0.000       | 0.000         | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 286.096    |
| Quantity of RDT&E Articles                               | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**A. Mission Description and Budget Item Justification**

The Adaptive Engine Transition Program (AETP) will design and manufacture multiple adaptive engine prototypes, complete component rig assessments, characterize materials, and inform manufacturing process improvements. The prototype engines will demonstrate fuel efficiency increases, thrust increases, and new component technologies by performing sea-level, altitude, and durability assessments across multiple power settings. These assessments will provide data to quantify the capability and reduce risk in areas such as thermal capacity, reliability, and supportability, among others. The program will also demonstrate adaptive engine technology can be scaled to meet military fighter engine size requirements while ensuring appropriate manufacturing and technology readiness levels by producing flight-weight prototypes. AETP test objectives are foundational risk reduction activities for the Next Generation Adaptive Propulsion (NGAP) program providing capability enabling options for Next Generation Air Dominance (NGAD) capabilities.

The Adaptive Engine Transition Program (AETP) Program Element is new in FY 2024 and responds to Congressional direction in the 2023 Appropriations Bill and accompanying Joint Explanatory Statement directing the Air Force to maintain separate budget lines for the AETP and Next Generation Adaptive Propulsion (NGAP) efforts. Prior to FY 2023 the entirety of both AETP and NGAP were reported in Project 643608, Advanced Engine Development in PE 0604004F, Advanced Engine Development. This is a congressionally directed administrative realignment to provide increased transparency to Congress and is not a new start.

This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2022 0.0 million was expended for civilian pay expenses in this program element, and in FY 2023 2.304 million is forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P) | <b>R-1 Program Element (Number/Name)</b><br>PE 0604534F I Adaptive Engine Transition Program (AETP) |
|---|---|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 0.000          | 0.000          | 0.000               | 0.000              | 0.000                |
| Current President's Budget                        | 0.000          | 286.096        | 0.000               | 0.000              | 0.000                |
| Total Adjustments                                 | 0.000          | 286.096        | 0.000               | 0.000              | 0.000                |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 286.096        | 0.000               | 0.000              | 0.000                |

**Change Summary Explanation**

FY 2022 - AETP executed entirely in PE 0604004F, Advanced Engine Development, Project 643608, Advanced Engine Development.

FY 2023 - AETP moved out of Program Element 0604004F, Advanced Engine Development and into this program element to maintain separate budget lines for the AETP and NGAP efforts as directed in the 2023 Appropriations Bill and accompanying Joint Explanatory Statement. This is a congressionally directed administrative realignment to provide increased transparency to Congress and is not a new start.

FY 2024 - Although the AETP provides the best overall F-35A operational performance, the F135 Engine Core Upgrade will restore engine life and prevent degradation for all three F-35 variants at the lowest cost. As such, no funding required or requested for the AETP.

|   |                |                |                |
|---|----------------|----------------|----------------|
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|

**Title:** Adaptive Engine Transition Program

|   |         |       |
|---|---------|-------|
| - | 286.096 | 0.000 |
|---|---------|-------|

**Description:** The Adaptive Engine Transition Program (AETP) will design and manufacture multiple adaptive engine prototypes, complete component rig assessments, characterize materials, and inform manufacturing process improvements. The prototype engines will demonstrate fuel efficiency increases, thrust increases, and new component technologies by performing sea-level, altitude, and durability assessments across multiple power settings. These assessments will provide data to quantify the capability and reduce risk in areas such as thermal capacity, reliability, and supportability, among others. The program will also demonstrate adaptive engine technology can be scaled to meet military fighter engine size requirements while ensuring appropriate manufacturing and technology readiness levels by producing flight-weight prototypes. AETP test objectives are foundational risk reduction activities for the Next Generation Adaptive Propulsion program providing capability enabling options for Next Generation Air Dominance (NGAD) capabilities.

This program element is new in FY 2024 and responds to Congressional direction to maintain separate budget lines for the Adaptive Engine Transition Program (AETP) and Next Generation Adaptive Propulsion (NGAP) efforts. Prior to FY 2023 the

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604534F / <i>Adaptive Engine Transition Program (AETP)</i> |
|--|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| entirety of both AETP and NGAP were reported in program element 0604004F, Advanced Engine Development, Project 643608, Advanced Engine Development. This is a congressionally directed administrative realignment to provide increased transparency to Congress and is not a new start.                              |                |                |                |
| <b>FY 2023 Plans:</b><br>Funds continuation of prototype engine assessments and product design activities that include addressing known design improvements, engine weight reduction initiatives, development of engine controls and accessories (Full Authority Digital Engine Control-FADEC) and F-35 integration. |                |                |                |
| <b>FY 2024 Plans:</b><br>AETP will be discontinued; no FY 2024 funds required or requested.  |                |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funding decreased due to discontinuance of the AETP.   |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | -              | 286.096        | 0.000          |

**D. Other Program Funding Summary (\$ in Millions)**  
N/A

**Remarks**

**E. Acquisition Strategy**  
For the Adaptive Engine Transition Program, the Air Force awarded two limited source, cost plus incentive fee contracts back in FY 2016 to General Electric and Pratt & Whitney due to their unique qualifications to design a high performance, flight-weight adaptive turbine engine in the thrust class for AETP. Incentive categories include engine weight, performance factors, and maintainability and supportability, with specific metrics for each category incentivized. In December 2022, a new Contract Line Item was added to the General Electric contract for continued maturation of fuel efficient adaptive engine component technologies and reduce associated risk in preparation for next-generation propulsion system development for combat aircraft applications. A notional acquisition strategy for transitioning the AETP to the F-35A was included in the Secretary of the Air Force April 2022 Report to Congressional Committees on AETP in accordance with the report requirements set forth in Section 242 of the National Defense Authorization Act for FY 2022. The government agency responsible for managing this program is the Air Force Life Cycle Management Center, Propulsion Directorate, Wright-Patterson Air Force Base, Ohio.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604534F / Adaptive Engine Transition Program (AETP) | <b>Project (Number/Name)</b><br>640866 / Advanced Engine Transition Program (AETP) |
|--|---|--|

| <b>Product Development (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Adaptive Engine Transition Program - GE     | C/CPIF                 | GE : Evendale, OH              | -           | -       |            | 138.352 | Oct 2022   | 0.000        | Oct 2023   | -           |            | 0.000         | 0.000            | 138.352    | -                        |
| Adaptive Engine Transition Program - PW     | C/CPIF                 | PW : East Hartford, CT         | -           | -       |            | 138.352 | Oct 2022   | 0.000        | Oct 2023   | -           |            | 0.000         | 0.000            | 138.352    | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | -       |            | 276.704 |            | 0.000        |            | -           |            | 0.000         | 0.000            | 276.704    | N/A                      |

| <b>Management Services (\$ in Millions)</b>                     |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Adaptive Engine Transition Program - Program Management Support | Various                | Various : TBD                  | -           | -       |            | 9.392   | Dec 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Not specified.  | C/CPAF                 | Not specified. : TBD           | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>   |                        |                                | -           | -       |            | 9.392   |            | -            |            | -           |            | -             | Continuing       | Continuing | N/A                      |

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> |             | -       | -       | 286.096      | 0.000       | 0.000         | Continuing       | Continuing | N/A                      |

**Remarks**  
 GE - General Electric PW - Pratt & Whitney  
  
 FY 2022 - AETP funding executing in its entirety in PE 0604004F, Advanced Engine Development.  
  
 FY 2023 - Growth in Management Services costs affiliated with program office growth for acquisition planning activities and propulsion industrial base supply chain studies.  
  
 FY 2024 - Although the AETP provides the best overall F-35A operational performance, the F135 Engine Core Upgrade will restore engine life and prevent degradation for all three F-35 variants at the lowest cost. As such, no funding required or requested for the AETP.

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604534F / <i>Adaptive Engine Transition Program (AETP)</i> | <b>Project (Number/Name)</b><br>640866 / <i>Advanced Engine Transition Program (AETP)</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |  |
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| <b><i>Adaptive Engine Transition Program</i></b>                             |  |
| Detailed Design, Engine Fabrication, Engine Assessments, Transition Planning |  |
| Design Improvements  |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604534F / <i>Adaptive Engine Transition Program (AETP)</i> | <b>Project (Number/Name)</b><br>640866 / <i>Advanced Engine Transition Program (AETP)</i> |

Schedule Details

| Events by Sub Project   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Adaptive Engine Transition Program</i></b>                            |         |      |         |      |
| Detailed Design, Engine Fabrication, EngineAssessments, Transition Planning | 1       | 2022 | 4       | 2024 |
| Design Improvements   | 4       | 2022 | 4       | 2024 |

**Note**

The Adaptive Engine Transition Program consists of five phases: detailed design, engine fabrication, engine assessments, transition planning and design improvements. Design improvements include engine weight reduction initiatives; engine design progression related to performance, durability and other requirements; engine controls and accessories development; additional altitude testing and engine tear-down; and life cycle cost studies.

Program deliverables include: military adaptive engine detailed design parameters and models; multiple engine sets of hardware (plus spare parts); matured technologies; major rig assessment data (controls, combustor, etc.); program reviews; and technology, afford-ability, sustainability and integration studies.

AETP moved out of Program Element 0604004F, Advanced Engine Development to this program element in FY 2023 to maintain separate budget lines for the AETP and NGAP efforts in accordance with direction in the 2023 Appropriations Bill and accompanying Joint Explanatory Statement. With discontinuance of the AETP, the AETP office will close out planned prototype engine assessments and product design activities during FY 2024.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

| <b>Appropriation/Budget Activity</b>   |             |         |         |              | <b>R-1 Program Element (Number/Name)</b>                           |               |         |         |         |         |                  |            |
|--|-------------|---------|---------|--------------|--|---------------|---------|---------|---------|---------|------------------|------------|
| 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> |             |         |         |              | PE 0604668F <i>I Joint Transportation Management System (JTMS)</i> |               |         |         |         |         |                  |            |
| COST (\$ in Millions)  | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO  | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
| Total Program Element  | -           | 0.000   | 27.758  | 37.026       | 0.000  | 37.026        | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 64.784     |
| 646682: <i>JTMS DEVELOPMENT</i>  | -           | 0.000   | 27.758  | 37.026       | 0.000  | 37.026        | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 64.784     |
| Quantity of RDT&E Articles   | -           | -       | -       | -            | -  | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

This initiative provides an overarching solution to reform functional financial and logistics capabilities within the Transportation of Things and is aimed at the third pillar of the 2022 National Defense Strategy—business reform. The program will deliver integrated, streamlined transportation and financial data and processes, supporting the Joint Deployment and Distribution Enterprise (JDDE). Services and DoD agencies will have a system to automate the linkage between transportation action tasks and transportation business related tasks across the full spectrum of financial activity, from obligations through general ledger accounting. It will also close all major gaps that prevent auditability within the transportation spend across DoD and achieve significant gains in two of the focus areas of the Department of Defense's Data Strategy: Senior Leader Decision Support and Business Analytics. Through the JTMS's ability to seamlessly integrate financial data and information with transportation operations in the joint domain, it will give JDDE users the ability to see to the transactional level in a resilient transportation network while reducing duplicate capabilities.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY2022 \$0.8M was expended for civilian pay expenses in this program element, and in FY2023 \$4.5M is forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 0.000          | 51.758         | 0.000               | 0.000              | 0.000                |
| Current President's Budget                        | 0.000          | 27.758         | 37.026              | 0.000              | 37.026               |
| Total Adjustments                                 | 0.000          | -24.000        | 37.026              | 0.000              | 37.026               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | -24.000        |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 37.026              | 0.000              | 37.026               |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604668F / <i>Joint Transportation Management System (JTMS)</i> |
|--|--|

**Change Summary Explanation**

In FY23, \$24M was Congressionally Marked in program 0604668F. The FY23 requested amount was \$51.758M and Authorized amount was \$27.758M.

**C. Accomplishments/Planned Programs (\$ in Millions)**

|  | FY 2022 | FY 2023 | FY 2024 |
|--|---------|---------|---------|
| <p><b>Title:</b> Joint Transportation Management System Acquisition/Development</p> <p><b>Description:</b> Engage in key pre-acquisition activities to support a projected FY24 prime integrator award including but not limited to drafting or executing key management plans and the programmatic activities required to inform the acquisition such as Project Management, Configuration Management, Risk Management, Release Management, Testing, and Training. Solution analysis and recommendations to the Functional Sponsor completed in 1st quarter of FY23 to support the projected prime integrator award. Develop strategy to procure and establish the appropriate hosting environment to support the chosen materiel solution and initiate accreditation activities per the required Risk Management Framework (RMF) classification.</p> <p><b>FY 2023 Plans:</b><br/>Start pre-acquisition activities including standing up the JPO and conducting the lead time work required with respect to business process re-engineering and organizational change management necessary to build the groundwork for the recommended solution from the analysis of alternatives results.</p> <p>Establishing Organizational Change Management Plan to communicate with key leaders and stakeholders.</p> <p>Engage in market research to assess industry and other pre-solicitation activities necessary to support a prime award in 4th quarter FY24.</p> <p><b>FY 2024 Plans:</b><br/>Continue key pre-acquisition activities to support a projected FY24 prime integrator award including but not limited to drafting or executing key management plans and the programmatic activities required to inform the acquisition and implementation; Activities underway include:</p> <ol style="list-style-type: none"> <li>1) Document as-is architectures across CONUS freight, Sealift, Airlift, and OCONUS freight</li> <li>2) Business Process Reengineering</li> <li>3) Organization Change Management</li> <li>4) Auditability Systems Requirements Definition</li> <li>5) Market Research and Acquisition/Procurement Strategy Development</li> <li>6) Prime Integrator Phase-In activities</li> </ol> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b></p> | 0.000   | 27.758  | 37.026  |



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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604668F <i>I Joint Transportation Management System (JTMS)</i> |
|--|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| Increase to ramp up pre-acquisition activities and increase hired positions in the Joint Program Office. |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 0.000          | 27.758         | 37.026         |

**D. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**E. Acquisition Strategy**

Follow the DoD Instruction 5000.75 process for Business Systems Requirements and Acquisition. Contract will be awarded under full and open competition whenever possible.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604668F / Joint Transportation Management System (JTMS) | <b>Project (Number/Name)</b><br>646682 / JTMS DEVELOPMENT |
|--|---|---|

| <b>Product Development (\$ in Millions)</b>         |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                                  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Joint Transportation System Acquisition/Development | C/TBD                  | TBD : Scott AFB, IL            | -           | -       |            | 0.000   | Jul 2024   | 9.773        | Jul 2024   | -           |            | 9.773         | Continuing       | Continuing | 9.773                    |
| <b>Subtotal</b>                                     |                        |                                | -           | -       |            | 0.000   |            | 9.773        |            | -           |            | 9.773         | Continuing       | Continuing | N/A                      |

| <b>Support (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item              | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Pre Acquisition Support         | C/Various              | TBD : Scott AFB, IL            | -           | -       |            | 12.352  | Oct 2022   | 10.858       | Oct 2023   | -           |            | 10.858        | Continuing       | Continuing | 6.460                    |
| <b>Subtotal</b>                 |                        |                                | -           | -       |            | 12.352  |            | 10.858       |            | -           |            | 10.858        | Continuing       | Continuing | N/A                      |

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Joint Program Office Support                | C/Various              | TBD : Scott AFB, IL            | -           | -       |            | 15.406  | Oct 2022   | 16.395       | Oct 2023   | -           |            | 16.395        | Continuing       | Continuing | 20.964                   |
| <b>Subtotal</b>                             |                        |                                | -           | -       |            | 15.406  |            | 16.395       |            | -           |            | 16.395        | Continuing       | Continuing | N/A                      |

|                            |  |  | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|--|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> |  |  | -           | -       | 27.758  | 37.026       | -           | 37.026        | Continuing       | Continuing | N/A                      |

**Remarks**  
In FY23 \$20.5M will be returned to AF for higher information and technology priorities

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604668F / <i>Joint Transportation Management System (JTMS)</i> | <b>Project (Number/Name)</b><br>646682 / <i>JTMS DEVELOPMENT</i> |

|  | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|  | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| <b><i>Pre-Acquisition</i></b>     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Pre-Acquisition Activities        |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| <b><i>Program Acquisition</i></b> |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| JTMS Development                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604668F / <i>Joint Transportation Management System (JTMS)</i> | <b>Project (Number/Name)</b><br>646682 / <i>JTMS DEVELOPMENT</i> |

Schedule Details

| Events by Sub Project      | Start   |      | End     |      |
|----------------------------|---------|------|---------|------|
|                            | Quarter | Year | Quarter | Year |
| <b>Pre-Acquisition</b>     |         |      |         |      |
| Pre-Acquisition Activities | 1       | 2023 | 3       | 2024 |
| <b>Program Acquisition</b> |         |      |         |      |
| JTMS Development           | 4       | 2024 | 4       | 2024 |

**Note**

Future program development beyond 4th quarter 2024 can not occur without a fully funded programming solution for the FY25-29 POM

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force** **Date:** March 2023

| <b>Appropriation/Budget Activity</b>  |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b>               |                      |                |                |                |                |                         |                   |
|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P) |                    |                |                |                     | PE 0604776F I Deployment & Distribution Enterprise R&D |                      |                |                |                |                |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>                                     | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b> | <b>FY 2028</b> | <b>Cost To Complete</b> | <b>Total Cost</b> |
| Total Program Element   | -                  | 39.311         | 27.586         | 31.833              | 0.000  | 31.833               | 32.544         | 33.356         | 34.039         | 35.270         | Continuing              | Continuing        |
| 640211: GLOBAL ACCESS   | -                  | 9.484          | 7.071          | 0.000               | 0.000  | 0.000                | 0.000          | 0.000          | 0.000          | 0.000          | 0.000                   | 16.555            |
| 640212: C2/OPTIMIZATION/MODELING AND SIMULATION   | -                  | 24.166         | 15.587         | 0.000               | 0.000  | 0.000                | 0.000          | 0.000          | 0.000          | 0.000          | 0.000                   | 39.753            |
| 640213: CYBER   | -                  | 5.461          | 4.928          | 0.000               | 0.000  | 0.000                | 0.000          | 0.000          | 0.000          | 0.000          | 0.000                   | 10.389            |
| 640215: Transportation Management Service   | -                  | 0.200          | 0.000          | 0.000               | 0.000  | 0.000                | 0.000          | 0.000          | 0.000          | 0.000          | 0.000                   | 0.200             |
| 640216: Deployment and Distribution Innovation  | -                  | 0.000          | 0.000          | 31.833              | 0.000  | 31.833               | 32.544         | 33.356         | 34.039         | 35.270         | Continuing              | Continuing        |

**Note**

This program, BA 4, PE 0604776F, project , Aerial Delivery - Low Cost Modular GPS Denied Kit, is a new start.  
 This program, BA 4, PE 0604776F, project , Automatic Landing Zone, is a new start.  
 This program, BA 4, PE 0604776F, project , Container Airdrop, is a new start.  
 This program, BA 4, PE 0604776F, project , Expeditionary Concrete Construction for Ports of Debarkation, is a new start.  
 This program, BA 4, PE 0604776F, project , Global Reach, is a new start.  
 This program, BA 4, PE 0604776F, project , Scalable Autonomous Modular Propulsion Kits, is a new start.  
 This program, BA 4, PE 0604776F, project , Large Area Runway Repair Gone Expeditionary, is a new start.  
 This program, BA 4, PE 0604776F, project , Theater Mitigation Alternatives at Military Entry Control Facilities, is a new start.  
 This program, BA 4, PE 0604776F, project , AI-Powered Sensitive Data Masking, is a new start.

ZBT has been approved to consolidate BPACS 640211, 640212, 640213 into one BPAC 640216 starting in FY24.

**A. Mission Description and Budget Item Justification**

This program provides for the development, integration, demonstration and detailed assessment of capabilities which improve deployment, distribution and supply chain decision-making/collaboration (e.g., planning stage to real-time execution/retrograde operations) without need for highly specialized operators. Projects in this area address the following: decision support tools, distribution process simulations/analytics, distribution demand forecasting/execution monitoring, automated decision-maker support (e.g., queuing, alerting, courses of action), automated status monitoring with information fusion to include drilldown capability, and resilient Command & Control (C2) infrastructure capabilities. Current planning, forecasting, and collaboration capabilities do not permit full synchronization of people, processes and assets to execute planned operations. Automated tools must be able to dynamically analyze/predict demand and provide input to advanced distribution planning systems to include the capability for Combatant Commanders to manage theater transportation operations from the port of debarkation to the point of need. Transportation information exchange across the DOD is inhibited by disparate systems, multiple data standards and insufficient interfaces. The ability to rapidly determine the impact of any delays/

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> |
|--|---|

changes and conduct "what-if" impact assessments on the closure of force packages is required. This project addresses the required mission support to combatant commanders and other customers in the area of C2, Optimization, and Modeling and Simulations.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY21 0M was expended for civilian pay expenses in this program element (PE). In FY22, Joint Transportation Management System (JTMS) 15.5M was placed in this PE, for civilian pay expenses, until a separate PE could be established. No other FY will include civilian pay expenses in this PE.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 40.103         | 27.586         | 31.761              | 0.000              | 31.761               |
| Current President's Budget                        | 39.311         | 27.586         | 31.833              | 0.000              | 31.833               |
| Total Adjustments                                 | -0.792         | 0.000          | 0.072               | 0.000              | 0.072                |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -0.792         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 0.072               | 0.000              | 0.072                |

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640211 / <i>GLOBAL ACCESS</i> |
|--|---|---|

| COST (\$ in Millions)        | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 640211: <i>GLOBAL ACCESS</i> | -           | 9.484   | 7.071   | 0.000        | 0.000       | 0.000         | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 16.555     |
| Quantity of RDT&E Articles   | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**Note**

ZBT has been approved to consolidate BPACS 640211, 640212, 640213 and 640215 into one BPAC 640216

**A. Mission Description and Budget Item Justification**

This program provides for the development, integration, demonstration and detailed assessment of DOD procedures/technologies targeted at optimizing throughput at the nodes as well as across the conduits of the deployment and distribution supply chains, from origin to point of use as well as return. Needed capabilities include inventory/cargo management, materiel handling innovations, improved physical node access, port throughput improvements, innovative delivery methods (e.g., precision airlift, autonomous re-supply), and cargo/container security. This project addresses required mission support to combatant commanders and other customers of DOD's distribution and transportation systems in the area of deployment/distribution velocity management, manned/unmanned systems to the point of effect, and increased global reach in austere/anti-access environments.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY21 0M was expended for civilian pay expenses in this program element (PE). In FY22, Joint Transportation Management System (JTMS) 15.5M was placed in this PE, for civilian pay expenses, until a separate PE could be established. No other FY will include civilian pay expenses in this PE.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | FY 2022 | FY 2023 | FY 2024 |
|--|---------|---------|---------|
| <b>Title:</b> Petroleum Undersea Sustainment Hose  | 0.450   | 0.260   | 0.000   |
| <b>Description:</b> Provide an agile, submersible over-the-shore conduit that can be pre-positioned or immediately employed from vessels of opportunity such as a commercial offshore supply vessel (OSV). |         |         |         |
| <b>FY 2023 Plans:</b><br>Addresses Sea Basing Technologies/Logistics-Over-The-Shore need to enhance the Joint Force Commander's flexibility  |         |         |         |
| <b>FY 2024 Plans:</b><br>See BPAC 640216   |         |         |         |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Development costs vary by FY   |         |         |         |
| <b>Title:</b> Airdrop System - Precision Extended Glide  | -       | 0.300   | 0.000   |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force   |   | <b>Date:</b> March 2023                                       |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640211 / <i>GLOBAL ACCESS</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   |   | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| <p><b>Description:</b> Demonstrate a long range powered parafoil system to reduce risk to delivery aircraft</p> <p><b>FY 2023 Plans:</b><br/>Begin design development of extended glide technology</p> <p><b>FY 2024 Plans:</b><br/>See BPAC 640216</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>FY24 New Start</p>  |   |   |                |                |
| <p><b>Title:</b> Collision Avoidance and Navigation Insight System/Aerial Port of the Future</p> <p><b>Description:</b> Autonomous Technologies applied to the 60K Tunner to improve throughput and safety</p> <p><b>FY 2023 Plans:</b><br/>Funding will develop future airport automation</p> <p><b>FY 2024 Plans:</b><br/>Project ends in FY23</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Project ends FY23</p>                  |   | 1.612   | 1.000          | 0.000          |
| <p><b>Title:</b> Submersible Matting</p> <p><b>Description:</b> Develop a submersible matting system (SUBMAT) to facilitate mobility across the shoreline and wet/dry gaps by combining current soil stability technology and mobility matting into a single product.</p> <p><b>FY 2023 Plans:</b><br/>Build for manufacture analysis and preliminary fabrication</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Project ends FY23</p> |   | 0.674   | 0.064          | -              |
| <p><b>Title:</b> Rapid Available Interface for trans-Loading</p> <p><b>Description:</b> Provides a process to rapidly assess the condition, design acceptable repairs and delivers pre-kitted rail repair and retrofit solutions. The standardized repair kits allows for the development of Tactics, Techniques and Procedures (TTPs) for each repair that can be scaled to address a range of damages.</p>  |   | 1.500   | 0.500          | 0.000          |



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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force  |   | <b>Date:</b> March 2023                                       |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640211 / <i>GLOBAL ACCESS</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  |   | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| <p><b>FY 2023 Plans:</b><br/>Work will identify and develop a robotic survey vehicle integrated with rail condition survey equipment.</p> <p><b>FY 2024 Plans:</b><br/>See BPAC 640216</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Development varies by FY</p>  |   |   |                |                |
| <p><b>Title:</b> Repair and Retrofit of Railway Systems</p> <p><b>Description:</b> The standardized repair kits allows for the development of Tactics, Techniques and Procedures (TTPs) for each repair that can be scaled to address a range of damages.</p> <p><b>FY 2023 Plans:</b><br/>Work will identify and develop a robotic survey vehicle integrated with rail condition survey equipment.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Project ends FY23</p>    |   | 1.100   | 0.750          | -              |
| <p><b>Title:</b> Drone Supported Surface Deployment</p> <p><b>Description:</b> Determine the suitability of using modern drones and drone mapping technology for capturing data for input to systems such as the Integrated Computerized Deployment System (ICODES) and the Transportation Geospatial Information System (TGIS)</p> <p><b>FY 2023 Plans:</b><br/>Finalize testing and demonstration</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Project ends in FY23</p> |   | 0.249   | 0.350          | -              |
| <p><b>Title:</b> Buoyant Roll On/Roll Off Interface Kit</p> <p><b>Description:</b> Prototype consisting of the RO/RO ramp to interface to a commercial supply vessel and a section of floating causeway and ancillary equipment sufficient to conduct a limited operational assessment</p> <p><b>FY 2023 Plans:</b></p>  |   | 1.050   | 0.400          | 0.000          |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force   |   | <b>Date:</b> March 2023                                       |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640211 / <i>GLOBAL ACCESS</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   |   | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| Continue to develop a prototype rapidly deployable ship-to-shore connector capability<br><b>FY 2024 Plans:</b><br>See BPAC 640216<br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Development varies by FY   |   |   |                |                |
| <b>Title:</b> 35 Thousand Foot Airdrop<br><b>Description:</b> Develop capabilities to airdrop from 35 thousand feet to increase aircraft standoff range from threat.<br><b>FY 2023 Plans:</b><br>Continuing to work parafoil and parachute technologies<br><b>FY 2024 Plans:</b><br>See BPAC 640216<br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Development varies by FY |   | 1.000   | 0.200          | 0.000          |
| <b>Title:</b> Replenishment from Ships to Point of Need Delivery<br><b>Description:</b> Unmanned system launched from ships and capable of carrying supplies up to 100 miles inland.<br><b>FY 2023 Plans:</b><br>Continue development of technologies to support required payloads and distances<br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Project ends FY23           |   | 0.350   | 0.525          | -              |
| <b>Title:</b> Use of Dual Row Airdrop System with Joint Light Tactical Vehicle<br><b>Description:</b> Increasing the strength of C-17 dual row rails to enable dropping the JLTV<br><b>FY 2023 Plans:</b><br>Continuing to apply technologies and test results<br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Project ends FY23   |   | 0.602   | 0.300          | -              |
| <b>Title:</b> Enhanced Vision Navigation for Joint Precision Airdrop System   |   | 0.427   | 0.531          | 0.000          |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force   |   | <b>Date:</b> March 2023                                       |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640211 / <i>GLOBAL ACCESS</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   |   | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| <p><b>Description:</b> Advanced technologies to improve airdrop capabilities to the warfighter.</p> <p><b>FY 2023 Plans:</b><br/>Continuing to work technologies to improve airdrop capabilities</p> <p><b>FY 2024 Plans:</b><br/>See BPAC 640216</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>None</p>  |   |   |                |                |
| <p><b>Title:</b> Aerial Delivery Platform</p> <p><b>Description:</b> Platform for air dropping mutiple vehicles</p> <p><b>FY 2023 Plans:</b><br/>Will design platform</p> <p><b>FY 2024 Plans:</b><br/>See BPAC 640216</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Development costs vary by FY</p>   |   | -   | 0.499          | 0.000          |
| <p><b>Title:</b> Modular Autonomous Ready Dynamic Positioning System</p> <p><b>Description:</b> Position for sealift lighterage assets</p> <p><b>FY 2023 Plans:</b><br/>Will develop a positioning system for sealift lighterage assets</p> <p><b>FY 2024 Plans:</b><br/>See BPAC 640216</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Development varies by FY</p> |   | 0.000   | 0.387          | 0.000          |
| <p><b>Title:</b> Spectrum Exploitation for Emissions Control</p> <p><b>Description:</b> Mitigate/reduce risks of emissions detection from civilian/commercial vessels</p>   |   | 0.320   | 0.300          | 0.000          |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023                                       |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640211 / <i>GLOBAL ACCESS</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <p><b><i>FY 2023 Plans:</i></b><br/>Mitigate/reduce risks of emissions detection from civilian/commercial vessels</p> <p><b><i>FY 2024 Plans:</i></b><br/>See BPAC 640216</p> <p><b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br/>Varies by development timeline</p>   |                |                |                |
| <p><b><i>Title:</i></b> Resilient Expeditionary Agile Littoral Logistics</p> <p><b><i>Description:</i></b> Transfer of fuel ashore from various conveyances from off-shore platform</p> <p><b><i>FY 2023 Plans:</i></b><br/>Continue technology development of fuel transfer</p> <p><b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br/>Project ending FY23</p> | 0.150          | 0.705          | -              |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 9.484          | 7.071          | 0.000          |

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

Requirements for joint deployment and distribution enterprise technology enhancements are annually identified, validated and prioritized by the Joint Deployment & Distribution Enterprise (JDDE) community. Pursuit of the development of new capabilities to meet these requirements is managed by the United States Transportation Command (USTRANSCOM). Prototype products, once evaluated by the users, are spirally transitioned by the operational community.



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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  |   | <b>Date:</b> March 2023 |  |   |  |  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> |                         |  | <b>Project (Number/Name)</b><br>640211 / <i>GLOBAL ACCESS</i> |  |  |

|                                    | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |  |  |  |  |
|------------------------------------|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|--|--|--|--|
|                                    | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |  |  |  |  |
| <i>Deployment and Distribution</i> |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |  |  |  |  |
| Integrated Logistics Support       |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |  |  |  |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023                                       |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640211 / <i>GLOBAL ACCESS</i> |

Schedule Details

| Events by Sub Project              | Start   |      | End     |      |
|------------------------------------|---------|------|---------|------|
|                                    | Quarter | Year | Quarter | Year |
| <i>Deployment and Distribution</i> |         |      |         |      |
| Integrated Logistics Support       | 1       | 2022 | 4       | 2023 |

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |   |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> |                      |                |                | <b>Project (Number/Name)</b><br>640212 / <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>  | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 640212: <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i>                  | -                  | 24.166         | 15.587         | 0.000               | 0.000   | 0.000                | 0.000          | 0.000          | 0.000   | 0.000                   | 0.000                   | 39.753            |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -   | -                    | -              | -              | -   | -                       |                         |                   |

**Note**

ZBT has been approved to consolidate BPACS 64021, 640212, 640213 and 640215 into one BPAC 640216

**A. Mission Description and Budget Item Justification**

This program provides for the development, integration, demonstration and detailed assessment of capabilities which improve deployment, distribution and supply chain decision-making/collaboration (e.g., planning stage to real-time execution/retrograde operations) without need for highly specialized operators. Projects in this area address the following: decision support tools, distribution process simulations/analytics, distribution demand forecasting/execution monitoring, automated decision-maker support (e.g., queuing, alerting, courses of action), automated status monitoring with information fusion to include drilldown capability, and resilient Command & Control (C2) infrastructure capabilities. Current planning, forecasting, and collaboration capabilities do not permit full synchronization of people, processes and assets to execute planned operations. Automated tools must be able to dynamically analyze/predict demand and provide input to advanced distribution planning systems to include the capability for Combatant Commanders to manage theater transportation operations from the port of debarkation to the point of need. Transportation information exchange across the DOD is inhibited by disparate systems, multiple data standards and insufficient interfaces. The ability to rapidly determine the impact of any delays/changes and conduct "what-if" impact assessments on the closure of force packages is required. This project addresses the required mission support to combatant commanders and other customers in the area of C2, Optimization, and Modeling and Simulations. The Joint Transportation Management System (JTMS) will develop and configure a commercial-off-the-shelf (COTS) transportation/financial management product to deliver DoD enterprise-wide end-to-end transportation and transportation-related financial business process reform.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY21 0M was expended for civilian pay expenses in this program element (PE). In FY22, Joint Transportation Management System (JTMS) 15.5M was placed in this PE, for civilian pay expenses, until a separate PE could be established. No other FY will include civilian pay expenses in this PE.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> TRANSCOM Innovation   | 15.836         | 5.596          | 0.000          |
| <b>Description:</b> Rapidly develop and integrate technology solutions for the enterprise |                |                |                |
| <b>FY 2023 Plans:</b>   |                |                |                |



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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force   |   | <b>Date:</b> March 2023   |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640212 / <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   |   | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| Continue to pursue and develop solutions to identified challenges   |   |   |                |                |
| <b>FY 2024 Plans:</b><br>See BPAC 640216  |   |   |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Each year new initiatives are identified in support of contested logistics that increase development costs                  |   |   |                |                |
| <b>Title:</b> Iron Spider   |   | 0.100   | 0.891          | 0.000          |
| <b>Description:</b> Support plans that are released on unclassified, untrusted commercial networks in order to solicit and contract with vendors capable of supplying theater forces. |   |   |                |                |
| <b>FY 2023 Plans:</b><br>Funding will allow permissioned transactional blockchain network integrated with an identity blockchain that controls access                                 |   |   |                |                |
| <b>FY 2024 Plans:</b><br>See BPAC 640216  |   |   |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Development varies by FY  |   |   |                |                |
| <b>Title:</b> Resilient Logistics JCTD  |   | 0.200   | 0.000          | -              |
| <b>Description:</b> Deliver logistical deception kits to confuse and deny enemy Intelligence, Surveillance, Reconnaissance (ISR)  |   |   |                |                |
| <b>FY 2023 Plans:</b><br>Project ends FY22  |   |   |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>N/A   |   |   |                |                |
| <b>Title:</b> Air Refueling Optimization  |   | 0.700   | 0.000          | -              |
| <b>Description:</b> System managing the various phases of the Air Refueling (AR) fleet management, validation, allocation and execution process.                                      |   |   |                |                |
| <b>FY 2023 Plans:</b><br>Project ends FY22  |   |   |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b>  |   |   |                |                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force   |   | <b>Date:</b> March 2023   |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640212 / <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   |   | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| N/A   |   |   |                |                |
| <p><b>Title:</b> Safety Analysis of Modified Midwest Guardrail</p> <p><b>Description:</b> Research and physical testing to gather and analyze data for improving Entry Control Facilities (ECF) design and operations, improve road safety on installations, and reduce overall costs</p> <p><b>FY 2023 Plans:</b><br/>Funding will establish entry control facilities ECF guardrail standards to mitigate terrorism/asymmetric threats</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Project ends FY23</p> |   | 0.800   | 0.350          | -              |
| <p><b>Title:</b> Data Lake</p> <p><b>Description:</b> Develop and demonstrate the capability that allows incongruent data to be brought together to provide automated decision support.</p> <p><b>FY 2023 Plans:</b><br/>Funding will permit increase in data management</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Project ends FY23</p>  |   | 0.900   | 1.675          | -              |
| <p><b>Title:</b> End-to-End Deployment and Distribution Modeling</p> <p><b>Description:</b> Provide an integrated deployment/distribution environment to provide continuous and optimal balancing of total demand verse capacity from planning through mission execution.</p> <p><b>FY 2023 Plans:</b><br/>Funding will allow model deployment and distribution</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Project ends FY23</p>   |   | 0.050   | 0.300          | -              |
| <p><b>Title:</b> Massachusetts Institute of Technology Lincoln Labs</p> <p><b>Description:</b> Partnership with MIT-LL to research efforts to improve enterprise operational architecture supporting high-end analytics, integrated information technology/data structures, understanding of cloud capabilities and multi-level cyber security defense.</p>   |   | 2.439   | 1.698          | 0.000          |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force  |   | <b>Date:</b> March 2023   |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640212 / <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  |   | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| <p><b>FY 2023 Plans:</b><br/>Effort ends FY24</p> <p><b>FY 2024 Plans:</b><br/>See BPAC 640216</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Development varies by FY</p>  |   |   |                |                |
| <p><b>Title:</b> Modeling &amp; Simulation Innovation</p> <p><b>Description:</b> Select student research/faculty-assisted projects (e.g., Joint Transportation Asset Scheduling Kit, Next Generation Cargo Capability, Applying Post Modern Portfolio Theory to Mitigate Risk in International Shipping, Optimal CH-47/C-130 Workload Balance, Remotely Piloted Aircraft Performing Airdrop Mission).</p> <p><b>FY 2023 Plans:</b><br/>Collaboration partnership with AFIT for student research</p> <p><b>FY 2024 Plans:</b><br/>Collaboration partnership with AFIT for student research</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Collaboration partnership with AFIT for student research</p> |   | 0.109   | 0.105          | 0.000          |
| <p><b>Title:</b> Infrastructure Information Confidence Model</p> <p><b>Description:</b> Inform decision makers of the quality of primary and alternate data sources they are using to make decisions</p> <p><b>FY 2023 Plans:</b><br/>Increase model capability</p> <p><b>FY 2024 Plans:</b><br/>Ends in FY23</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Project ends FY23</p>  |   | 0.674   | 0.341          | 0.000          |
| <p><b>Title:</b> Aerial Delivery and Autonomous Deployment of Unmanned Vehicles</p> <p><b>Description:</b> Develop ability to deliver unmanned systems from existing airdrop systems</p>   |   | 0.828   | 1.010          | 0.000          |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force  |   | <b>Date:</b> March 2023   |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640212 / <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  |   | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| <p><b>FY 2023 Plans:</b><br/>Aerial Delivery and Autonomous Deployment of Unmanned Vehicles</p> <p><b>FY 2024 Plans:</b><br/>See BPAC 640216</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Development varies by FY</p>  |   |   |                |                |
| <p><b>Title:</b> Program Execution</p> <p><b>Description:</b> Provide technical assistance and program management support to the USTRANSCOM RDT&amp;E Program.</p> <p><b>FY 2023 Plans:</b><br/>TRL 4-6: Program support to explore technology solutions to capability gaps identified through Joint Concept Development documents, the Joint capabilities Integration and Development System process, Joint Experimentation, etc, to increase the responsiveness, efficiency and effectiveness of the Joint Deployment and Distribution Enterprise.</p> <p><b>FY 2024 Plans:</b><br/>See BPAC 640216</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>COLA</p> |   | 1.017   | 1.150          | 0.000          |
| <p><b>Title:</b> Scheduling Mobility Aircrews for Readiness and Transportation</p> <p><b>Description:</b> Develop prototype software for advanced squadron scheduling, collaboration, and predictive modeling.</p> <p><b>FY 2023 Plans:</b><br/>Projet ends FY22</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>N/A</p>   |   | 0.513   | 0.000          | -              |
| <p><b>Title:</b> Analyzer Driven Data Integrity</p> <p><b>Description:</b> Increase data integrity</p> <p><b>FY 2023 Plans:</b></p>  |   | -   | 0.238          | 0.000          |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force  |   | <b>Date:</b> March 2023   |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640212 / <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  |   | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| begin plan design<br><b>FY 2024 Plans:</b><br>See BPAC 640216<br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Development varies by FY  |   |   |                |                |
| <b>Title:</b> Strategic Theater Orchestration and Resource Management<br><b>Description:</b> Ability to manage theater lift assets<br><b>FY 2023 Plans:</b><br>Begin system design<br><b>FY 2024 Plans:</b><br>See BPAC 640216<br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Development varies by FY |   | -   | 0.615          | 0.000          |
| <b>Title:</b> Risk Assessment and Vetting for the Enterprise<br><b>Description:</b> Assessing deployment distribution risk<br><b>FY 2023 Plans:</b><br>Begin design phase<br><b>FY 2024 Plans:</b><br>See BPAC 640216<br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Development varies by FY          |   | -   | 0.700          | 0.000          |
| <b>Title:</b> Component Level Operational Decision Advantage<br><b>Description:</b> develop detailed decision support tool<br><b>FY 2023 Plans:</b><br>Begin design plans<br><b>FY 2024 Plans:</b>   |   | -   | 0.500          | 0.000          |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force   |   | <b>Date:</b> March 2023   |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640212 / <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   |   | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| See BPAC 640216   |   |   |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Development varies as project progresses  |   |   |                |                |
| <b>Title:</b> JDDE Mission Assurance Coordinator  |   | -   | 0.418          | 0.000          |
| <b>Description:</b> Develop a JDDE-wide method for mission coordination   |   |   |                |                |
| <b>FY 2023 Plans:</b><br>Begin design development   |   |   |                |                |
| <b>FY 2024 Plans:</b><br>See BPAC 640216  |   |   |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Development varies as project progresses  |   |   |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>   |   | 24.166  | 15.587         | 0.000          |
| <b>C. Other Program Funding Summary (\$ in Millions)</b>  |   |   |                |                |
| N/A   |   |   |                |                |
| <b>Remarks</b>  |   |   |                |                |
| <b>D. Acquisition Strategy</b>  |   |   |                |                |
| Requirements for joint deployment and distribution enterprise technology enhancements are annually identified, validated and prioritized by the Joint Deployment & Distribution Enterprise (JDDE) community. Pursuit of the development of new/improved capabilities to meet these requirements is managed by the United States Transportation Command (USTRANSCOM). Prototype products, once evaluated by the users, are spirally transitioned by the operational community. |   |   |                |                |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640212 / <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i> |
|--|---|---|

| Support (\$ in Millions)     |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item           | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Integrated Logistics Support | Various                | Various : Belleville, IL       | -           | 24.166  | Nov 2021   | 15.587  | Nov 2022   | 0.000        |            | -           |            | 0.000         | 0.000            | 39.753     | -                        |
| <b>Subtotal</b>              |                        |                                | -           | 24.166  |            | 15.587  |            | 0.000        |            | -           |            | 0.000         | 0.000            | 39.753     | N/A                      |

**Remarks**  
Funds will be realigned within PE.

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | -           | 24.166  | 15.587  | 0.000        | -           | 0.000         | 0.000            | 39.753     | N/A                      |

**Remarks**

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640212 / <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i> |

|  | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|  | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|                                    |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------------|------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| <i>Deployment and Distribution</i> |            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Integrated Logistics Support       | [REDACTED] |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |



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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640212 / <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i> |

Schedule Details

| Events by Sub Project              | Start   |      | End     |      |
|------------------------------------|---------|------|---------|------|
|                                    | Quarter | Year | Quarter | Year |
| <i>Deployment and Distribution</i> |         |      |         |      |
| Integrated Logistics Support       | 1       | 2022 | 4       | 2023 |

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

|  |   |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640213 / <i>CYBER</i> |
|--|---|---|

| COST (\$ in Millions)      | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 640213: <i>CYBER</i>       | -           | 5.461   | 4.928   | 0.000        | 0.000       | 0.000         | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 10.389     |
| Quantity of RDT&E Articles | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**Note**

ZBT has been approved to consolidate BPACS 64021, 640212, 640213 and 640215 into one BPAC 640216

**A. Mission Description and Budget Item Justification**

This program provides for the development, integration, demonstration and detailed assessment of capabilities to ensure USTRANSCOM mission assurance is in a persuasive/dynamic cyber environment. USTRANSCOM requires the procedures/technologies to improve cyber surveillance and control of networks across multiple domains and the ability to continue critical network operations in contested unclassified and classified network environments. The Command also needs the ability to differentiate between valid/unauthorized users and determine/quantify the trustworthiness of hardware/software systems. Additionally USTRANSCOM must have the ability to rapidly analyze & correlate data regarding malicious activities, select/evoke real-time defense actuators, perform automated reasoning capabilities that address data quality issues, and the ability to rapidly return to a known/safe operating state.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY21 0M was expended for civilian pay expenses in this program element (PE). In FY22, Joint Transportation Management System (JTMS) 15.5M was placed in this PE, for civilian pay expenses, until a separate PE could be established. No other FY will include civilian pay expenses in this PE.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | FY 2022 | FY 2023 | FY 2024 |
|--|---------|---------|---------|
| <b>Title:</b> Oversight  | 1.324   | 1.330   | 0.000   |
| <b>Description:</b> Enable continuous tracking of adversary cyber groups and campaigns targeting USTRANSCOM and USINDOPACOM enterprise and their partners  |         |         |         |
| <b>FY 2023 Plans:</b><br>Funding will provide anomaly detection and predictive analysis to dynamically assess threats, attack vectors and adversary intent |         |         |         |
| <b>FY 2024 Plans:</b><br>See BPAC 640216   |         |         |         |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>See BPAC 640216  |         |         |         |
| <b>Title:</b> Cyber Mission Assurance Technologies   | 0.590   | 2.598   | 0.000   |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023                               |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640213 / <i>CYBER</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <p><b>Description:</b> Near real-time understanding of the operational impact of cyber risks, threats, and disruptions.</p> <p><b>FY 2023 Plans:</b><br/>Funding will develop integrated analysis/decision processes involving complex ops/cyber data by selecting pre-approved actions and coordinating stakeholders in the fight-through of cyber risks/disruptions to executing missions and Cyber Critical Asset Lists</p> <p><b>FY 2024 Plans:</b><br/>See BPAC 640216</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Development varies as project progresses</p>                                    |                |                |                |
| <p><b>Title:</b> Lincoln Labs</p> <p><b>Description:</b> Partnership with MIT-LL to research efforts to improve enterprise operational architecture supporting high-end analytics, integrated information technology/data structures, understanding of cloud capabilities and multi-level cyber security defense.</p> <p><b>FY 2023 Plans:</b><br/>Harmonized data and flexible analytic data architectures that provide ease of data sharing, scalability, to support operational decision making</p> <p><b>FY 2024 Plans:</b><br/>See BPAC 640216</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>N/A</p> | 3.547          | 1.000          | 0.000          |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 5.461          | 4.928          | 0.000          |

|   |
|---|
| <p><b>C. Other Program Funding Summary (\$ in Millions)</b><br/>N/A</p> <p><b>Remarks</b></p> <p><b>D. Acquisition Strategy</b><br/>Requirements for joint deployment and distribution enterprise technology enhancements are annually identified, validated and prioritized by the Joint Deployment &amp; Distribution Enterprise (JDDE) community. Pursuit of the development of new/improved capabilities to meet these requirements is managed by the United States Transportation Command (USTRANSCOM). Prototype products, once evaluated by the users, are spirally transitioned by the operational community.</p> |
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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force Date: March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / Deployment & Distribution Enterprise R&D | <b>Project (Number/Name)</b><br>640213 / CYBER |
|--|--|--|

| Support (\$ in Millions)     |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total |                  | Cost To Complete | Total Cost               | Target Value of Contract |
|------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------------|--------------------------|--------------------------|
| Cost Category Item           | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |                  |                          |                          |
| Integrated Logistics Support | Various                | Various : Belleville, IL       | -           | 5.461   | Nov 2022   | 4.928   | Nov 2022   | 0.000        |            | -           |            | 0.000         | 0.000            | 10.389           | -                        |                          |
| <b>Subtotal</b>              |                        |                                | -           | 5.461   |            | 4.928   |            | 0.000        |            | -           |            | 0.000         | 0.000            | 10.389           | N/A                      |                          |
|                              |                        |                                | Prior Years | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost       | Target Value of Contract |                          |
| <b>Project Cost Totals</b>   |                        |                                | -           | 5.461   |            | 4.928   |            | 0.000        |            | -           |            | 0.000         | 0.000            | 10.389           | N/A                      |                          |

**Remarks**

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023                               |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640213 / <i>CYBER</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

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| <i><b>Deployment and Distribution</b></i> |  |
| Integrated Logistics Support              |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023                               |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640213 / <i>CYBER</i> |

Schedule Details

| Events by Sub Project                     | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Deployment and Distribution</i></b> |         |      |         |      |
| Integrated Logistics Support              | 1       | 2022 | 4       | 2023 |

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

|  |   |   |
|--|---|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640215 / <i>Transportation Management Service</i> |
|--|---|---|

| COST (\$ in Millions)                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 640215: <i>Transportation Management Service</i> | -           | 0.200   | 0.000   | 0.000        | 0.000       | 0.000         | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 0.200      |
| Quantity of RDT&E Articles                       | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**Note**

ZBT has been approved to consolidate BPACS 64021, 640212, 640213 and 640215 into one BPAC 640216

**A. Mission Description and Budget Item Justification**

The program will deliver integrated, streamlined transportation and financial data and processes, supporting the Joint Deployment and Distribution Enterprise (JDDE). Services and DoD agencies will have a system to automate the linkage between transportation action tasks and transportation business related tasks across the full spectrum of financial activity, from obligations through general ledger accounting. It will also close all major gaps that prevent auditability within the transportation spend across DoD and achieve significant gains in two of the focus areas of the Department of Defense's Data Strategy: Senior Leader Decision Support and Business Analytics. Through the JTMS's ability to seamlessly integrate financial data and information with transportation operations in the joint domain, it will give JDDE users the ability to see to the transactional level in a resilient transportation network while reducing duplicate capabilities.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | FY 2022 | FY 2023 | FY 2024 |
|---|---------|---------|---------|
| <b>Title:</b> Transportation Financial Product Development    | 0.200   | 0.000   | -       |
| <b>Description:</b> Pre-acquisition activities                |         |         |         |
| <b>FY 2023 Plans:</b><br>R&D Development                      |         |         |         |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>N/A |         |         |         |
| <b>Accomplishments/Planned Programs Subtotals</b>             | 0.200   | 0.000   | -       |

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

In FY2023 JTMS executes out of PE 0604668F

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640215 / <i>Transportation Management Service</i> |

**D. Acquisition Strategy**

Reforms the Defense Transportation System (DTS) by integrating financial and transportation transactions at the transactional level to effectively manage resources through a transportation requirement's plan to pay lifecycle. Program will improve resource management and budgeting accuracy, maximize buying power, strengthen financial management decision-making, and improve the Department's effort to achieve auditability.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640215 / <i>Transportation Management Service</i> |
|--|---|---|

| <b>Support (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item              | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Integrated Logistics Support    | Various                | Belleville, IL : IL            | -           | 0.200   | Nov 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 0.200      | -                        |
| <b>Subtotal</b>                 |                        |                                | -           | 0.200   |            | -       |            | -            |            | -           |            | -             | 0.000            | 0.200      | N/A                      |

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | -           | 0.200   | -       | -            | -           | -             | 0.000            | 0.200      | N/A                      |

**Remarks**  
DoD enterprise end-to-end transportation and transportation-related financial business process reform.

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640215 / <i>Transportation Management Service</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   |  |
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| <b><i>Integrated Logistics Support</i></b>    |  |
| Develop Transportation Products and Processes |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640215 / <i>Transportation Management Service</i> |

Schedule Details

| Events by Sub Project                         | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Integrated Logistics Support</i></b>    |         |      |         |      |
| Develop Transportation Products and Processes | 1       | 2022 | 4       | 2022 |

**Note**

DoD enterprise end-to-end transportation and transportation-related financial business process reform.

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|   |                    |                |                |                     |   |                      |                |                |  |                         |                         |                   |
|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|--|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |   |                      |                |                |  | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> |                      |                |                | <b>Project (Number/Name)</b><br>640216 / <i>Deployment and Distribution Innovation</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>  | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>   | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 640216: <i>Deployment and Distribution Innovation</i>                   | -                  | 0.000          | 0.000          | 31.833              | 0.000   | 31.833               | 32.544         | 33.356         | 34.039   | 35.270                  | Continuing              | Continuing        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -   | -                    | -              | -              | -  | -                       |                         |                   |

**Note**

- This program, BA 4, PE 0604776F, project , Aerial Delivery - Low Cost Modular GPS Denied Kit, is a new start.
- This program, BA 4, PE 0604776F, project , Automatic Landing Zone, is a new start.
- This program, BA 4, PE 0604776F, project , Container Airdrop, is a new start.
- This program, BA 4, PE 0604776F, project , Expeditionary Concrete Construction for Ports of Debarkation, is a new start.
- This program, BA 4, PE 0604776F, project , Global Reach, is a new start.
- This program, BA 4, PE 0604776F, project , Scalable Autonomous Modular Propulsion Kits, is a new start.
- This program, BA 4, PE 0604776F, project , Large Area Runway Repair Gone Expeditionary, is a new start.
- This program, BA 4, PE 0604776F, project , Theater Mitigation Alternatives at Military Entry Control Facilities, is a new start.
- This program, BA 4, PE 0604776F, project , AI-Powered Sensitive Data Masking, is a new start.

FY24 ZBT consolidates BPACS 640211, 640212, 640213 into BPAC 640216

**A. Mission Description and Budget Item Justification**

This program provides for the development, integration, demonstration and detailed assessment of capabilities which improve deployment, distribution and supply chain decision-making/collaboration (e.g., planning stage to real-time execution/retrograde operations) without need for highly specialized operators. Projects in this area address the following: decision support tools, distribution process simulations/analytics, distribution demand forecasting/execution monitoring, automated decision-maker support (e.g., queuing, alerting, courses of action), automated status monitoring with information fusion to include drilldown capability, and resilient Command & Control (C2) infrastructure capabilities. Current planning, forecasting, and collaboration capabilities do not permit full synchronization of people, processes and assets to execute planned operations. Automated tools must be able to dynamically analyze/predict demand and provide input to advanced distribution planning systems to include the capability for Combatant Commanders to manage theater transportation operations from the port of debarkation to the point of need. Transportation information exchange across the DOD is inhibited by disparate systems, multiple data standards and insufficient interfaces. The ability to rapidly determine the impact of any delays/changes and conduct "what-if" impact assessments on the closure of force packages is required. This project addresses the required mission support to combatant commanders and other customers in the area of C2, Optimization, and Modeling and Simulations.

This program also provides for the development, integration, demonstration and detailed assessment of capabilities to ensure USTRANSCOM mission assurance is in a persuasive/dynamic cyber environment. USTRANSCOM requires the procedures/technologies to improve cyber surveillance and control of networks across multiple domains and the ability to continue critical network operations in contested unclassified and classified network environments. The Command also needs the ability to differentiate between valid/unauthorized users and determine/quantify the trustworthiness of hardware/software systems. Additionally USTRANSCOM must have the

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|--|---|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640216 / <i>Deployment and Distribution Innovation</i> |
|--|---|--|

ability to rapidly analyze & correlate data regarding malicious activities, select/evoke real-time defense actuators, perform automated reasoning capabilities that address data quality issues, and the ability to rapidly return to a known/safe operating state.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | FY 2022 | FY 2023 | FY 2024 |
|--|---------|---------|---------|
| <p><b>Title:</b> TRANSCOM Innovation</p> <p><b>Description:</b> Rapidly develop and integrate technology solutions for the enterprise</p> <p><b>FY 2023 Plans:</b><br/>See BPAC 640212</p> <p><b>FY 2024 Plans:</b><br/>Continue to pursue and develop solutions to identified challenges</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Technology pursuits vary every FY</p>  | -       | 0.000   | 1.445   |
| <p><b>Title:</b> Petroleum Undersea Sustainment Hose</p> <p><b>Description:</b> Provide an agile, submersible over-the-shore conduit that can be pre-positioned or immediately employed from vessels of opportunity such as a commercial offshore supply vessel (OSV).</p> <p><b>FY 2023 Plans:</b><br/>See BPAC 640211</p> <p><b>FY 2024 Plans:</b><br/>Addresses Sea Basing Technologies/Logistics-Over-The-Shore need to enhance the Joint Force Commander's flexibility</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Development costs vary by FY</p> | -       | 0.000   | 0.800   |
| <p><b>Title:</b> Aerial Delivery - Low Cost Modular GPS Denied Kit</p> <p><b>Description:</b> Demonstrate a low size, weight, power and cost kit that can provide GPS-denied navigation, aerial delivery platforms</p> <p><b>FY 2023 Plans:</b><br/>FY24 New Start</p> <p><b>FY 2024 Plans:</b></p>  | -       | 0.000   | 0.750   |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force   |   | <b>Date:</b> March 2023  |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640216 / <i>Deployment and Distribution Innovation</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   |   | <b>FY 2022</b>   | <b>FY 2023</b> | <b>FY 2024</b> |
| Contract engineering, flight testing  |   |  |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>FY24 New Start  |   |  |                |                |
| <b>Title:</b> Airdrop System - Precision Extended Glide   |   | -  | 0.000          | 0.750          |
| <b>Description:</b> Demonstrate a long range powered parafoil system to reduce risk to delivery aircraft                              |   |  |                |                |
| <b>FY 2023 Plans:</b><br>See BPAC 640211  |   |  |                |                |
| <b>FY 2024 Plans:</b><br>Systems Engineering, Component Procurements.   |   |  |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Development costs vary as project progresses                                |   |  |                |                |
| <b>Title:</b> Automatic Landing Zone  |   | -  | 0.000          | 0.496          |
| <b>Description:</b> Aid selection of a LZ/DZ by presenting the user with a map-based course of action decision tool, at point of need |   |  |                |                |
| <b>FY 2023 Plans:</b><br>FY24 New Start   |   |  |                |                |
| <b>FY 2024 Plans:</b><br>Understanding the data formats and interfaces of the following existing GOTs products                        |   |  |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>FY24 New Start  |   |  |                |                |
| <b>Title:</b> Container Airdrop   |   | -  | 0.000          | 0.500          |
| <b>Description:</b> Enable the airdrop of a standard 20ft ISO container from a C-17 utilizing standard low altitude airdrop methods   |   |  |                |                |
| <b>FY 2023 Plans:</b><br>FY24 New Start   |   |  |                |                |
| <b>FY 2024 Plans:</b>   |   |  |                |                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force   |   | <b>Date:</b> March 2023  |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640216 / <i>Deployment and Distribution Innovation</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   |   | <b>FY 2022</b>   | <b>FY 2023</b> | <b>FY 2024</b> |
| Develop Container-Platform Lock System  |   |  |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>FY24 New Start  |   |  |                |                |
| <b>Title:</b> Expeditionary Concrete Construction for Ports of Debarkation  |   | -  | 0.000          | 0.500          |
| <b>Description:</b> Use indigenous materials for contingency construction while minimizing logistics required to enable the construction  |   |  |                |                |
| <b>FY 2023 Plans:</b><br>FY24 New Start   |   |  |                |                |
| <b>FY 2024 Plans:</b><br>Material procurement and characterization  |   |  |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>FY24 New Start  |   |  |                |                |
| <b>Title:</b> Global Reach  |   | -  | 0.000          | 0.803          |
| <b>Description:</b> Tactical Situation, COP, mission planning, intelligence, communications resiliency, ship survivability capabilities   |   |  |                |                |
| <b>FY 2023 Plans:</b><br>FY24 New Start   |   |  |                |                |
| <b>FY 2024 Plans:</b><br>Conduct design activities to include but not limited to staff, operator and crew interviews, site, Information Technology (IT) and network surveys to better understand MSC's near, mid and long-term strategic and operational needs. |   |  |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>FY24 New Start  |   |  |                |                |
| <b>Title:</b> Scalable Autonomous Modular Propulsion Kits   |   | -  | 0.000          | 0.400          |
| <b>Description:</b> Develop scalable modular propulsion kits with marine automation for installation on ocean/riverine commercial barges  |   |  |                |                |
| <b>FY 2023 Plans:</b>   |   |  |                |                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force  |   | <b>Date:</b> March 2023  |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640216 / <i>Deployment and Distribution Innovation</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  |   | <b>FY 2022</b>   | <b>FY 2023</b> | <b>FY 2024</b> |
| <p>FY24 New Start</p> <p><b>FY 2024 Plans:</b><br/>Autonomous control system used to convert manned vessels to autonomous unmanned capability</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>FY24 New Start</p>   |   |  |                |                |
| <p><b>Title:</b> Large Area Runway Repair Gone Expeditionary</p> <p><b>Description:</b> Deliver TTPs/equipment to enhance capabilities to repair large craters</p> <p><b>FY 2023 Plans:</b><br/>FY24 New Start</p> <p><b>FY 2024 Plans:</b><br/>Develop new and mature technologies that will enable airbase recovery</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>FY24 New Start</p>                               |   | -  | 0.000          | 1.000          |
| <p><b>Title:</b> Theater Mitigation Alternatives at Military Entry Control Facilities</p> <p><b>Description:</b> Research and physical testing to gather and analyze data for improving Entry Control Facilities</p> <p><b>FY 2023 Plans:</b><br/>FY24 New Start</p> <p><b>FY 2024 Plans:</b><br/>Begin reserach efforts to gather required data</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>FY24 New Start</p>    |   | -  | 0.000          | 1.420          |
| <p><b>Title:</b> Rapid Available Interface for trans-Loading</p> <p><b>Description:</b> Provides a process to rapidly assess the condition, design acceptable repairs and delivers prekitted rail repair and retrofit solutions. The standardized repair kits allows for the development of Tactics, Techniques and Procedures (TTPs) for each repair that can be scaled to address a range of damages.</p> <p><b>FY 2023 Plans:</b></p> |   | -  | 0.000          | 0.500          |



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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force   |   | <b>Date:</b> March 2023  |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640216 / <i>Deployment and Distribution Innovation</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   |   | <b>FY 2022</b>   | <b>FY 2023</b> | <b>FY 2024</b> |
| See BPAC 640211   |   |  |                |                |
| <b>FY 2024 Plans:</b><br>Work will identify and develop a robotic survey vehicle integrated with rail condition survey equipment.   |   |  |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>No Change   |   |  |                |                |
| <b>Title:</b> Buoyant Roll On/Roll Off Interface Kit  |   | -  | 0.000          | 0.750          |
| <b>Description:</b> Prototype consisting of the RO/RO ramp to interface to a commercial supply vessel and a section of floating causeway and ancillary equipment sufficient to conduct a limited operational assessment |   |  |                |                |
| <b>FY 2023 Plans:</b><br>See BPAC 640211  |   |  |                |                |
| <b>FY 2024 Plans:</b><br>Continue to develop a prototype rapidly deployable ship-to-shore connector capability  |   |  |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Costs vary by FY  |   |  |                |                |
| <b>Title:</b> 35 Thousand Foot Airdrop  |   | -  | 0.000          | 0.500          |
| <b>Description:</b> Develop capabilities to airdrop from 35 thousand feet to increase aircraft standoff range from threat.  |   |  |                |                |
| <b>FY 2023 Plans:</b><br>See BPAC 640211  |   |  |                |                |
| <b>FY 2024 Plans:</b><br>Continuing to work parafoil and parachute technologies   |   |  |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Varies by FY  |   |  |                |                |
| <b>Title:</b> Enhanced Vision Navigation for Joint Precision Airdrop System   |   | -  | 0.000          | 0.540          |
| <b>Description:</b> Support to oversee the development of advanced technologies to improve airdrop and other capabilities to the warfighter.  |   |  |                |                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force   |   | <b>Date:</b> March 2023  |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640216 / <i>Deployment and Distribution Innovation</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   |   | <b>FY 2022</b>   | <b>FY 2023</b> | <b>FY 2024</b> |
| <p><b>FY 2023 Plans:</b><br/>See BPAC 640211</p> <p><b>FY 2024 Plans:</b><br/>Monitor projects progression to ensure costs, schedule, performance</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>NA</p>  |   |  |                |                |
| <p><b>Title:</b> Aerial Delivery Platform</p> <p><b>Description:</b> Platform for air dropping mutple vehicles</p> <p><b>FY 2023 Plans:</b><br/>See BPAC 640211</p> <p><b>FY 2024 Plans:</b><br/>Development of platform prototype</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Development varies by FY</p> |   | -  | 0.000          | 1.445          |
| <p><b>Title:</b> Modular Autonomous Ready Dynamic Positioning System</p> <p><b>Description:</b> Position for sealift lighterage assets</p> <p><b>FY 2023 Plans:</b><br/>See BPAC 640211</p> <p><b>FY 2024 Plans:</b><br/>develop prototypes</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Varies by FY</p>    |   | -  | 0.000          | 1.181          |
| <p><b>Title:</b> Spectrum Exploitation for Emissions Control</p> <p><b>Description:</b> Mitigate/reduce risks of emissions detection from civilian/commercial vessels</p> <p><b>FY 2023 Plans:</b></p>  |   | -  | 0.000          | 0.882          |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force   |   | <b>Date:</b> March 2023  |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640216 / <i>Deployment and Distribution Innovation</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   |   | <b>FY 2022</b>   | <b>FY 2023</b> | <b>FY 2024</b> |
| See BPAC 640211   |   |  |                |                |
| <b>FY 2024 Plans:</b><br>Conduct lab testing to Mitigate/reduce risks of emissions detection from civilian/commercial vessels   |   |  |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Varies by FY  |   |  |                |                |
| <b>Title:</b> AI-Powered Sensitive Data Masking   |   | -  | 0.000          | 0.300          |
| <b>Description:</b> Focus on masking structured data, building an organizational knowledge base, and masking unstructured data  |   |  |                |                |
| <b>FY 2023 Plans:</b><br>FY24 New Start   |   |  |                |                |
| <b>FY 2024 Plans:</b><br>Identify a focused subset of operational data that is commonly shared across trusted partners.   |   |  |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>NA  |   |  |                |                |
| <b>Title:</b> Iron Spider   |   | -  | 0.000          | 0.775          |
| <b>Description:</b> Support plans that are released on unclassified, untrusted commercial networks in order to solicit and contract with vendors capable of supplying theater forces.                                   |   |  |                |                |
| <b>FY 2023 Plans:</b><br>See BPAC 640212  |   |  |                |                |
| <b>FY 2024 Plans:</b><br>Continue to allow permissioned transactional blockchain network integrated with an identity blockchain that controls access  |   |  |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Varies by FY  |   |  |                |                |
| <b>Title:</b> Massachusetts Institute of Technology Lincoln Labs  |   | -  | 0.000          | 3.100          |
| <b>Description:</b> Partnership with MIT-LL to research efforts to improve enterprise operational architecture supporting high-end analytics, integrated information technology/data structures, understanding of cloud |   |  |                |                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force   |   | <b>Date:</b> March 2023  |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640216 / <i>Deployment and Distribution Innovation</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   |   | <b>FY 2022</b>   | <b>FY 2023</b> | <b>FY 2024</b> |
| capabilities and multi-level cyber security defense.  |   |  |                |                |
| <p><b>FY 2023 Plans:</b><br/>See BPAC 640212</p> <p><b>FY 2024 Plans:</b><br/>Multiple efforts to increase decision support</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Varies by FY</p>  |   |  |                |                |
| <p><b>Title:</b> Modeling &amp; Simulation Innovation</p> <p><b>Description:</b> Select student research/faculty-assisted projects (e.g., Joint Transportation Asset Scheduling Kit, Next Generation Cargo Capability, Applying Post Modern Portfolio Theory to Mitigate Risk in International Shipping, Optimal CH-47/C-130 Workload Balance, Remotely Piloted Aircraft Performing Airdrop Mission).</p> <p><b>FY 2023 Plans:</b><br/>See BPAC 640212</p> <p><b>FY 2024 Plans:</b><br/>Collaboration partnership with AFIT for student research</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding varies very little each FY</p> |   | -  | 0.000          | 0.125          |
| <p><b>Title:</b> Aerial Delivery and Autonomous Deployment of Unmanned Vehicles</p> <p><b>Description:</b> Develop ability to deliver unmanned systems from existing airdrop systems</p> <p><b>FY 2023 Plans:</b><br/>See BPAC 640212</p> <p><b>FY 2024 Plans:</b><br/>Develop release mechanism for unmanned vehicle</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Development varies by FY</p>  |   | -  | 0.000          | 1.904          |
| <p><b>Title:</b> Program Execution</p>  |   | -  | 0.000          | 1.056          |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force  |   | <b>Date:</b> March 2023  |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640216 / <i>Deployment and Distribution Innovation</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  |   | <b>FY 2022</b>   | <b>FY 2023</b> | <b>FY 2024</b> |
| <p><b>Description:</b> Provide technical assistance and program management support to the USTRANSCOM RDT&amp;E Program.</p> <p><b>FY 2023 Plans:</b><br/>See BPAC 640212</p> <p><b>FY 2024 Plans:</b><br/>TRL 4-6: Program support to explore technology solutions to capability gaps identified through Joint Concept Development documents, the Joint capabilities Integration and Development System process, Joint Experimentation, etc, to increase the responsiveness, efficiency and effectiveness of the Joint Deployment and Distribution Enterprise.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Very little variation by FY</p> |   |  |                |                |
| <p><b>Title:</b> Analyzer Driven Data Integrity</p> <p><b>Description:</b> Increase data integrity</p> <p><b>FY 2023 Plans:</b><br/>See BPAC 640212</p> <p><b>FY 2024 Plans:</b><br/>Contiune plan design</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Increase in design development</p>   |   | -  | 0.000          | 0.475          |
| <p><b>Title:</b> Strategic Theater Orchestration and Resource Management</p> <p><b>Description:</b> Provide ability more effectively and efficiently manage theater lift assets</p> <p><b>FY 2023 Plans:</b><br/>See BPAC 640212</p> <p><b>FY 2024 Plans:</b><br/>Established Strategic-Theater Scenarios</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b></p>  |   | -  | 0.000          | 1.310          |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force   |   | <b>Date:</b> March 2023  |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640216 / <i>Deployment and Distribution Innovation</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   |   | <b>FY 2022</b>   | <b>FY 2023</b> | <b>FY 2024</b> |
| Going from system design to scenario build  |   |  |                |                |
| <b>Title:</b> Risk Assessment and Vetting for the Enterprise<br><b>Description:</b> Effort will provide the ability to assess deployment distribution risk factors<br><br><b>FY 2023 Plans:</b><br>See BPAC 640212<br><br><b>FY 2024 Plans:</b><br>Move from desig to development phases<br><br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Starting development phase increases costs          |   | -  | 0.000          | 1.900          |
| <b>Title:</b> Component Level Operational Decision Advantage<br><b>Description:</b> Develop detailed decision support tool that provides insight at the component level<br><br><b>FY 2023 Plans:</b><br>See BPAC 640212<br><br><b>FY 2024 Plans:</b><br>Initiate the agile software development approach<br><br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Development increase between phases |   | -  | 0.000          | 1.524          |
| <b>Title:</b> JDDE Mission Assurance Coordinator<br><b>Description:</b> Develop a JDDE-wide method for mission coordination<br><br><b>FY 2023 Plans:</b><br>See BPAC 640212<br><br><b>FY 2024 Plans:</b><br>Iterations of conceive, build, and test solutions<br><br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Software development increase  |   | -  | 0.000          | 1.605          |
| <b>Title:</b> Oversight   |   | -  | 0.000          | 1.330          |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|--|---|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640216 / <i>Deployment and Distribution Innovation</i> |
|--|---|--|

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | FY 2022 | FY 2023 | FY 2024 |
|--|---------|---------|---------|
| <p><b>Description:</b> Enable continuous tracking of adversary cyber groups and campaigns targeting USTRANSCOM and USINDOPACOM enterprise and their partners</p> <p><b>FY 2023 Plans:</b><br/>See BPAC 640213</p> <p><b>FY 2024 Plans:</b><br/>Continue anomaly detection and predictive analysis to dynamically assess threats, attack vectors and adversary intent</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Same funding level</p>  |         |         |         |
| <p><b>Title:</b> Cyber Mission Assurance Technologies</p> <p><b>Description:</b> Near real-time understanding of the operational impact of cyber risks, threats, and disruptions.</p> <p><b>FY 2023 Plans:</b><br/>See BPAC 640213</p> <p><b>FY 2024 Plans:</b><br/>Continue to develop integrated analysis/decision processes involving complex ops/cyber data by selecting pre-approved actions and coordinating stakeholders in the fight-through of cyber risks/disruptions to executing missions and Cyber Critical Asset Lists</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Development increases in FY24</p> | -       | 0.000   | 1.767   |
| <b>Accomplishments/Planned Programs Subtotals</b>  | -       | 0.000   | 31.833  |

**C. Other Program Funding Summary (\$ in Millions)**  
N/A

**Remarks**

**D. Acquisition Strategy**  
Requirements for joint deployment and distribution enterprise technology enhancements are annually identified, validated and prioritized by the Joint Deployment & Distribution Enterprise (JDDE) community. Pursuit of the development of new/improved capabilities to meet these requirements is managed by the United States Transportation Command (USTRANSCOM). Prototype products, once evaluated by the users, are spirally transitioned by the operational community.

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**Exhibit R-3, RDT&E Project Cost Analysis:** PB 2024 Air Force **Date:** March 2023

|  |   |  |
|--|---|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640216 / <i>Deployment and Distribution Innovation</i> |
|--|---|--|

| <b>Product Development (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Integrated Logistics Support                | Various                | USTRANSCOM :<br>Scott AFB, IL  | -           | -       |            | -       |            | 31.833       |            | -           |            | 31.833        | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | -       |            | -       |            | 31.833       |            | -           |            | 31.833        | Continuing       | Continuing | N/A                      |

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | -           | -       | -       | 31.833       | -           | 31.833        | Continuing       | Continuing | N/A                      |

**Remarks**



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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640216 / <i>Deployment and Distribution Innovation</i> |

|  | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|  | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|                                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| <i>Deployment and Distribution</i> |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Integrated Logistics Support       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604776F / <i>Deployment &amp; Distribution Enterprise R&amp;D</i> | <b>Project (Number/Name)</b><br>640216 / <i>Deployment and Distribution Innovation</i> |

Schedule Details

| Events by Sub Project                     | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Deployment and Distribution</i></b> |         |      |         |      |
| Integrated Logistics Support              | 1       | 2024 | 4       | 2028 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |  |
|--|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> |
|--|--|

| COST (\$ in Millions)                             | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                             | -           | 348.134 | 370.810 | 210.806      | 0.000       | 210.806       | 192.833 | 100.212 | 121.892 | 189.614 | Continuing       | Continuing |
| 640858: <i>AFWERX Prime</i>                       | -           | 112.534 | 0.000   | 0.000        | 0.000       | 0.000         | 1.476   | 1.511   | 1.545   | 1.476   | Continuing       | Continuing |
| 645350: <i>Experimentation</i>                    | -           | 90.686  | 217.894 | 95.233       | 0.000       | 95.233        | 65.804  | 66.952  | 67.876  | 69.625  | Continuing       | Continuing |
| 645351: <i>Prototyping</i>                        | -           | 144.914 | 152.916 | 108.495      | 0.000       | 108.495       | 118.326 | 24.371  | 45.093  | 110.980 | Continuing       | Continuing |
| 645352: <i>Architecture Design and Evaluation</i> | -           | 0.000   | 0.000   | 7.078        | 0.000       | 7.078         | 7.227   | 7.378   | 7.378   | 7.533   | Continuing       | Continuing |

**A. Mission Description and Budget Item Justification**

The Tech Transition Program addresses the gap between initial system-level technology or concept development and demonstration, and successful acquisition and operational capability implementation. The Tech Transition Program matures new warfighting concepts, rapidly develops fieldable prototypes, and performs experimentation to assess military utility of transition-ready weapon systems. This program utilizes multiple approaches and integrated activities to field technology for the warfighter focusing on efforts that are directly tied to the Secretary of the Air Force's (SecAF) Operational Imperatives.

Experimentation efforts explore new concepts and their applications in potential future operating environments within a system-of-systems context taking risks early in the acquisition process to drive a more optimized and efficient acquisition approach significantly reducing overall acquisitions costs.

Prototyping enables integration and demonstration of emerging technologies to quickly move them into warfighting capability. Following strategic guidance the Department of the Air Force has institutionalized Experimentation and Prototyping to achieve smarter, faster, and more efficient acquisitions that move technologies rapidly into the most critical warfighting capabilities.

The Tech Transition Program allows acquisition program managers (the capability developers) and warfighters (the capability recipients and end users) to prototype, integrate, and demonstrate candidate technologies and assess them in an operational system of systems environment in partnership with Combatant Commanders, Major and Field Commands, Program Executive Officers, schoolhouses, simulation facilities, and development planning organizations.

Architecture Design and Evaluation is directed by the DAF PEO C3BM with oversight by the Secretary of the Air Force along with the Chief of Staff of the Air Force, Chief of Space Operations, and Senior Acquisition Executive. This activity is supported by the Air Force Research Laboratory.

The total cost of the AKCS Middle Tier of Acquisition effort is 64.27 million, including RDT&E and procurement of prototype units. The AKCS is fully funded across the Future Years Defense Program.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |  |
|--|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> |
|--|--|

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F, 0605831F, and/or 0606017F.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 359.045        | 649.545        | 314.135             | 0.000              | 314.135              |
| Current President's Budget                        | 348.134        | 370.810        | 210.806             | 0.000              | 210.806              |
| Total Adjustments                                 | -10.911        | -278.735       | -103.329            | 0.000              | -103.329             |
| • Congressional General Reductions                | 0.000          | -30.000        |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 57.300         |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | -247.860       |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | -10.911        | -58.175        | -103.329            | 0.000              | -103.329             |

**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

**Project:** 640858: *AFWERX Prime*

Congressional Add: *Program increase - Agility Prime*

Congressional Add Subtotals for Project: 640858

**Project:** 645350: *Experimentation*

Congressional Add: *Program Increase - Autonomous Air Combat Operations*

Congressional Add: *Program Increase Advanced Rotary Engine Hybrid Power System*

Congressional Add: *Program Increase - Operational Additive Manufacturing Capabilities*

Congressional Add: *Program Increase Advanced Air Mobility*

Congressional Add: *Program Increase - F35 Logistics Enhancements*

Congressional Add: *Program Increase - Hybrid Autonomous Maritime Expeditionary Logistics*

Congressional Add: *Program Increase Versatile Aerial Power System*

|   | <b>FY 2022</b> | <b>FY 2023</b> |
|---|----------------|----------------|
|   | 52.359         | -              |
| Congressional Add Subtotals for Project: 640858 | 52.359         | -              |
|   | 9.696          | 10.000         |
|   | -              | 10.000         |
|   | -              | 9.800          |
|   | -              | 5.500          |
|   | -              | 10.000         |
|   | -              | 2.000          |
|   | -              | 10.000         |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |  |
|--|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> |
|--|--|

**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

|  | FY 2022 | FY 2023 |
|--|---------|---------|
| Congressional Add Subtotals for Project: 645350                                      | 9.696   | 57.300  |
| <b>Project: 645351: Prototyping</b>  |         |         |
| Congressional Add: <i>Program increase - Logistics Enhancements</i>                  | 3.878   | 0.000   |
| Congressional Add: <i>Program increase - Alternative PNT phase III Demonstration</i> | 3.878   | 0.000   |
| Congressional Add Subtotals for Project: 645351                                      | 7.756   | 0.000   |
| Congressional Add Totals for all Projects  | 69.811  | 57.300  |

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|   |                    |                |                |                     |  |                      |                |                |  |                         |                         |                   |
|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|--|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |  |                      |                |                |  | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> |                      |                |                | <b>Project (Number/Name)</b><br>640858 / <i>AFWERX Prime</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>   | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>   | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 640858: <i>AFWERX Prime</i>   | -                  | 112.534        | 0.000          | 0.000               | 0.000  | 0.000                | 1.476          | 1.511          | 1.545  | 1.476                   | Continuing              | Continuing        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -  | -                    | -              | -              | -  | -                       |                         |                   |

**Note**

AFWERX Prime BPAC 640858 under PE 64858F (Tech Transition) is planned to transition to PE 64317F (Tech Transfer) beginning FY 24.

**A. Mission Description and Budget Item Justification**

AFWERX Prime (formerly Agility Prime) is a new acquisition approach that uses government-specific resources to reduce risk in emerging technology markets while partnering with investors, industry, interagency, and international partners for accelerated, affordable, and agile commercial and military capability. These Prime efforts are led by a Chief Commercialization Officer whose key responsibility is to accelerate technology commercialization for fielding of military capability. Initial efforts of AFWERX Prime provides research, development, testing, and evaluation to field transformative vertical flight technology. These systems incorporate non-traditional electric or hybrid propulsion for manned or optionally manned missions, with onboard, remote, or eventually autonomous control. AFWERX Prime leverages commercial investment in technologies that support mobility and sustainment in benign or contested environments to enable agile, lower-cost distributed logistics, humanitarian operations, disaster response operations, and communications capabilities.

AFWERX Prime explores associated technologies and follow-on Prime initiatives, including autonomy, and leveraging commercial software best practices and capabilities to solve capability integration problem sets. Agility Prime, the first prime, leverages emerging vertical lift and logistics platforms, enabling resilient basing and sustainment options. Future Prime initiatives will use the same paradigm to leverage commercial technology and investment for high returns on government participation in this sector, achieving advanced, agile, and accelerated fielding of commercial and military capability bolstering national security and domestic technological dominance.

Next-Gen Large Aircraft aims to accelerate prototyping and widespread adoption of blended wing body aircraft for military and commercial applications, leveraging common goals among DOD and allied nations, commercial airlines and freight companies, other industry partners, and private investors. Cargo, tanker, and non-stealth bomber aircraft account for approximately 40% of DOD's total annual operational energy consumption, estimated to be about 1.2 billion gallons per year. Next-Gen Large Aircraft endeavors to meaningfully reduce fuel delivery logistical challenges, and prime the U.S. commercial aerospace sector to advance 21st century airframe designs in similar manner as military-developed aircraft primed commercial aircraft derivatives in the mid-20th century.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| <b>Title:</b> AFWERX Prime (formerly Agility Prime)  | 60.175         | 0.000          | 0.000               | -                  | 0.000                |
| <b>Description:</b> Execution of efforts to explore and transition emerging dual-use technologies under this new acquisition approach to include evaluation of transformative vertical flight and agile logistics supporting distributed operations, and applicable initial use cases, autonomous capabilities, advanced energy and hybrid |                |                |                     |                    |                      |

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

|  |  |  |
|--|--|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>640858 / <i>AFWERX Prime</i> |
|--|--|--|

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b> | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|---|---------|---------|--------------|-------------|---------------|
|---|---------|---------|--------------|-------------|---------------|

propulsion, and rapid commercial software capabilities. Activities include technical exchanges, research, development, certification, testing, and evaluation.

***FY 2023 Plans:***  
Continue risk reduction ground testing with multiple aircraft manufacturers including wind tunnel, environmental, cyber penetration, and Electromagnetic Interference characterization. Continue prototype testing to characterize performance, handling qualities, and mission system effectiveness. Continue airworthiness assessments aimed at providing flight certified vehicles in 2024. Continue flight tests in realistic operating environments and scenarios to provide data for business case analysis and fielding. Continue to perform initial research, development, testing, and evaluation of other potential technology sectors to follow this Prime acquisition paradigm.

***FY 2024 Base Plans:***  
Efforts include enabling technology risk reduction with multiple manufacturers for commercial and operations assessment. For Agility Prime, continue prototype testing to characterize performance, handling qualities, and mission system effectiveness. Facilitate airworthiness assessments aimed at initial flight certified vehicles. Conduct flight tests in realistic operating environments and scenarios to provide data for business case analysis and fielding. Conduct research, development, test and evaluation for key enabling technologies of autonomous operations and vehicle collaboration along with hybrid propulsion. For Autonomy Prime, provide a low-cost pipeline and proving ground for evaluate, iterate, and mature of autonomous capabilities for industry and government organizations, including dual-use applications. Supports commercial advancement of overlapping autonomous mission capabilities and transitioning capabilities into major Air Force autonomy programs. With Integration Prime, provide a multi-level environment to prototype and transition integrating software capabilities with industry and non-traditional solution providers and software integration stacks to enable rapid adaptability and scalability of mission threads along with a government owned open architecture toolkit for integrating applications onto multiple platforms.

|   |        |       |       |   |       |
|---|--------|-------|-------|---|-------|
| <b>Accomplishments/Planned Programs Subtotals</b> | 60.175 | 0.000 | 0.000 | - | 0.000 |
|---|--------|-------|-------|---|-------|

|   | FY 2022 | FY 2023 |
|---|---------|---------|
| <b><i>Congressional Add:</i></b> Program increase - Agility Prime               | 52.359  | -       |
| <b><i>FY 2022 Accomplishments:</i></b> Conduct Congressionally-directed efforts |         |         |
| <b>Congressional Adds Subtotals</b>   | 52.359  | -       |

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|   |                         |
|---|-------------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|---|-------------------------|

|  |  |  |
|--|--|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>640858 / <i>AFWERX Prime</i> |
|--|--|--|

**C. Other Program Funding Summary (\$ in Millions)**

| <u>Line Item</u>                           | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • RDTE 04 0604009F:<br><i>AFWERX Prime</i> | 0.000          | 130.860        | 12.988                        | 0.000                        | 12.988                         | 5.483          | 5.568          | 5.568          | 6.442          | Continuing                        | Continuing        |

**Remarks**  
Funding for AFWERX Prime Project, BPAC 640858 under PE 0604858F (Tech Transition) transitioned to Project, BPAC 640858 under PE 0604009F (AFWERX) beginning FY 2023 per Congressional direction.

**D. Acquisition Strategy**  
AFWERX Prime effort will proceed along the following path: 1) investigate details regarding potential commercial markets; 2) identify technologies that are likely to result in successful prototypes and support future DAF capability needs and Operational Imperatives ; 3) create collaborative test plans potentially offering test assets and expertise; 4) leverage this campaign for near-term airworthiness as well as preparation for procurement of hardware, software, data, or services. The intent is to accelerate learning to enable early adoption, procurement, and fielding.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
|--|---|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / Tech Transition Program | <b>Project (Number/Name)</b><br>640858 / AFWERX Prime |
|--|---|---|

| <b>Product Development (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| AOI 1 Performer A                           | C/FFP                  | Various : Various              | -           | 12.000  | Oct 2021   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| AOI 2 Performer A                           | C/FFP                  | Various : Various              | -           | 3.000   | Nov 2021   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| AOI 1 Performer B                           | C/FFP                  | Various : Various              | -           | 6.000   | Jan 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| AOI 2 Performer B                           | C/FFP                  | Various : Various              | -           | 4.000   | Feb 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| AOI 3 Performer A                           | C/FFP                  | Various : Various              | -           | 3.000   | Dec 2021   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| AOI 3 Performer B                           | C/FFP                  | Various : Various              | -           | 4.000   | Mar 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Air Race Partners                           | RO                     | Various : Various              | -           | 5.000   | Jun 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Next Gen Large Aircraft                     | MIPR                   | DIU : Mountain View, CA        | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Congressional Add- Agility Prime            | Various                | Various : Various              | -           | 52.359  | Sep 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Prime Efforts                               | TBD                    | TBD : TBD                      | -           | -       |            | -       |            | 0.000        | Jun 2024   | 0.000       | Jun 2024   | 0.000         | Continuing       | Continuing | -                        |
| Agility Prime AOI 1 Performer A             | C/FFP                  | Various : Various              | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Agility Prime AOI 1 Performer B             | C/FFP                  | Various : Various              | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Agility Prime AOI 2 Performer A             | C/FFP                  | Various : Various              | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Agility Prime AOI 3 Performer A             | C/FFP                  | Various : Various              | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Agility Prime AOI 3 Performer B             | C/FFP                  | Various : Various              | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Autonomy Prime Line of Effort A             | C/FFP                  | Various : Various              | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Autonomy Prime Line of Effort B             | C/FFP                  | Various : Various              | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Autonomy Prime Line of Effort C             | C/FFP                  | Various : Various              | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Autonomy Prime Line of Effort D             | C/FFP                  | Various : Various              | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Integration Prime Capability Sprint A       | C/FFP                  | Various : Various              | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
|--|---|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / Tech Transition Program | <b>Project (Number/Name)</b><br>640858 / AFWERX Prime |
|--|---|---|

| <b>Product Development (\$ in Millions)</b>     |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                              | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Integration Prime Capability Sprint B           | C/FFP                  | Various : Various              | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Integration Prime Capability Sprint C           | C/FFP                  | Various : Various              | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Integration Prime Open Architecture App Toolkit | C/FFP                  | Various : Various              | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                                 |                        |                                | -           | 89.359  |            | -       |            | 0.000        |            | 0.000       |            | 0.000         | Continuing       | Continuing | N/A                      |

| <b>Support (\$ in Millions)</b>             |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Modeling and Analytics Support              | MIPR                   | Various : Various              | -           | 2.000   | Nov 2021   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Government Test Support                     | WR                     | Various : Various              | -           | 2.000   | Dec 2021   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Airworthiness and Test Support              | Various                | Various : Various              | -           | 3.000   | Nov 2021   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Next Generation Large Aircraft Test Support | MIPR                   | Various : Various              | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 7.000   |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | N/A                      |

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Autonomy And Hybrid Stratfi                 | MIPR                   | Various : Various              | -           | 5.000   | Dec 2021   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Autonomy and Hybrid Stratfi (2)             | MIPR                   | Various : Various              | -           | 5.000   | Feb 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Next Gen Large Aircraft/ Test/Airworthiness | MIPR                   | Various : Various              | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Integration Testing                         | Various                | Various : Various              | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |



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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |  |  |
|--|--|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>640858 / <i>AFWERX Prime</i> |
|--|--|--|

|  | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|  | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |  |
|--|--|
| <b><i>AFWERX Prime Product Development</i></b> |  |
| Product Development                            |  |
| Innovative Capability Opening (Air Race)       |  |
| Air Force Airworthiness Assessments (Part 1)   |  |
| Air Force Airworthiness Release                |  |
| First Air Force Manned Flights                 |  |
| Site Surveys                                   |  |
| Bed-down Planning                              |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023                                      |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>640858 / <i>AFWERX Prime</i> |

Schedule Details

| Events by Sub Project                          | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>AFWERX Prime Product Development</i></b> |         |      |         |      |
| Product Development                            | 1       | 2022 | 4       | 2028 |
| Innovative Capability Opening (Air Race)       | 1       | 2022 | 4       | 2022 |
| Air Force Airworthiness Assessments (Part 1)   | 1       | 2022 | 3       | 2022 |
| Air Force Airworthiness Release                | 3       | 2022 | 4       | 2022 |
| First Air Force Manned Flights                 | 1       | 2022 | 1       | 2022 |
| Site Surveys                                   | 1       | 2022 | 1       | 2022 |
| Bed-down Planning                              | 2       | 2022 | 4       | 2022 |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |  |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> |                      |                |                | <b>Project (Number/Name)</b><br>645350 / <i>Experimentation</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>   | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 645350: <i>Experimentation</i>  | -                  | 90.686         | 217.894        | 95.233              | 0.000  | 95.233               | 65.804         | 66.952         | 67.876  | 69.625                  | Continuing              | Continuing        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -  | -                    | -              | -              | -   | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

The Experimentation project funds experimentation campaigns to explore new concepts and their applications in operationally relevant environments and within a system-of-systems warfighting context. Operational Experimentation Campaigns are directly aligned and integrated with the SecAF's Operational Imperatives. Concepts and enabling technologies including but not limited to, airborne targeting and tracking, autonomy, spectrum warfare, artificial intelligence, machine learning, expeditionary base defense, agile combat operations, and joint all-domain operations hold great promise, yet their transition to acquisition programs and fielded capabilities is typically hampered due to uncertainties regarding their military utility and organizational adoption. Experimentation campaigns assess hypotheses that new capabilities will deliver decisive competitive advantage against our adversaries in a dynamic threat environment. These campaigns dramatically shorten and reduce the overall cost of the acquisition process by delivering robust information including operational utility assessments, total life cycle cost estimates, preliminary product support strategy, reliability and maintainability metrics, operational utility assessments and Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities and Policy implications.

A key element of the experimentation campaigns is strong stakeholder partnerships and buy-in from senior DAF leadership including the Secretary of the Air Force, Air Force Futures, Air Force Plans and Programs, US Space Force Futures and Integration, Office of the Assistant Secretary of the Air Force for Acquisition, Technology and Logistics, warfighting Major Commands and Combatants Commands (capability recipients/end users), Space and Missile Systems Center and Air Force Material Command (capability developers) that ensures rapid transition of capabilities when operational utility, affordability, sustainability, and industrial capacity meet the Department of Air Force needs.

Experimentation campaigns are centered on an operational level warfighting concept to provide context for assessment. They use wargaming, simulation, demonstrations, and field/flight experimentation to evolve, refine, and validate the warfighting concepts leading to solid, evidence-based materiel and non-materiel capability development approaches with associated recommendations. Experimentation campaigns improve the effectiveness of operations by refining concepts and generating new information to address challenging threats of the future which aids the fielding of advanced technologies by providing the credible evidence needed to make sound strategic decisions and investment choices. Warfighting concepts evolve based on the latest threat assessments and the Experimentation Campaigns are likewise modified to ensure the Department of the Air Force retains a competitive advantage. Much of the Operational Experimentation efforts are more thoroughly described at higher classification levels.

The Department of the Air Force's component of the Rapid Defense Experimentation Reserve (RDER) is one of the many experimentation efforts executed within this project. To facilitate rapid modernization of the force, the Rapid Defense Experimentation Reserve (RDER) initiative was established in the Defense Planning Guidance for Fiscal Years 2023-2027, to encourage multi-component experimentation through a campaign of learning. Services, Agencies, and other participating organizations are to identify "best of breed" capabilities developed among the DoD prototyping programs, and execute approved projects through large-scale, cross-service experiments in order to refine and/or validate the Joint Warfighting Concept (JWC). Organizations nominate proposals to the Office of the Under Secretary of Defense for Research and Engineering (OUSD(R&E)) that are multi-component — involving Joint Services, International partners and/or other government agencies —

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>645350 / <i>Experimentation</i> |
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and link to one or more of the four key supporting concepts ("functional battles") of the Joint Warfighting Concept: Joint Concept for Fires, Joint Concept for Command and Control, Joint Concept for Contested Logistics, and Joint Concept for Information Advantage.

Experimentation is focused on rapid learning and then pivoting existing or future capability development efforts based on that knowledge to ensure the most pressing operational gaps are addressed and our warfighting advantages are preserved. Further details can be provided in the appropriate forum.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|--|---------|---------|--------------|-------------|---------------|
| <p><b>Title:</b> Experimentation Campaigns</p> <p><b>Description:</b> Execution of Experimentation Campaigns to identify the competitive advantages of operational warfighting concepts and the technologies that enable these concepts. Activities may include flight tests, operational exercises, joint-service exercises, digital engineering, system-of-systems integration facilitated workshops, wargaming, modeling and simulation, and virtual and hardware prototyping to enable experimentation campaigns.</p> <p><b>FY 2023 Plans:</b><br/>Continue to execute Experimentation Campaigns that aim to produce competitive advantages against near-peer adversaries and advance multi-domain operations to bring a convergence of effects, as directed by Department of the Air Force Leadership.</p> <ul style="list-style-type: none"> <li>- In FY 2023 the App Enabled Rapidly Reprogrammable EW/EMS Systems (AERRES) program will demonstrate Artificial Intelligence/ Machine Learning Electromagnetic Spectrum (EMS) algorithms and assess the competitive advantages of these algorithms on several operational platforms in tactical operations extending the capability of 4th gen Aircraft.</li> <li>- Following the live fire joint service, Operational Experimentation test event with an international partner, the Base Defense Experimentation efforts will assess the maintainability, reliability, and suitability of the National Advanced Surface to Air Missile System (NASAMS) in OCONUS operations as part of Joint Service operations in partnership with EUCOM.</li> <li>- As part of the ADAIR-UX Experimentation effort, the Strategic Development Planning and Experimentation office will partner with Major Commands and Program Executive Offices to build and execute operational experimentation efforts focused on the implementation of Collaborative Combat Aircraft (CCA) in key operational tests, operational training exercises, and joint-service campaigns. This will transition advancements pioneered through the Skyborg effort and industry advancements to produce initial fielded capability.</li> <li>- The Department of Defense is actively pushing the development and fielding of adaptable and flexible targeting capabilities that can leverage machine learning and advanced communication networks to minimize the continual requirements placed our DoD and national sensing resources. Leveraging the findings from the Intelligence Community, efforts will not only identify limitations in Department of the Air Force systems, but</li> </ul> | 80.990  | 160.594 | 95.233       | -           | 95.233        |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>645350 / <i>Experimentation</i> |
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**B. Accomplishments/Planned Programs (\$ in Millions)**

also seek opportunities to incorporate state-of-the art statistics and AI, and machine-to-machine processing to maintain target awareness. The Air Force has long maintained a tactical advantage against any and all adversaries in the utilization and employment of the E-3 Airborne Warning & Control System (AWACS) to identify, track, and target enemy airborne platforms. Experimentation efforts will focus on determining how the Air Force can maintain this competitive advantage by assessing Artificial Intelligence/Machine Learning algorithms employed on several different autonomous air platforms in tactical operations and joint exercises. Experimentation efforts will deploy and assess cost-curve flipping base defense capabilities such as the Hypervelocity Gun Weapon System (HGWS) to defend and protect Air Force expeditionary operations in austere, difficult to locate positions. SDPE will work with HAF, MAJCOMs, COCOMs, and joint-service partners to explore, build, and assess High Altitude Long Endurance (HALE) capabilities such as High Altitude Balloons (HABs).

- Smaller experimentation campaigns will be undertaken to address the strategic dilemma posed at Air University's Chief of Staff of the Air Force sponsored Blue Horizons program.

Only those Experimentation efforts that are deemed the absolute highest priority by the Department of the Air Force Leadership will be executed aiming to create technologies and processes that will provide the largest competitive advantages and produce the most significant dilemmas for our adversaries will be investigated or executed. Data from all efforts is provided directly to AF Plans and Programs (A8), Futures (5/7), Secretary of the Air Force for Acquisition, Technology and Logistics (AQ), and US Space Force Futures and Integration (S8), and the Space Warfighting Analysis Center (SWAC) to drive capability development

***FY 2024 Base Plans:***

Continue to execute Experimentation Campaigns that aim to assess and enable competitive advantages against near-peer adversaries and advance multi-domain operations to bring a convergence of effects, as directed by Department of the Air Force Leadership.

In FY 2024 the App Enabled Rapidly Reprogrammable EW/EMS Systems (AERRES) program will evaluate the operational utility of open architectures for rapidly reprogrammable Electronic Warfare (EW) and assess the competitive advantages of Artificial Intelligence/Machine Learning Electromagnetic Spectrum (EMS) algorithms on several operational platforms in tactical operations. Software focused EW and AI/ML tools will enable responsive Electronic Attack to rapidly adapt and defeat near-peer RF threats.

SDPE's Hawkeye Experimentation Campaign will perform end-to-end operational experimentation of a long-range kill chain, scale the capability up to the throughput needed for an operational system, and work with DOD

|  | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|--|---------|---------|--------------|-------------|---------------|
|  |         |         |              |             |               |



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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>645350 / <i>Experimentation</i> |

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | FY 2022 | FY 2023 | FY 2024<br>Base | FY 2024<br>OCO | FY 2024<br>Total |
|--|---------|---------|-----------------|----------------|------------------|
| <p>USG organizations to transition the capability onto a DOD digital infrastructure. All relevant data from multiple domains is shared to contribute to the optimized targeting solution, The accuracy and latency of each data stream is coherently fused to form optimal targeting information that is ideally only limited by the capability of the available sensors. The target information is then passed through multiple communications pathways to the platforms. Under the FY 2019-2022 Hawkeye effort, all key elements were demonstrated in live testing, characterized at limited scale, and shown to be effective. The current effort integrates the element, scales the system to large numbers of platforms, and transitions the capability to an operational digital infrastructure, and completes the overall transition to the operational program offices for sustainment. FY 2024: adding funding for targeting efficiency to demonstrate communications, track extraction, and weapon/target pairing</p> <p>The Base Defense Battle Management Command and Control Experimentation efforts will assess the maintainability, reliability, and suitability of the National Advanced Surface to Air Missile System (NASAMS) and Hypervelocity Ground Weapon System (HGWS) in OCONUS operations as part of Joint Service operations in partnership with EUCOM and INDOPACOM. The systems both will be integrated with an operationally fielded USAF Command and Control (C2) systems providing centralized control and fusion of Joint Service sensors to improve weapons quality track. Efforts will focus on evaluating the Air Defense Controller to reduce manpower, improve target engagement, cut engagement timelines, and assess operator limitations vs. raids of various threats. In addition, the HGWS prototype will rapidly deploy to a remote location to understand the effectiveness of expeditionary operations.</p> <p>The Autonomous Attributable Aircraft Experiment (AAAx) will transform manned fighter platforms to AI driven aircraft to dramatically accelerate the evaluation and integration AI/ML algorithms in combat systems. In addition, AAAx efforts will focus not on solely building and understanding the competitive advantages of an Artificial Intelligence-fueled platform, but also in understanding the infrastructure required to maintain vehicle operations including deployment of advanced software on a flight line, acquiring and cataloguing sensor data, and exploring unique waveforms to connect these platforms to traditional manned assets. SDPE will collaborate with industry Artificial Intelligence/Machine Learning leaders and service labs to assess vulnerabilities of codes that are being developed, tested, and implemented in air platforms. Leveraging the findings from the Intelligence Community, efforts will not only identify susceptibilities in Department of the Air Force systems, but also seek opportunities to counter and exploit adversary Artificial Intelligence platforms.</p> <p>As part of the ADAIR-UX Experimentation effort, the Strategic Development Planning and Experimentation office will partner with Major Commands and Program Executive Offices to build and execute operational experimentation efforts focused on the implementation of Autonomous Air Platforms in key operational tests,</p> |         |         |                 |                |                  |

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>645350 / <i>Experimentation</i> |
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**B. Accomplishments/Planned Programs (\$ in Millions)**

operational training exercises, and joint-service campaigns. The Operational Experimentation effort will improve overall CAF operationalization of tactical uncrewed platforms through operational assessment of five capability components: vehicle design, sensors/payloads, networks/high-performance computing, human-machine interface, and autonomy.

Under Project SAINT SDPE will build a digital environment to assess the ability to establish and maintain custody of adversary targets using cross-service, cross-agency, and commercial sensing capabilities. SDPE will also explore low cost, nontraditional platforms such as high altitude balloons and uncrewed, long endurance air platforms to sense and track adversary platforms and actions. Additional efforts will continue to identify and evaluate potential game-changing Agile Combat Employment operations that enable Air Force expeditionary operations in austere, difficult to locate positions. Smaller experimentation campaigns will be undertaken to address the strategic dilemma posed at Air University's Chief of Staff of the Air Force sponsored Blue Horizons program.

Only those Experimentation efforts that are deemed the absolute highest priority by the Department of the Air Force Leadership will be executed aiming to create technologies and processes that will provide the largest competitive advantages and produce the most significant dilemmas for our adversaries will be investigated or executed. Data from all efforts is provided directly to the Secretary of the Air Force, AF Plans and Programs (A8), Futures (5/7), Secretary of the Air Force for Acquisition, Technology and Logistics (AQ), and US Space Force Futures and Integration (S8), and the Space Warfighting Analysis Center (SWAC) to drive capability development.

***FY 2023 to FY 2024 Increase/Decrease Statement:***

FY 2024 funding decreased compared to FY 2023 by \$65.361 million. Funding decreased due to higher Air Force Priorities and due to moving Rapid Defense Experimentation Reserve (RDER) funds out of this effort to a new Program Element, 0604025F per Congressional Direction.

|   | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|---|---------|---------|--------------|-------------|---------------|
| <b>Accomplishments/Planned Programs Subtotals</b> | 80.990  | 160.594 | 95.233       | -           | 95.233        |

|  | FY 2022 | FY 2023 |
|--|---------|---------|
| <b><i>Congressional Add:</i></b> Program Increase - Autonomous Air Combat Operations         | 9.696   | 10.000  |
| <b><i>FY 2022 Accomplishments:</i></b> Conduct Congressionally - Directed Efforts            |         |         |
| <b><i>FY 2023 Plans:</i></b> Conduct Congressionally - Directed Efforts                      |         |         |
| <b><i>Congressional Add:</i></b> Program Increase Advanced Rotary Engine Hybrid Power System | -       | 10.000  |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>645350 / <i>Experimentation</i> |

|   | FY 2022 | FY 2023 |
|---|---------|---------|
| <b>FY 2023 Plans:</b> Conduct Congressionally - Directed Efforts                                |         |         |
| <b>Congressional Add:</b> Program Increase - Operational Additive Manufacturing Capabilities    | -       | 9.800   |
| <b>FY 2023 Plans:</b> Conduct Congressionally - Directed Efforts                                |         |         |
| <b>Congressional Add:</b> Program Increase Advanced Air Mobility                                | -       | 5.500   |
| <b>FY 2023 Plans:</b> Conduct Congressionally - Directed Efforts                                |         |         |
| <b>Congressional Add:</b> Program Increase - F35 Logistics Enhancements                         | -       | 10.000  |
| <b>FY 2023 Plans:</b> Conduct Congressionally - Directed Efforts                                |         |         |
| <b>Congressional Add:</b> Program Increase - Hybrid Autonomous Maritime Expeditionary Logistics | -       | 2.000   |
| <b>FY 2023 Plans:</b> Conduct Congressionally - Directed Efforts                                |         |         |
| <b>Congressional Add:</b> Program Increase Versatile Aerial Power System                        | -       | 10.000  |
| <b>FY 2023 Plans:</b> Conduct Congressionally - Directed Efforts                                |         |         |
| <b>Congressional Adds Subtotals</b>   | 9.696   | 57.300  |

**C. Other Program Funding Summary (\$ in Millions)**

| Line Item   | FY 2022 | FY 2023 | FY 2024 | FY 2024 | FY 2024 | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To  |            |            |
|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|------------|------------|
|   |         |         | Base    | OCO     | Total   |         |         |         |         | Complete | Total Cost |            |
| • RDTE 04 0604025F: <i>Rapid Defense Experimentation Reserve (RDER)</i> | -       | -       | 154.300 | -       | 154.300 | -       | -       | -       | -       | -        | Continuing | Continuing |

**Remarks**

**D. Acquisition Strategy**

Experimentation campaigns will aid the advancement and transition of advanced technologies by providing the credible evidence decision makers need to make sound strategic decisions and investment choices, to provide the warfighter with advanced capabilities. Air Force Futures, Air Force Plans and Programs, US Space Force Futures and Integration, and the Office of the Assistant Secretary of the Air Force for Acquisition, Technology and Logistics direct experimentation campaigns. The Air Force Strategic Development Planning and Experimentation (SDPE) Office located at Wright-Patterson Air Force Base, Ohio and Eglin Air Force Base manages and executes each experimentation campaign. Contracting strategies vary based on the activities of each campaign.

Global Thunder: The system will be acquired through a full-and-open competition using the existing AFRL Defense Experimentation Using the Commercial Space Internet (DEUCSI) solicitation and a new Acquisition Strategy is not required.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>645350 / <i>Experimentation</i> |
|--|--|---|

| <b>Product Development (\$ in Millions)</b>                          |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Experimentation Campaigns  | C/Various              | Various : Various              | -           | 5.509   | Sep 2022   | -       |            | 19.467       | Jan 2024   | -           |            | 19.467        | Continuing       | Continuing | -                        |
| Experimentation Campaign Hawkeye Contract 1                          | C/CPAF                 | L3 Harris : Salt Lake City, UT | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Experimentation Campaign Hawkeye Contract 2                          | C/CPFF                 | Lockheed : Fort Worth, TX      | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Experimentation Campaign Hawkeye Contract 3                          | C/CPFF                 | Space X : Hawthorne, CA        | -           | 3.903   | Aug 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Experimentation Campaign Hawkeye Contract 4                          | Various                | Various : Various              | -           | 5.666   | Sep 2022   | 10.000  | Dec 2022   | 20.000       | Oct 2023   | -           |            | 20.000        | Continuing       | Continuing | -                        |
| Experimentation Campaigns Hawkeye Contract 5                         | Various                | Various : Various              | -           | -       |            | 18.000  | Nov 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Experimentation Campaign Hawkeye Contract 6                          | Various                | Various : Various              | -           | -       |            | 2.000   | Dec 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Experimentation Campaign Autonomous Attributable Aircraft            | Various                | Various : Various              | -           | 0.236   | Aug 2022   | -       |            | 4.000        | Jan 2024   | -           |            | 4.000         | Continuing       | Continuing | -                        |
| Experimentation Campaign Autonomous Attributable Aircraft Contract 1 | C/CPFF                 | Lockheed : Palmdale, CA        | -           | 0.500   | Jul 2022   | 2.000   | Jul 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Experimentation Campaign Autonomous Attributable Aircraft Contract 2 | C/CPFF                 | Kratos : Colorado Springs, CO  | -           | 0.000   | May 2022   | 2.000   | May 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Experimentation Campaign Autonomous Attributable Aircraft Contract 3 | C/CPFF                 | Calspan : Buffalo, NY          | -           | 0.400   | Jul 2022   | 2.000   | Jul 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Experimentation Campaign Autonomous Attributable Aircraft Contract 4 | C/CPAF                 | Leidos : Reston, VA            | -           | 0.000   | Sep 2022   | 2.000   | Sep 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Experimentation Campaign Autonomous Attributable Aircraft Contract 5 | C/CPAF                 | Infoscitex : Dayton, OH        | -           | 0.000   | Jun 2022   | 2.000   | Jun 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / Tech Transition Program | <b>Project (Number/Name)</b><br>645350 / Experimentation |
|--|---|--|

| <b>Product Development (\$ in Millions)</b>   |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Experimentation Campaign Autonomous Attributable Aircraft Contract 6                  | C/CPAF                 | Fregata : St Louis, MO         | -           | 0.389   | Dec 2022   | 2.000   | Dec 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Experimentation Campaign Autonomous Attributable Aircraft Contract 7                  | C/CPAF                 | GRE OTA : FL                   | -           | 5.900   | Sep 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Experimentation Campaign Blue Horizons  | Various                | Various : Various              | -           | 2.915   | Sep 2022   | 2.250   | Dec 2022   | 2.000        | Nov 2023   | -           |            | 2.000         | Continuing       | Continuing | -                        |
| Experimentation Campaign Base Defense Gun Weapon System 1                             | C/CPFF                 | Raytheon : Tucson, AZ          | -           | 18.500  | Jul 2022   | 7.000   | Jan 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Experimentation Campaign Base Defense Gun Weapon System 2                             | C/CPAF                 | Various : Various              | -           | 2.435   | Sep 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Experimentation Campaign Base Defense National Advanced Surface to Air Missile System | C/CPFF                 | BAE : Minneapolis, MN          | -           | 0.000   | Aug 2022   | 12.000  | Dec 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Experimentation Campaign Counter AI   | C/CPAF                 | Various : Various              | -           | 5.000   | Sep 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Experimentation Campaign AERRES   | Various                | Various : Various              | -           | 10.917  | Sep 2022   | 6.500   | Dec 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Experimentation Campaign AMTI   | Various                | Various : Various              | -           | 1.800   | Sep 2022   | 5.000   | Feb 2023   | 3.000        | Jan 2024   | -           |            | 3.000         | Continuing       | Continuing | -                        |
| Experimentation Campaign Agile Combat Employment                                      | Various                | Various : Various              | -           | -       |            | 5.000   | Dec 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Congressional Add - Autonomous Air Combat Operations                                  | Various                | Various : Various              | -           | 9.696   | Sep 2022   | 10.000  | Oct 2023   | -            |            | -           |            | -             | 0.000            | 19.696     | -                        |
| Congressional Add - advanced rotary engine hybrid power system                        | Various                | Various : Various              | -           | -       |            | 10.000  | Oct 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Congressional Add - operational additive manufacturing capabilities                   | Various                | Various : Various              | -           | -       |            | 9.800   | Dec 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>645350 / <i>Experimentation</i> |
|--|--|---|

| <b>Product Development (\$ in Millions)</b>                            |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|--|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>  | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| Congressional Add - advanced air mobility                              | Various                           | Various : Various                         | -                  | -              |                   | 5.500          | Aug 2023          | -                   |                   | -                  |                   | -                    | Continuing              | Continuing        | -                               |
| Congressional Add - F-35 Logistics Enhancements                        | Various                           | Various : Various                         | -                  | -              |                   | 10.000         | Jun 2024          | -                   |                   | -                  |                   | -                    | Continuing              | Continuing        | -                               |
| Congressional Add - hybrid autonomous maritime expeditionary logistics | Various                           | Various : Various                         | -                  | -              |                   | 2.000          | Nov 2023          | -                   |                   | -                  |                   | -                    | Continuing              | Continuing        | -                               |
| Congressional Add - Versatile Aerial Power System                      | Various                           | Various : Various                         | -                  | -              |                   | 10.000         | Dec 2023          | -                   |                   | -                  |                   | -                    | Continuing              | Continuing        | -                               |
| Experimentation Campaign Unmanned Adversary Air (ADAIR UX)             | Various                           | Various : Various                         | -                  | -              |                   | 45.607         | Jul 2023          | -                   |                   | -                  |                   | -                    | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>  |                                   |   | -                  | 73.766         |                   | 182.657        |                   | 48.467              |                   | -                  |                   | 48.467               | Continuing              | Continuing        | N/A                             |

**Remarks**  
Experimentation is focused on rapid learning and then pivoting based on that learning. Therefore, specific plans are not detailed to prevent locking into an approach that will likely shift based on current experimentation efforts. Further budget details can be provided in the appropriate forum.

| <b>Support (\$ in Millions)</b>                                     |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| Experimentation Campaign Support                                    | Various                           | Various : Various                         | -                  | 0.225          | Mar 2022          | 1.361          | Mar 2023          | 4.000               | Jan 2024          | -                  |                   | 4.000                | Continuing              | Continuing        | -                               |
| Experimentation Campaign Autonomous Attributable Aircraft Support 1 | MIPR                              | Perduco/GSA : O'Fallon, IL                | -                  | 2.000          | Nov 2021          | 5.200          | Nov 2022          | 1.000               | Nov 2023          | -                  |                   | 1.000                | Continuing              | Continuing        | -                               |
| Experimentation Campaign Autonomous Attributable Aircraft Support 2 | MIPR                              | OO-ALC : Ogden, UT                        | -                  | 0.700          | Sep 2022          | -              |                   | -                   |                   | -                  |                   | -                    | Continuing              | Continuing        | -                               |
| Experimentation Campaign Hawkeye                                    | Various                           | Various : Various                         | -                  | 0.717          | Dec 2022          | -              |                   | 2.000               | Dec 2023          | -                  |                   | 2.000                | Continuing              | Continuing        | -                               |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |  |
|--|---|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / Tech Transition Program | <b>Project (Number/Name)</b><br>645350 / Experimentation |
|--|---|--|

| <b>Support (\$ in Millions)</b>        |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                     | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Experimentation Campaign Base Defense  | MIPR                   | Various : Various              | -           | 2.845   | Sep 2022   | 4.000   | Nov 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Experimentation Campaign Blue Horizons | MIPR                   | DOE : Oak Ridge, TN            | -           | -       |            | 0.250   | Nov 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Experimentation Campaign AERRES 1      | MIPR                   | AAFC/AFR : Adelphi, MD         | -           | -       |            | 0.500   | Oct 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Experimentation Campaign AERRES 2      | MIPR                   | SWRI : TBD                     | -           | 0.300   |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Experimentation Campaign AMTI          | Various                | Various : Various              | -           | 0.000   | Sep 2022   | 1.000   | Oct 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                        |                        |                                | -           | 6.787   |            | 12.311  |            | 7.000        |            | -           |            | 7.000         | Continuing       | Continuing | N/A                      |

| <b>Test and Evaluation (\$ in Millions)</b>                     |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Experimentation Campaign Test and Evaluation                    | MIPR                   | Various : Various              | -           | 0.000   | Dec 2021   | 2.480   | Dec 2022   | 5.000        | Dec 2023   | -           |            | 5.000         | Continuing       | Continuing | -                        |
| Experimentation Campaign Hawkeye                                | Various                | Various : Various              | -           | 3.014   | Jun 2022   | -       |            | 10.000       | Oct 2023   | -           |            | 10.000        | 0.000            | 13.014     | -                        |
| Experimentation Campaign Autonomous Attributable Aircraft T&E 1 | MIPR                   | Various : Various              | -           | 0.775   | Apr 2022   | 6.100   | Apr 2023   | 14.260       | Feb 2024   | -           |            | 14.260        | Continuing       | Continuing | -                        |
| Experimentation Campaign AERRES 1                               | MIPR                   | 96 OSS : Eglin AFB, FL         | -           | 0.000   | Dec 2021   | 3.770   | Dec 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Experimentation Campaign AERRES 2                               | MIPR                   | 586th : CA                     | -           | 1.320   |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Experimentation Campaign Base Defense                           | MIPR                   | Various : Various              | -           | 0.000   | Dec 2021   | 4.000   | Oct 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Blue Horizons   | Various                | Various : Various              | -           | -       |            | 1.000   | Nov 2022   | 1.500        | Nov 2023   | -           |            | 1.500         | Continuing       | Continuing | -                        |
| Experimentation Campaign Counter AI                             | Various                | Various : Various              | -           | 0.000   | Jun 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |





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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>645350 / <i>Experimentation</i> |
|--|--|---|

|  | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|  | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |
| <b>Experimentation</b>   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Experimentation Campaigns  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| <b>App Enabled Rapidly Reprogrammable EW/ EMS Systems (AERRES)</b> |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| App Enabled Rapidly Reprogrammable EW/ EMS Systems (AERRES)        |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| <b>Congressional Add - Autonomous Air Combat Operations</b>        |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Congressional Add - Autonomous Air Combat Operations               |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| <b>Base Defense Experiment</b>                                     |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Base Defense Experiment - NASAM and HGWS                           |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| <b>Autonomous Attributable Aircraft Experiment (AAAx)</b>          |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Autonomous Attributable Aircraft Experiment (AAAx)                 |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| <b>Blue Horizons Projects</b>                                      |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Blue Horizons Projects   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| <b>Counter AI</b>  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Counter AI Experimentation   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| <b>ADAIR UX</b>  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| ADAIR UX   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| <b>Hawkeye</b>   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Hawkeye  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| <b>Pathfinders</b>   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Pathfinders  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |

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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |   |  |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / Tech Transition Program | <b>Project (Number/Name)</b><br>645350 / Experimentation |
|--|---|--|

|  | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|  | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |
| <b><i>Congressional Add - Advanced Rotary Engine Hybrid Power system</i></b>         |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Congressional Add - Advanced Rotary Engine Hybrid Power system                       |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| <b><i>Congressional Add - Operational Additive manufacturing capabilities</i></b>    |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Congressional Add - Operational Additive Manufacturing Capabilities                  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| <b><i>Congressional Add - Advanced Air Mobility</i></b>                              |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Congressional Add - Advanced Air Mobility  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| <b><i>Congressional Add - F-35 Logistics Enhancements</i></b>                        |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Congressional Add - F-35 Logistics Enhancements                                      |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| <b><i>Congressional Add - Hybrid Autonomous Maritime Expeditionary Logistics</i></b> |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Congressional Add - Hybrid Autonomous Maritime Expeditionary Logistics               |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| <b><i>Congressional Add - Versatile Aerial Power System</i></b>                      |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Congressional Add - Versatile Aerial Power System                                    |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>645350 / <i>Experimentation</i> |

Schedule Details

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b>Experimentation</b>   |         |      |         |      |
| Experimentation Campaigns  | 1       | 2022 | 4       | 2028 |
| <b>App Enabled Rapidly Reprogrammable EW/EMS Systems (AERRES)</b>          |         |      |         |      |
| App Enabled Rapidly Reprogrammable EW/EMS Systems (AERRES)                 | 1       | 2022 | 4       | 2023 |
| <b>Congressional Add - Autonomous Air Combat Operations</b>                |         |      |         |      |
| Congressional Add - Autonomous Air Combat Operations                       | 1       | 2022 | 4       | 2023 |
| <b>Base Defense Experiment</b>   |         |      |         |      |
| Base Defense Experiment - NASAM and HGWS                                   | 1       | 2022 | 4       | 2023 |
| <b>Autonomous Attritable Aircraft Experiment (AAAx)</b>                    |         |      |         |      |
| Autonomous Attritable Aircraft Experiment (AAAx)                           | 1       | 2022 | 4       | 2024 |
| <b>Blue Horizons Projects</b>  |         |      |         |      |
| Blue Horizons Projects   | 1       | 2022 | 4       | 2028 |
| <b>Counter AI</b>  |         |      |         |      |
| Counter AI Experimentation   | 1       | 2022 | 4       | 2022 |
| <b>ADAIR UX</b>  |         |      |         |      |
| ADAIR UX   | 1       | 2023 | 4       | 2023 |
| <b>Hawkeye</b>   |         |      |         |      |
| Hawkeye  | 1       | 2022 | 4       | 2026 |
| <b>Pathfinders</b>   |         |      |         |      |
| Pathfinders  | 1       | 2022 | 4       | 2028 |
| <b>Congressional Add - Advanced Rotary Engine Hybrid Power system</b>      |         |      |         |      |
| Congressional Add - Advanced Rotary Engine Hybrid Power system             | 1       | 2023 | 4       | 2023 |
| <b>Congressional Add - Operational Additive manufacturing capabilities</b> |         |      |         |      |

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**Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>645350 / <i>Experimentation</i> |
|--|--|---|

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| Congressional Add - Operational Additive Manufacturing Capabilities                  | 1       | 2023 | 4       | 2023 |
| <b><i>Congressional Add - Advanced Air Mobility</i></b>                              |         |      |         |      |
| Congressional Add - Advanced Air Mobility  | 1       | 2023 | 4       | 2023 |
| <b><i>Congressional Add - F-35 Logistics Enhancements</i></b>                        |         |      |         |      |
| Congressional Add - F-35 Logistics Enhancements                                      | 1       | 2023 | 4       | 2023 |
| <b><i>Congressional Add - Hybrid Autonomous Maritime Expeditionary Logistics</i></b> |         |      |         |      |
| Congressional Add - Hybrid Autonomous Maritime Expeditionary Logistics               | 1       | 2023 | 4       | 2023 |
| <b><i>Congressional Add - Versatile Aerial Power System</i></b>                      |         |      |         |      |
| Congressional Add - Versatile Aerial Power System                                    | 1       | 2023 | 4       | 2023 |

**Note**

Experimentation is focused on rapid learning and then pivoting based on that learning. They are used to determine the competitive advantage a technology or warfighting concept can have over our adversaries and ascertain operational utility. Often Experimentation Campaigns uncover new ways to use existing technology or how to exploit new Science and Technology for our competitive gain. Further schedule details regarding individual experimentation campaigns can be provided in the appropriate forum.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

| Appropriation/Budget Activity<br>3600 / 4 |             |         |         |              | R-1 Program Element (Number/Name)<br>PE 0604858F / Tech Transition Program |               |         |         | Project (Number/Name)<br>645351 / Prototyping |         |                  |            |
|---|-------------|---------|---------|--------------|--|---------------|---------|---------|---|---------|------------------|------------|
| COST (\$ in Millions)                     | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO  | FY 2024 Total | FY 2025 | FY 2026 | FY 2027                                       | FY 2028 | Cost To Complete | Total Cost |
| 645351: Prototyping                       | -           | 144.914 | 152.916 | 108.495      | 0.000  | 108.495       | 118.326 | 24.371  | 45.093  | 110.980 | Continuing       | Continuing |
| Quantity of RDT&E Articles                | -           | -       | -       | -            | -  | -             | -       | -       | -   | -       |                  |            |

**A. Mission Description and Budget Item Justification**

The Prototyping project enables demonstration of emerging technologies in an operational environment to determine and evaluate the complete advantage against our adversaries and how the technology is integrated into the future fight.

Lifecycle Prototyping investments focus on three major thrusts (1) advancing capabilities of legacy weapon systems, (2) militarizing novel mature commercial technologies, and (3) exploring partnerships with Department of the Air Force Program Executive Officers to rapidly transition technologies that are being developed as part of the Department of Air Force Vanguard programs. Prototype project investments that advance capabilities of legacy weapon systems focus on kinetic energy effectors for base defense and expeditionary employment operations, a multi-source resilient Position Navigation and Timing pod, and software defined electronic warfare and communication capabilities. Prototype projects that seek to militarize novel mature commercial technologies will focus on artificial intelligence, autonomy, cyber warfare capabilities, digital engineering, and novel weapon and aircraft technologies. Finally, prototype projects that explore partnerships will invest in risk reduction activities in partnership with the Department of the Air Force Program Executive Officers assigned to each of the Department of the Air Force Vanguard Programs to ensure rapid and seamlessly transition of Science and Technology into warfighting capabilities.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|---|---------|---------|--------------|-------------|---------------|
| <b>Title:</b> Lifecycle Prototyping   | 137.158 | 88.916  | 20.274       | -           | 20.274        |
| <b>Description:</b> Following Strategic Department of Defense and Department of the Air Force direction cross-functional teams composed of operators, technologists, engineers, acquisition, and requirements personnel from across the Department of the Air Force execute Prototyping Campaigns to determine if and how much of a competitive advantage these systems can produce against our adversaries. Developmental Prototypes are an opportunity to understand the operational utility of a new warfighting concept or technology, while avoiding the pitfalls of entering into a lengthy, formal acquisition program without the requisite knowledge of performance trade-offs and technical and programmatic risks. Prototypes integrated into carefully crafted operational Experimentation Campaigns provide immediate feedback to Department of the Air Force senior leaders driving rapid acquisition or divestment with minimal resources. Prototype efforts provide an initial capability if warranted that can act as a catalyst for future rapid acquisition. Exploring innovative prototypes that range across the full Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities and Policy spectrum gives Department of the Air Force senior leaders a quicker understanding of the potential operational utility, leading to better decisions on what to pursue with limited acquisition resources. |         |         |              |             |               |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023                                     |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>645351 / <i>Prototyping</i> |

|   |                |                |                     |                    |                      |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|

**FY 2023 Plans:**  
Continue to integrate operational prototypes into Experimental Campaigns to determine the feasibility and evaluate the strategic military advantage these capabilities present against adversaries.

- A Rapid Dragon (palletized munitions) operational prototype will be built and will launch heterogeneous weapon loads identified by Department of the Air Force senior leaders that will provide strategic advantages against China and other peer adversaries. Palletized munition prototypes will be built and integrated into Joint Operations and Allied Partner exercises to understand the operational advantages that can be exploited across services and strategic allied partners.
- A C-130 transportable/deployable Hypervelocity Ground Weapon System (HGWS) prototype will be built and integrated into a Joint-Service operation that will rapidly deploy the HGWS prototype, integrate the system into an existing joint service battle management system, and test its effectiveness against incoming cruise missiles as part of a life fire experiment. The HGWS prototype will rapidly deploy to a remote location to understand the effectiveness of expeditionary operations.
- Autonomous Aircraft efforts will build and conduct operational experimentation efforts implementing proven artificial intelligence architectures and algorithms from AFRL, DOD-service partners, Industry, and Allied partners integrated into existing operational aircraft. In addition, prototype efforts will focus not on solely building and understanding the competitive advantages of an Artificial Intelligence-fueled platform, but also in understanding the infrastructure required to maintain vehicle operations including deployment of advanced software on a flight line, acquiring and cataloguing sensor data, and exploring unique waveforms to connect these platforms to traditional manned assets.
- The Regional Operating Picture initiative will deploy Wave Relay Mobile Ad-Hoc Network communications equipment at FE Warren Air Force Base Wyoming, Minot Air Force Base North Dakota, and Malmstrom Air Force Base Montana to provide seamless digital Command, Control, and Communications and real-time status of all intercontinental ballistic missile (ICBM) personnel and equipment across the entire 90th, 91st, and 341st Missile Wings.

Only those Prototype efforts that are deemed the absolute highest priority by the Department of the Air Force Leadership will be executed aiming to create technologies and processes that will provide the largest competitive advantages and produce the most significant dilemmas for our adversaries will be investigated or executed. Data from all efforts is provided directly to AF Plans and Programs (A8), Futures (5/7), Secretary of the Air Force for

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>645351 / <i>Prototyping</i> |
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|   |                |                |                     |                    |                      |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|

Acquisition, Technology and Logistics (AQ), and US Space Force Futures and Integration (S8), and the Space Warfighting Analysis Center (SWAC) to drive capability development decisions and inform warfighting concepts.

**FY 2024 Base Plans:**  
SDPE Hawkeye Prototyping Funding to demonstrate targeting efficiency to demonstrate communications, track extraction, and weapon/target pairing

**FY 2023 to FY 2024 Increase/Decrease Statement:**  
FY 2024 decreased compared to FY 2023 by \$68.642 million due to higher Air Force priorities.

**Title:** Rapid Defense Experimentation Reserve

**Description:** The Department of Defense implement multiple RDER experimentation series through Service nominated projects with execution timelines ranging from one to two years. The USD (R&E) will review project progress, and recommend new projects at least annually with the goal of quickly incorporating the most promising innovative prototypes into experiments, and promptly terminating projects that fail to achieve expectations. To incentivize a disciplined approach to rapidly identify, incorporate, and execute projects largely through the Military Services, the Department will fund approved Service projects for the upcoming fiscal year out of the Department reserves. Funding decisions on additional funds in follow-on years for new projects, and funding decrements for project terminations will be incorporated in budgets annually based on emerging requirements and periodic assessments of project viability. Services will execute these funds under oversight of the OSD in a manner consistent with the experimentation scenario for which individual projects were selected. Service experimentation outcomes will be designed to validate required capabilities enabling the JWC by evaluating and integrating prototyped technologies in operationally relevant, multi-domain environments. Experimentation results will facilitate Joint Staff analysis in the evaluation of the Joint Warfighting Concept, assist the Joint Requirements Oversight Counsel in requirements determination, and inform the Deputy's Management Action Group to make budget decisions that effect changes throughout the Department.

**FY 2023 Plans:**  
RDER efforts include the following efforts: CONCEAD, TURUL, Global Thunder, and RDER Classified Effort # 2 (further details available on the appropriate forum).

- CONCEAD: will develop and flight demonstrate precision RF synchronization open-architecture prototypes for enhanced sensing and disruptive electromagnetic spectrum (EMS) capability. CONCEAD expands on methods developed under the Retroactive Arrays for Coherent Transmission (ReACT) program (previously budgeted in PE 0603766E Network Centric Warfare Technology) to advance EMS dominance.

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| - | 64.000 | - | - | - | - |

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>645351 / <i>Prototyping</i> |
|--|--|---|

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b> | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|---|---------|---------|--------------|-------------|---------------|
|---|---------|---------|--------------|-------------|---------------|

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| <p>Specific plans for FY 2023 include developing advanced hardware and waveforms to raise the technology readiness level (TRL) of this disruptive EMS capability. Design and purchase advanced hardware system; Mature methods for acquiring threat radar waveforms; Mature and analyze enhanced waveforms.</p> <p>- Turul: will deliver a minimum viable product software that will enable the warfighter to make requests and receive information from a variety of commercial space providers. These data products will be utilized to automatically generate information products that the warfighter can leverage in their find, fix, track, target, engage, and assess (F2T2EA) workflows. In FY 2023 TURUL will deliver graphical User Interface accessible unclassified via the cloud that the warfighter can utilize to task, collect, and view data products from commercial space sensors.</p> <p>- Global Thunder: will prototype, integrate and perform operational experimentation on advanced satellite communications terminals for selected aircraft, and integrate these platforms into the Hawkeye long-range kill chain. The terminals will follow the Global Lightning design architecture with the capability to dynamically switch between communications spacecraft in low-Earth orbit (LEO, 500-km), medium-Earth orbit (MEO, 8,000 km), and geosynchronous orbit (GEO, 36,000 km), utilizing a multi-modem design that allows connectivity to both commercial and protected government satellites. Global Thunder FY 2023 efforts include receiver terminal prototyping and initial aircraft integration.</p> <p>For FY 2023 funding Congress directed the creation of a new RDER PE (0604025F). Due to the timing of PE creation and database locking the funds were mistakenly placed in the Tech Transition Prototyping BPAC. This is a known issue that will be addressed via tech adjustment.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>FY 2024 decreased compared to FY 2023 by \$64.000 million. Funding decreased due to the movement to a newly established Program Element, 0604025F per Congressionally Direction.</p> |  |  |  |  |  |
|---|--|--|--|--|--|

|  |   |       |        |   |        |
|--|---|-------|--------|---|--------|
| <p><b>Title:</b> Blended Wing Body - Next Generation Aircraft</p> <p><b>Description:</b> In partnership with Defense Innovation Unit, allies, industry stakeholders, and private investors, Next-Gen Large Aircraft targets over a 30% increase in aerodynamic efficiency over traditional tube-and-wing large aircraft (given same engines), with a corresponding 30% decrease in greenhouse gas emissions. For military applications, initial analysis shows increases in combat capability greater than the percent increase in fuel efficiency for both aerial refueling and cargo aircraft productivity (e.g. 30% increase in fuel efficiency can equal 60% or more increased aerial refueling fuel offload at range). Project goals include designing an aircraft that can cost-effectively scale up and down to enable acquisition by a broader community of government and industry stakeholders. Overall effort intends to manufacture a prototype large-scale aircraft for certification and</p> | - | 0.000 | 88.221 | - | 88.221 |
|--|---|-------|--------|---|--------|



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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>645351 / <i>Prototyping</i> |
|--|--|---|

|   |                |                |                     |                    |                      |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|

testing. This project works in coordination with DOD's Chief Sustainability Officer and the Air Force Operational Energy office.

**FY 2023 Plans:**  
N/A

**FY 2024 Base Plans:**  
Execute prototype development of a blended wing body aircraft. Creation of digital environment for airframe design iteration and risk reduction. Manufacturing technology maturation and risk reduction, as well as esign integration of advanced composites, non-cylindrical pressure vessel technology expanding on work done by NASA, flight control laws, and nacelle-airframe optimization. Complete initial requirements generation phase, continue vehicle and airframe design, structural analysis and component testing, and avionics and flight control system integration plan. Incorporate life-cycle sustainment cost considerations into design phase. Initial airworthiness and test planning for prototype aircraft.

**FY 2023 to FY 2024 Increase/Decrease Statement:**  
FY 2024 increased compared to FY 2023 In FY2024 by \$88.221 million. Funding increased due to the transfer of funding from PE 064009F, AFWERX Prime, Project 640858.

|   |         |         |         |   |         |
|---|---------|---------|---------|---|---------|
| <b>Accomplishments/Planned Programs Subtotals</b> | 137.158 | 152.916 | 108.495 | - | 108.495 |
|---|---------|---------|---------|---|---------|

|  | FY 2022 | FY 2023 |
|--|---------|---------|
| <b>Congressional Add:</b> Program increase - Logistics Enhancements                  | 3.878   | 0.000   |
| <b>FY 2022 Accomplishments:</b> Conduct Congressionally-directed efforts             |         |         |
| <b>FY 2023 Plans:</b> N/A  |         |         |
| <b>Congressional Add:</b> Program increase - Alternative PNT phase III Demonstration | 3.878   | 0.000   |
| <b>FY 2022 Accomplishments:</b> Conduct Congressionally-directed efforts             |         |         |
| <b>FY 2023 Plans:</b> N/A  |         |         |
| <b>Congressional Adds Subtotals</b>  | 7.756   | 0.000   |

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>645351 / <i>Prototyping</i> |
|--|--|---|

**C. Other Program Funding Summary (\$ in Millions)**

| <u>Line Item</u>  | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |            |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|------------|
| • RDTE 04 0604025F: <i>Rapid Defense Experimentation Reserve (RDER)</i> | -              | -              | 154.300                       | -                            | 154.300                        | -              | -              | -              | -              | -                                 | Continuing        | Continuing |
| • RDTE 04 0604009F: <i>AFWERX Prime</i>                                 | -              | 41.909         | -                             | -                            | -                              | -              | -              | -              | -              | -                                 | Continuing        | Continuing |

**Remarks**

**D. Acquisition Strategy**

Prototyping campaigns will aid the advancement and transition of advanced technologies by providing the credible evidence decision makers need to make sound strategic decisions and investment choices, to provide the warfighter with advanced capabilities. Air Force Futures, Air Force Plans and Programs, US Space Force Futures and Integration, and the Office of the Assistant Secretary of the Air Force for Acquisition, Technology and Logistics direct experimentation campaigns. The Air Force Strategic Development Planning and Experimentation (SDPE) Office located at Wright-Patterson Air Force Base, Ohio and Eglin Air Force Base manages and executes each experimentation campaign. Contracting strategies vary based on the activities of each campaign.

NC3 Commercial Development/Prototyping will use full-and-open proposal calls under the existing Defense Experimentation Using the Commercial Space Internet (DEUCSI) solicitation. Terminals (radios, modems, antennas) will be prototypes using multiple prime vendors. These contracts are currently in negotiation and are on track for a Jan 2023 award. The primes will be expected to establish sub-contracts with the commercial vendors to secure the modems or waveforms, so as to allow the government to operationalize this capability as an integrated unit. With awards to a qualified integration contractor for each platform, the prototype units will be integrated onto a single platform of each type, complete flight worthiness approvals, interim authorities to test (IATT), and complete flight testing in an operational environment to prove the system. Working with the PEO of each platform we will then be able to extend the capability to the rest of the fleet as a simple procurement of a proven prototype, using Firm Fixed Price contracts and enabling Rapid Acquisition Authorities if needed. The Satellite communication (SATCOM) service will be acquired through the terminal prototype contracts for a limited duration to support the experimentation (typically 1 year), and transition to service contracts under United States Space Force, Commercial Satellite Communications Office (USSF/CSCO) for operations.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>645351 / <i>Prototyping</i> |
|--|--|---|

| <b>Product Development (\$ in Millions)</b>                                |                        |                                  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|----------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location   | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Prototyping Requirements   | Various                | Not specified. : Various         | -           | -       |            | -       |            | 20.274       | Mar 2024   | -           |            | 20.274        | Continuing       | Continuing | -                        |
| Prototyping Campaign Global Lightning Commercial Space Internet Contract 1 | C/CPFF                 | Raytheon : McKinney, TX          | -           | 3.688   | Feb 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Prototyping Campaign Global Lightning Commercial Space Internet Contract 3 | C/CPFF                 | SpaceX : Hawthorne, CA           | -           | 7.936   | Apr 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Prototyping Campaign Global Lightning Commercial Space Internet Contract 4 | C/CPFF                 | Northrop Grumman : San Diego, CA | -           | 7.822   | May 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Prototyping Campaign Global Lightning Commercial Space Internet Contract 5 | C/CPFF                 | L3 : Salt Lake City, UT          | -           | 2.015   | Apr 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 2.015      | -                        |
| Prototyping Campaign Global Lightning Commercial Space Internet Contract 8 | C/CPFF                 | Lockheed Martin : Fort Worth, TX | -           | 8.369   | Apr 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Prototyping Campaign Base Defense Contract 1                               | C/CPFF                 | BAE : Minneapolis, MN            | -           | 18.317  | Mar 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Prototyping Campaign Hawkeye   | C/CPFF                 | Space X : Hawthorne, CA          | -           | 7.849   | Apr 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Prototyping Campaign Hawkeye Contract 2                                    | C/CPFF                 | Ball Aerospace : Boulder, CO     | -           | 1.650   | Apr 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Prototyping Campaign Autonomous Attributable Aircraft Contract 1           | C/CPFF                 | CALSPAN : Buffalo, NY            | -           | 2.220   | Sep 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Prototyping Campaign Autonomous Attributable Aircraft Contract 2           | C/CPFF                 | Various : Various                | -           | 9.011   | Oct 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / Tech Transition Program | <b>Project (Number/Name)</b><br>645351 / Prototyping |
|--|---|--|

| <b>Product Development (\$ in Millions)</b>                         |                        |  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location         | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Prototyping Campaign Autonomous Attributable Aircraft Contract 3    | C/CPFF                 | Lockheed : Various                     | -           | 0.970   | Aug 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Prototyping Campaign Palletized Munitions (Rapid Dragon) Contract 1 | C/CPFF                 | Lockheed Martin : Orlando, FL          | -           | 14.700  | Apr 2022   | 20.000  | May 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Regional Operating Picture  | C/Various              | Persistent Systems, LLC : New York, NY | -           | 21.120  | Sep 2022   | 32.000  | May 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Congressional Add alternative PNT phase III demonstration           | Various                | Various : Various                      | -           | 3.878   | Sep 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Next Gen Large Aircraft (BWB)                                       | MIPR                   | DIU : Mountain view, CA                | -           | -       |            | -       |            | 79.518       | Dec 2023   | -           |            | 79.518        | Continuing       | Continuing | -                        |
| Congressional Add Logistics Enhancements                            | Various                | Various : Various                      | -           | 3.878   | Sep 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Rapid Defense Experimentation Reserve (RDER) CONCEAD                | Various                | Various : Various                      | -           | -       |            | 18.000  | Mar 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Rapid Defense Experimentation Reserve (RDER) Global Thunder         | Various                | Various : Various                      | -           | -       |            | 20.000  | Dec 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Rapid Defense Experimentation Reserve (RDER) Classified             | Various                | Various : Various                      | -           | -       |            | 15.000  | Nov 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Rapid Defense Experimentation Reserve (RDER) TURUL                  | Various                | Various : Various                      | -           | -       |            | 11.000  | Jan 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>   |                        |  | -           | 113.423 |            | 116.000 |            | 99.792       |            | -           |            | 99.792        | Continuing       | Continuing | N/A                      |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / Tech Transition Program | <b>Project (Number/Name)</b><br>645351 / Prototyping |
|--|---|--|

| <b>Support (\$ in Millions)</b>   |                        |  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location         | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Prototyping Campaign Global Lightning Commercial Space Internet Support 1 | MIPR                   | BAH : Tysons Corner, VA                | -           | 2.129   | Feb 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 2.129      | -                        |
| Prototyping Campaign Global Lightning Commercial Space Internet Support 3 | MIPR                   | Various : Various                      | -           | 0.975   | Oct 2021   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Prototyping Campaign Base Defense Support 1                               | MIPR                   | JHU : Baltimore, MD                    | -           | 0.854   | Jun 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Prototyping Campaign Base Defense Support 3                               | MIPR                   | Navy : Dahlgren, VA                    | -           | 2.218   | Mar 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Prototyping Campaign Palletized Munitions (Rapid Dragon)                  | MIPR                   | Dahlgren Navy : Dahlgren, VA           | -           | 1.560   | Nov 2021   | 1.500   | Apr 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Prototyping Campaign Palletized Munitions (Rapid Dragon) 2                | MIPR                   | 412 TW : Edwards AFB, CA               | -           | 1.350   |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Prototyping Campaign Palletized Munitions Support                         | Various                | Various : Various                      | -           | 6.639   |            | 2.000   | Apr 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Prototyping Campaign Autonomous Attritable Aircraft                       | Various                | Various : Various                      | -           | 1.925   | Feb 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Prototyping Campaign Podded Position Navigation and Timing Prototyping    | Various                | Various : Various                      | -           | 0.466   | Mar 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Regional Operating Picture  | C/Various              | Persistent Systems, LLC : New York, NY | -           | -       |            | 5.500   | Jan 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Next Generation Large Aircraft Test Support (BWB)                         | MIPR                   | Various : Various                      | -           | -       |            | -       |            | 3.053        | Nov 2023   | -           |            | 3.053         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>   |                        |  | -           | 18.116  |            | 9.000   |            | 3.053        |            | -           |            | 3.053         | Continuing       | Continuing | N/A                      |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |  |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / Tech Transition Program | <b>Project (Number/Name)</b><br>645351 / Prototyping |
|--|---|--|

| <b>Test and Evaluation (\$ in Millions)</b>                            |                        |                                       |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|---------------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location        | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Prototyping Campaign Global Lightning Commercial Space Internet        | MIPR                   | Various : Various                     | -           | 1.197   | May 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 1.197      | -                        |
| Prototyping Campaign Palletized Munitions (Rapid Dragon)               | MIPR                   | Various : Various                     | -           | 3.290   | May 2022   | 6.546   |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Prototyping Campaign Base Defense                                      | MIPR                   | Various : Various                     | -           | 2.600   | Apr 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Prototyping Campaign Autonomous Attritable Aircraft                    | Various                | Various : Various                     | -           | 2.475   | Apr 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Prototyping Campaign Hawkeye   | MIPR                   | Various : Various                     | -           | 0.390   | Jun 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Regional Operating Picture   | C/Various              | Persistent Systems LLC : New York, NY | -           | -       |            | 18.000  | Jan 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Prototyping Campaign Podded Position Navigation and Timing Prototyping | Various                | Various : Various                     | -           | 0.534   | Mar 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Next Generation Large Aircraft (BWB)                                   | MIPR                   | Various : Various                     | -           | -       |            | -       |            | 2.877        | Jan 2024   | -           |            | 2.877         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>  |                        |                                       | -           | 10.486  |            | 24.546  |            | 2.877        |            | -           |            | 2.877         | Continuing       | Continuing | N/A                      |

| <b>Management Services (\$ in Millions)</b>         |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                                  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Prototyping Contractor Support                      | Various                | Various : Various              | -           | -       |            | 0.327   | Sep 2023   | 0.698        |            | -           |            | 0.698         | Continuing       | Continuing | -                        |
| Prototyping Program Management Administration Costs | Various                | Various : Various              | -           | 2.889   | Feb 2022   | 3.043   | Feb 2023   | 2.075        | Nov 2023   | -           |            | 2.075         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                                     |                        |                                | -           | 2.889   |            | 3.370   |            | 2.773        |            | -           |            | 2.773         | Continuing       | Continuing | N/A                      |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>645351 / <i>Prototyping</i> |
|--|--|---|

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | -           | 144.914 | 152.916 | 108.495      | -           | 108.495       | Continuing       | Continuing | N/A                      |

**Remarks**  
Additional details can be provided in the appropriate forum.

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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |   |  |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / Tech Transition Program | <b>Project (Number/Name)</b><br>645351 / Prototyping |
|--|---|--|

|   | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|   | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |
| <b>Lifecycle Prototyping</b>                                |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Lifecycle Prototyping                                       |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Commercial Space Internet (Global Lightning)                |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Base Defense - Hyper Velocity Gun Weapons System Prototype  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Rapid Dragon (Palletized Munitions)                         |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Regional Operating Picture                                  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Autonomous Attributable Aircraft Prototyping                |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Hawkeye Prototyping   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Congressional Add - Logistics Enhancements                  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Congressional Add - Alternative PNT Phase III demonstration |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Rapid Defense Experimentation Reserve (RDER) CONCEAD        |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Rapid Defense Experimentation Reserve (RDER) Global Thunder |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Rapid Defense Experimentation Reserve (RDER) Classified     |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Rapid Defense Experimentation Reserve (RDER) TURUL          |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| <b>Blended Wing Body</b>                                    |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Vehicle Design  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Airframe  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Avionics and Flight Controls                                |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Airframe Integration and Test                               |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Structural Analysis and Test                                |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Air Vehicle   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |





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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023                                     |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>645351 / <i>Prototyping</i> |

Schedule Details

| Events by Sub Project                                       | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Lifecycle Prototyping</i></b>                         |         |      |         |      |
| Lifecycle Prototyping                                       | 1       | 2022 | 4       | 2028 |
| Commercial Space Internet (Global Lightning)                | 1       | 2022 | 4       | 2022 |
| Base Defense - Hyper Velocity Gun Weapons System Prototype  | 1       | 2022 | 4       | 2023 |
| Rapid Dragon (Palletized Munitions)                         | 1       | 2022 | 4       | 2023 |
| Regional Operating Picture                                  | 4       | 2022 | 4       | 2023 |
| Autonomous Attritable Aircraft Prototyping                  | 1       | 2022 | 4       | 2022 |
| Hawkeye Prototyping   | 1       | 2022 | 4       | 2028 |
| Congressional Add - Logistics Enhancements                  | 1       | 2022 | 4       | 2022 |
| Congressional Add - Alternative PNT Phase III demonstration | 1       | 2022 | 4       | 2022 |
| Rapid Defense Experimentation Reserve (RDER) CONCEAD        | 1       | 2023 | 4       | 2023 |
| Rapid Defense Experimentation Reserve (RDER) Global Thunder | 1       | 2023 | 4       | 2023 |
| Rapid Defense Experimentation Reserve (RDER) Classified     | 1       | 2023 | 4       | 2023 |
| Rapid Defense Experimentation Reserve (RDER) TURUL          | 1       | 2023 | 4       | 2023 |
| <b><i>Blended Wing Body</i></b>                             |         |      |         |      |
| Vehicle Design  | 1       | 2024 | 3       | 2024 |
| Airframe  | 1       | 2024 | 2       | 2026 |
| Avionics and Flight Controls                                | 1       | 2024 | 2       | 2026 |
| Airframe Integration and Test                               | 3       | 2024 | 3       | 2026 |
| Structural Analysis and Test                                | 1       | 2024 | 4       | 2026 |
| Air Vehicle   | 1       | 2024 | 4       | 2026 |
| Flight Simulator  | 1       | 2024 | 4       | 2026 |
| Ground Test   | 3       | 2024 | 4       | 2026 |

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2024 Air Force **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>645351 / <i>Prototyping</i> |
|--|--|---|

| Events by Sub Project | Start   |      | End     |      |
|-----------------------|---------|------|---------|------|
|                       | Quarter | Year | Quarter | Year |
| Grounds loads test    | 3       | 2024 | 4       | 2026 |
| Flight Test           | 3       | 2026 | 4       | 2026 |

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|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|--|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |  |                      |                |                |  | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> |                      |                |                | <b>Project (Number/Name)</b><br>645352 / <i>Architecture Design and Evaluation</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>   | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>   | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 645352: <i>Architecture Design and Evaluation</i>                       | -                  | 0.000          | 0.000          | 7.078               | 0.000  | 7.078                | 7.227          | 7.378          | 7.378  | 7.533                   | Continuing              | Continuing        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -  | -                    | -              | -              | -  | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

In September 2022, the Secretary of the Air Force (SecAF) directed the standup of the DAF Integrating Program Executive Office for Command, Control, Communication and Battle Management (DAF PEO C3BM). The construct emerged out of the Operational Imperatives (OI) analysis that identified a significant need for C3BM integration and a greater level of systems engineering and technical discipline across the enterprise to ensure the effectiveness of ABMS in supporting DAF operations. Notably, DAF PEO C3BM combines the previous efforts of the DAF Rapid Capabilities Office (RCO) ABMS program and the DAF Chief Architect Office (CAO). Furthermore, DAF PEO C3BM works in a federated manner with other PEOs across the DAF with C3BM equity to orchestrate end-to-end capability delivery. By bringing the ABMS and CAO portfolio of programs and authorities under a single PEO and then conferring unto that PEO the responsibility to integrate broader DAF battle management and C2 capabilities, one organization now has the architectural authorities to direct technical integration activities across the DAF while also having the acquisition authorities of a PEO to execute organic materiel solutions to field a survivable, distributable command and control capability into the integrated DAF BATTLE NETWORK.

Architecture Design and Evaluation is directed by the DAF PEO C3BM with oversight by the Secretary of the Air Force along with the Chief of Staff of the Air Force, Chief of Space Operations, and Senior Acquisition Executive. This activity is supported by the Air Force Research Laboratory.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Department of the Air Force Tech Architecture. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F, 0605831F and/or 0604858F.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| <b>Title:</b> DAF Architecture Design and Integration  | 0.000          | 0.000          | 7.078               | -                  | 7.078                |
| <b>Description:</b> DAF PEO C3BM combined the roles of the Chief Architect and the Chief Engineer into a single office called the Architecture and Systems Engineering (ASE) office, which is responsible for the technical integrity of the DAF BATTLE NETWORK as we integrate ABMS capabilities, the rest of the DAF's C2 systems, |                |                |                     |                    |                      |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>645352 / <i>Architecture Design and Evaluation</i> |

**B. Accomplishments/Planned Programs (\$ in Millions)**

and other Services's capabilities under JADC2. Architecture integration in system-of-systems mission threads and environments is critical to deliberately advancing the DAF's technological edge by informing architecture design, acquisition investments, system requirements for future capabilities, and acquisition baseline updates for current systems.

Architecture Design and Evaluation provides the subject matter expertise to develop mission-focused architectures to enable cross-cutting architecture development across Program Executive Offices, Major Commands, and Space Deltas. Architecture Design and Evaluation analyzes science, technology, research, development, and experimentation enterprises to determine the technical and operational feasibility of new technical concepts.

**FY 2023 Plans:**  
N/A

**FY 2024 Base Plans:**  
Provide subject matter expertise and product development capability to develop and maintain:

- Digital engineering - Create or leverage common way for all the mission integration teams to aggregate various data products and make them available to the community. Fund Model-Based Systems Engineering at multiple security levels, to include TS/SCI and SAP level, for all ASE and DAF/OSD/Joint partners. Develop Modeling & Simulation capabilities to enable evaluation of C3BM systems.
- Mission Domain Architectures and Mission Integration Teams - Support operational analysis, architecture modeling, systems engineering, risk reduction, and architecture test and evaluation.
- Operational Response Team - Support operational integration and experimentation of C3BM Digital Infrastructure development.

**FY 2023 to FY 2024 Increase/Decrease Statement:**  
FY 2024 increased compared to FY 2023 by \$7.078 million due to realignment of funding from PE 0604006F.

|   | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|---|---------|---------|--------------|-------------|---------------|
|   |         |         |              |             |               |
| <b>Accomplishments/Planned Programs Subtotals</b> | 0.000   | 0.000   | 7.078        | -           | 7.078         |

**C. Other Program Funding Summary (\$ in Millions)**

| Line Item  | FY 2022 | FY 2023 | FY 2024 | FY 2024 | FY 2024 | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To    |            |
|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|------------|------------|
|  |         |         | Base    | OCO     | Total   |         |         |         |         | Complete   | Total Cost |
| • RDTE 04 0604006F: <i>Dept of the Air Force Tech Architecture</i> | 0.000   | 0.000   | 2.620   | -       | 2.620   | 2.899   | 3.138   | 3.919   | 4.281   | Continuing | Continuing |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>645352 / <i>Architecture Design and Evaluation</i> |

**C. Other Program Funding Summary (\$ in Millions)**

| <u>Line Item</u> | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|

**Remarks**

**D. Acquisition Strategy**

N/A

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| Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force |                        |                                |             |                                       |            |         |            |   |            |             |            | Date: March 2023 |                  |            |                          |
|---|------------------------|--------------------------------|-------------|---------------------------------------|------------|---------|------------|---|------------|-------------|------------|------------------|------------------|------------|--------------------------|
| Appropriation/Budget Activity                               |                        |                                |             | R-1 Program Element (Number/Name)     |            |         |            | Project (Number/Name)                       |            |             |            |                  |                  |            |                          |
| 3600 / 4  |                        |                                |             | PE 0604858F / Tech Transition Program |            |         |            | 645352 / Architecture Design and Evaluation |            |             |            |                  |                  |            |                          |
| Product Development (\$ in Millions)                        |                        |                                |             | FY 2022                               |            | FY 2023 |            | FY 2024 Base                                |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost                                  | Award Date | Cost    | Award Date | Cost  | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |
| C3BM Architecture Development                               | Various                | Various : Various              | -           | -                                     |            | -       |            | 6.000                                       | Oct 2023   | -           |            | 6.000            | Continuing       | Continuing | -                        |
| <b>Subtotal</b>   |                        |                                | -           | -                                     |            | -       |            | 6.000                                       |            | -           |            | 6.000            | Continuing       | Continuing | N/A                      |
| Test and Evaluation (\$ in Millions)                        |                        |                                |             | FY 2022                               |            | FY 2023 |            | FY 2024 Base                                |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost                                  | Award Date | Cost    | Award Date | Cost  | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |
| C3BM ORT Evaluation   | Various                | Various : Various              | -           | -                                     |            | -       |            | 0.078                                       | Oct 2023   | -           |            | 0.078            | Continuing       | Continuing | -                        |
| <b>Subtotal</b>   |                        |                                | -           | -                                     |            | -       |            | 0.078                                       |            | -           |            | 0.078            | Continuing       | Continuing | N/A                      |
| Management Services (\$ in Millions)                        |                        |                                |             | FY 2022                               |            | FY 2023 |            | FY 2024 Base                                |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost                                  | Award Date | Cost    | Award Date | Cost  | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |
| Program Management Administration                           | Various                | Various : Various              | -           | -                                     |            | -       |            | 1.000                                       | Oct 2023   | -           |            | 1.000            | Continuing       | Continuing | -                        |
| <b>Subtotal</b>   |                        |                                | -           | -                                     |            | -       |            | 1.000                                       |            | -           |            | 1.000            | Continuing       | Continuing | N/A                      |
| <b>Project Cost Totals</b>                                  |                        |                                | -           | -                                     |            | -       |            | 7.078                                       |            | -           |            | 7.078            | Continuing       | Continuing | N/A                      |
| <b>Remarks</b>  |                        |                                |             |                                       |            |         |            |   |            |             |            |                  |                  |            |                          |
|   |                        |                                |             |                                       |            |         |            |   |            |             |            |                  |                  |            |                          |

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>645352 / <i>Architecture Design and Evaluation</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   |  |
|---|--|
| <b>DAFTADIE Product Development</b>       |  |
| C3BM Architecture Development             |  |
| <b>Test and Evaluation</b>                |  |
| C3BM ORT Evaluation                       |  |
| <b>Management Services ( in Millions)</b> |  |
| Program Management Administration         |  |



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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604858F / <i>Tech Transition Program</i> | <b>Project (Number/Name)</b><br>645352 / <i>Architecture Design and Evaluation</i> |

Schedule Details

| Events by Sub Project                            | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>DAFTADIE Product Development</i></b>       |         |      |         |      |
| C3BM Architecture Development                    | 1       | 2024 | 4       | 2028 |
| <b><i>Test and Evaluation</i></b>                |         |      |         |      |
| C3BM ORT Evaluation                              | 1       | 2024 | 4       | 2028 |
| <b><i>Management Services ( in Millions)</i></b> |         |      |         |      |
| Program Management Administration                | 1       | 2024 | 4       | 2028 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604860F / <i>Operational Energy and Installation Resilience</i> |
|--|---|

| COST (\$ in Millions)   | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element   | -           | 100.839 | 25.500  | 46.305       | 0.000       | 46.305        | 50.396  | 36.652  | 21.722  | 17.458  | Continuing       | Continuing |
| 644860: <i>Operational Energy and Installation Resilience</i> | -           | 100.839 | 25.500  | 46.305       | 0.000       | 46.305        | 50.396  | 36.652  | 21.722  | 17.458  | Continuing       | Continuing |
| Quantity of RDT&E Articles                                    | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**Note**  
This program, BA 4, PE 0604860F, project 644860, Tech Transition Program, is a new start.

**A. Mission Description and Budget Item Justification**

The Operational Energy and Installation Resilience program develops, matures, prototypes, and demonstrates technologies, software, and processes focused in two areas: decreasing operational energy risk and increasing installation resilience. The Air Force is DOD's largest consumer of operational energy, and also requires resilient installations to execute its missions. Technology transition, agile software development, and process integration efforts with a focus in these areas enable the Air Force to optimize operational energy use for maximum combat capability, and mitigate multi-domain energy threats to installations. The objective of this program is to prioritize, validate, and implement solutions to that end.

In similar manner to the Tech Transition Program (0604858F), the Operational Energy and Installation Resilience program allows acquisition program managers and warfighters to prototype, demonstrate, and transition candidate technologies and processes, including assessments in operationally relevant environments.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2022 \$0.170 million was expended for civilian pay expenses in this program element. In FY 2023, no more than 5% of the total program element funds will be used for this purpose.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604860F / <i>Operational Energy and Installation Resilience</i> |
|--|---|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 104.000        | 0.000          | 0.000               | 0.000              | 0.000                |
| Current President's Budget                        | 100.839        | 25.500         | 46.305              | 0.000              | 46.305               |
| Total Adjustments                                 | -3.161         | 25.500         | 46.305              | 0.000              | 46.305               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 10.000         |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -3.161         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 15.500         | 46.305              | 0.000              | 46.305               |

**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

**Project:** 644860: *Operational Energy and Installation Resilience*

Congressional Add: *Program Increase - Energy and Climate Resilience*

Congressional Add: *Hydrogen Fuel Cell Microgrid Technology*

Congressional Add Subtotals for Project: 644860

Congressional Add Totals for all Projects

|   | <b>FY 2022</b> | <b>FY 2023</b> |
|---|----------------|----------------|
|   | 70.000         | -              |
|   | -              | 10.000         |
| Congressional Add Subtotals for Project: 644860 | 70.000         | 10.000         |
| Congressional Add Totals for all Projects       | 70.000         | 10.000         |

**Change Summary Explanation**

Air Force requested Congress transfer \$15.500 million Tech Transition Program into this program.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <b>Title:</b> Operational Energy   | 30.839         | 0.000          | 30.805         |
| <b>Description:</b> Operational energy efforts seek to decrease overall mission energy intensity (i.e. energy demand reduction). Efforts in this program can include prototyping, demonstration, and transition of technologies, software, and processes that maximize combat capability by optimizing the following areas: platform energy use, mission planning and execution, propulsion sustainment, and energy logistics. Energy education, energy-informed wargaming, digital engineering, and modeling and simulation efforts typically support these areas. Specific examples of prototype and demonstration projects that optimize energy use and decrease energy intensity include: legacy aircraft drag reduction technologies, alternate-fuel propulsion systems, ultra-efficient airframe designs, mission scheduling software, air-asset allocation tools, cargo load planning tools, and turbine engine sustainment enhancements for increased fuel efficiency. |                |                |                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604860F / <i>Operational Energy and Installation Resilience</i> |
|--|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
|---|----------------|----------------|----------------|

While similar efforts may be found in other program elements, Operational Energy projects in these technology and process areas are viewed through an "energy lens," specifically geared toward cost-effectively optimizing energy use to maximize combat capability. Ideally, as the Air Force progresses toward an energy-aware culture, all acquisition efforts will incorporate this tenet from the beginning of, and throughout, the acquisition life cycle. This program aims to advance such a culture through successful project execution.

**FY 2023 Plans:**

Operational energy software development, test, and deployment including feature improvement operational tools, enabling of data analytics for decision advantage, and prototyping of new applications to improve mission effectiveness and energy intensity of operations; technology development to optimize Mobility Air Forces allocation and long range planning, unit readiness, and tactical and operational cargo planning processes; modeling and simulation for the energy supply chain to help DOD members understand the energy effects of decisions and the impacts on the total force, enabling better decision making and a more proactive energy posture.

**FY 2024 Plans:**

Continued software development on FY 2022-2023 projects will be enhanced by additional effort in combat air forces training scheduling, advanced data analytics systems for strategic airlift assets, air refueling optimization, and aerial refueling aircraft availability; additional efforts will support augmented reality training tools, aircraft drag reduction technology prototyping and demonstrations, advanced engine sustainment techniques, and mobile applications to support MAF command and control. These efforts expand the readiness impacts of current efforts and integrate energy logistics in both training and operations.

**FY 2023 to FY 2024 Increase/Decrease Statement:**

Additional funding supports development in logistics and sustainment, expansion of mission planning and execution tools, and further prototyping of aerospace technologies that reduce drag and improve range and combat capability.

**Title:** Tech Transition Program

**Description:** Tech transiton improves operational energy and installation resilience through prototyping, integration, and demonstration of energy technologies. The technologies will be assessed in an operational systems environment.

**FY 2023 Plans:**

Prototype, integrate, demonstrate and assess operational energy and resilience technology.

**FY 2024 Plans:**

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p>While similar efforts may be found in other program elements, Operational Energy projects in these technology and process areas are viewed through an "energy lens," specifically geared toward cost-effectively optimizing energy use to maximize combat capability. Ideally, as the Air Force progresses toward an energy-aware culture, all acquisition efforts will incorporate this tenet from the beginning of, and throughout, the acquisition life cycle. This program aims to advance such a culture through successful project execution.</p> <p><b>FY 2023 Plans:</b><br/>Operational energy software development, test, and deployment including feature improvement operational tools, enabling of data analytics for decision advantage, and prototyping of new applications to improve mission effectiveness and energy intensity of operations; technology development to optimize Mobility Air Forces allocation and long range planning, unit readiness, and tactical and operational cargo planning processes; modeling and simulation for the energy supply chain to help DOD members understand the energy effects of decisions and the impacts on the total force, enabling better decision making and a more proactive energy posture.</p> <p><b>FY 2024 Plans:</b><br/>Continued software development on FY 2022-2023 projects will be enhanced by additional effort in combat air forces training scheduling, advanced data analytics systems for strategic airlift assets, air refueling optimization, and aerial refueling aircraft availability; additional efforts will support augmented reality training tools, aircraft drag reduction technology prototyping and demonstrations, advanced engine sustainment techniques, and mobile applications to support MAF command and control. These efforts expand the readiness impacts of current efforts and integrate energy logistics in both training and operations.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Additional funding supports development in logistics and sustainment, expansion of mission planning and execution tools, and further prototyping of aerospace technologies that reduce drag and improve range and combat capability.</p> <p><b>Title:</b> Tech Transition Program</p> <p><b>Description:</b> Tech transiton improves operational energy and installation resilience through prototyping, integration, and demonstration of energy technologies. The technologies will be assessed in an operational systems environment.</p> <p><b>FY 2023 Plans:</b><br/>Prototype, integrate, demonstrate and assess operational energy and resilience technology.</p> <p><b>FY 2024 Plans:</b></p> | -              | 15.500         | 15.500         |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604860F / <i>Operational Energy and Installation Resilience</i> |
|--|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| Continue to prototype, integrate, demonstrate and assess operational energy and resilience technology. |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 30.839         | 15.500         | 46.305         |

|   | <b>FY 2022</b> | <b>FY 2023</b> |
|---|----------------|----------------|
| <b>Congressional Add:</b> Program Increase - Energy and Climate Resilience      | 70.000         | -              |
| <b>FY 2022 Accomplishments:</b> Conduct Congressionally Directed Efforts        |                |                |
| <b>Congressional Add:</b> Hydrogen Fuel Cell Microgrid Technology               | -              | 10.000         |
| <b>FY 2023 Plans:</b> Develop and test hydrogen fuel cell microgrid technology. |                |                |
| <b>Congressional Adds Subtotals</b>   | 70.000         | 10.000         |

**D. Other Program Funding Summary (\$ in Millions)**

| <b>Line Item</b>                                      | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024<br/>Base</b> | <b>FY 2024<br/>OCO</b> | <b>FY 2024<br/>Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b> | <b>FY 2028</b> | <b>Cost To<br/>Complete</b> | <b>Total Cost</b> |
|---|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| • RDTE 04 0604858F:<br><i>Tech Transition Program</i> | -              | 58.000         | 8.000                   | -                      | 8.000                    | 8.000          | 8.000          | 1.000          | -              | Continuing                  | Continuing        |

**Remarks**  
Operational Energy and Installation Resilience efforts were previously funded under the Tech Transition Program (0604858F), primarily through congressional adds (e.g. Alternative Energy). A new program element dedicated to these areas was congressionally directed in the FY 2022 Appropriations Bill.

**E. Acquisition Strategy**

The efforts within this program element are variable and will employ multiple different acquisition strategies. In general, projects will seek to inform senior decision makers regarding the suitability of technology and process transition. As an example, for legacy aircraft drag reduction technologies, solutions will be prototyped and demonstrated via ground and/or flight assessments; drag reduction and fuel savings estimates will be validated or refined, suitability for fleet implementation will be assessed (maintainability, return-on-investment, etc.), and recommendations for transition will be made. Both FAR-based contracts and Other Transactions will be utilized.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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|--|---|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604860F / <i>Operational Energy and Installation Resilience</i> | <b>Project (Number/Name)</b><br>644860 / <i>Operational Energy and Installation Resilience</i> |
|--|---|--|

| <b>Product Development (\$ in Millions)</b>                 |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Operational Energy  | Various                | Various : Various              | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| C-17 Aft Body Drag Reduction                                | Various                | Various : Various              | -           | 2.900   | Jul 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| C-17 Drag Reduction - Other                                 | Various                | Various : Various              | -           | 1.400   | Jul 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| C-130 Aft Body Drag Reduction                               | Various                | Various : Various              | -           | 2.900   | Jul 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| KC-135 Aft Body Drag Reduction                              | Various                | Various : Various              | -           | 3.700   | Jul 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| KC-135 Vertical Windshield Wipers                           | Various                | Various : Various              | -           | 1.800   | Jun 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Mobility Aircraft Control Surface Analysis                  | Various                | Various : Various              | -           | 1.800   | Jul 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Cargo Optimization - Improved Load Planning                 | Various                | Various : Various              | -           | 2.739   | Jul 2022   | -       |            | 0.900        | Jul 2024   | -           |            | 0.900         | Continuing       | Continuing | -                        |
| Mobility Air Force Long Range Planning and Allocation Tools | Various                | Various : Various              | -           | 5.900   | Jul 2022   | -       |            | 2.850        | Jul 2024   | -           |            | 2.850         | Continuing       | Continuing | -                        |
| Puckboard Scheduling Engine                                 | Various                | Various : Various              | -           | 5.900   | Jul 2022   | -       |            | 2.850        | Jul 2024   | -           |            | 2.850         | Continuing       | Continuing | -                        |
| Energy Supply Chain Risk Model                              | TBD                    | Various : Various              | -           | -       |            | -       |            | 1.000        | Aug 2024   | -           |            | 1.000         | Continuing       | Continuing | -                        |
| Program Increase - Energy & Climate Resilience              | Various                | Various : Various              | -           | 67.000  | Aug 2022   | -       |            | 22.805       | Feb 2024   | -           |            | 22.805        | Continuing       | Continuing | -                        |
| Hydrogen Fuel Cell Microgrid                                | TBD                    | TBD : TBD                      | -           | -       |            | 10.000  | May 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Tech Transition   | TBD                    | TBD : TBD                      | -           | -       |            | 15.500  | May 2023   | 15.500       | Feb 2024   | -           |            | 15.500        | Continuing       | Continuing | -                        |
| <b>Subtotal</b>   |                        |                                | -           | 96.039  |            | 25.500  |            | 45.905       |            | -           |            | 45.905        | Continuing       | Continuing | N/A                      |





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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |   |  | <b>Date:</b> March 2023 |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604860F / <i>Operational Energy and Installation Resilience</i> | <b>Project (Number/Name)</b><br>644860 / <i>Operational Energy and Installation Resilience</i> |                         |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |  |
|--|--|
| <b>Operational Energy</b>                              |  |
| All  |  |
| <b>Program Increase -Energy and Climate Resilience</b> |  |
| All  |  |
| <b>Tech Transition</b>                                 |  |
| No event title.  |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604860F / <i>Operational Energy and Installation Resilience</i> | <b>Project (Number/Name)</b><br>644860 / <i>Operational Energy and Installation Resilience</i> |

Schedule Details

| Events by Sub Project   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Operational Energy</i></b>                              |         |      |         |      |
| All   | 2       | 2022 | 4       | 2027 |
| <b><i>Program Increase -Energy and Climate Resilience</i></b> |         |      |         |      |
| All   | 3       | 2022 | 4       | 2028 |
| <b><i>Tech Transition</i></b>                                 |         |      |         |      |
| No event title.   | 3       | 2023 | 4       | 2028 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |   |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605164F / <i>Air Refueling Capability Modernization</i> |
|--|---|

| COST (\$ in Millions)                                      | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                                      | -           | 0.000   | 11.281  | 19.400       | 0.000       | 19.400        | 93.999  | 193.925 | 107.417 | 111.304 | 0.000            | 537.326    |
| 645164: <i>Continued Tanker Recapitalization RDT&amp;E</i> | -           | 0.000   | 11.281  | 19.400       | 0.000       | 19.400        | 93.999  | 193.925 | 107.417 | 111.304 | 0.000            | 537.326    |
| Quantity of RDT&E Articles                                 | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**Note**  
In FY 2023, PE 0401221F, KC-46A Tanker Squadrons, Project 655KCY, KC-Y efforts were transferred to PE 0605164F, Air Refueling Capabilities Modernization, Project 645164, Continued Tanker Recapitalization RDT&E.

**A. Mission Description and Budget Item Justification**

In FY 2024, the Department of the Air Force will break from its previous recapitalization approaches (KC-X, KC-Y, KC-Z) in favor of more agile methods, prioritizing and accelerating the right capabilities to deliver fuel to the fight. This new approach replaces KC-Z with an accelerated Next Generation Air-refueling System (NGAS) (PE 0605057F) and continues Tanker Recapitalization (PE 0605164F) between KC-46A and NGAS. To do so, the DAF will procure a limited number of air refuelable, commercial derivative, limited development tankers, whose funding is covered in this Program Element. The number of air refuelable, commercial derivative tankers will be flexible and dependent on NGAS's first delivery, likely in the mid to late 2030s.

The Tanker Recapitalization effort will be a commercial derivative, limited development tanker that provides fuel to U.S. and coalition aircraft receivers via a boom or drogue system that can operate in day/night and adverse weather conditions to enable deployment, employment, sustainment, and redeployment of U.S. and coalition forces. The Tanker Recapitalization program will have communication, navigation, and surveillance equipment to support worldwide operations and refueling competences in chemical, biological and hostile threat environments through self-defense/protection (both active and passive) capabilities to include the necessary battlespace awareness to mitigate threats.

The dynamics and mission urgency of the post-production (post-DD-250) environment require the program to maintain a flexible and responsive posture to support a broad range of mission support needs. Tanker Recapitalization will identify, design, develop, integrate, verify, certify, produce, install, field, and sustain a comprehensive range of non-recurring and recurring post-production, air vehicle enhancements and field support needs to include but not limited to programmed Mobility Air Force (MAF) requirements, Combatant Commander Joint or Urgent Operational Needs (JUON/UON), non-programmed Federal Aviation Administration (FAA) directives, requirements identified and supported by HHQ Enterprise Capability Collaboration Teams (i.e., High Value Airborne Asset [HVAA], Air Superiority 2030, and Multi-Domain Command and Control [MDC2]), or correction of field deficiencies.

Tanker Recapitalization will develop, field, and sustain warfighter capabilities to meet evolving threats and mission support requirements through Block or discrete modification or modernization programs depending on mission urgency, available funding, and programmatic and technical risks. Post-production requirements may include but not limited to avionics and structural systems/architecture and subsystem updates, general mission equipment updates and procurement, general sustainment support, studies and analyses, future tanker requirements simulation and training, and correction of field deficiencies.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605164F / <i>Air Refueling Capability Modernization</i> |
|--|---|

Project 645164, Continued Tanker Recapitalization RDT&E will also support Program Support Costs (PSC) activities to include but not limited to market research, acquisition planning, pre-milestone activities, RFP development, test planning, mission planning capability development, future tanker development, and various studies and analyses.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Tanker Recapitalization weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2022, \$0.000 million was expended for civilian pay expenses in this program element, and in FY 2023 \$4.000 million is forecast for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 0.000          | 0.000          | 0.000               | 0.000              | 0.000                |
| Current President's Budget                        | 0.000          | 11.281         | 19.400              | 0.000              | 19.400               |
| Total Adjustments                                 | 0.000          | 11.281         | 19.400              | 0.000              | 19.400               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 11.281         |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 19.400              | 0.000              | 19.400               |

**Change Summary Explanation**

FY 2023 funding increase of \$11.281 million due to Congressional Directed Transfer from PE 41221F, KC-46A Tanker Squadron to PE 65164F, Air Refueling Capabilities Modernization.

FY 2024 funding increase of \$19.400 million for Air Refueling Capability Modernization Program Office standup to support acquisition activities.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Support                                       | -              | 11.281         | 19.400         |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605164F / <i>Air Refueling Capability Modernization</i> |
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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <p><b>Description:</b> Studies and analyses to support Tanker Recapitalization planning activities for future initiatives, future tanker replacement planning, and other Program Office support to include but not limited to market research, acquisition planning, pre-milestone activities, Request for Proposal (RFP) development, test planning, and various studies and analyses.</p> <p><b>FY 2023 Plans:</b><br/>Market research, acquisition planning, pre-milestone activities, RFP development, test planning, and various studies and analyses for tanker recapitalization development and other future tanker development.</p> <p><b>FY 2024 Plans:</b><br/>Continued market research, acquisition planning, pre-milestone activities, RFP development and release, test planning, and various studies and analyses for tanker recapitalization and other future tanker development efforts.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding increased due to ramp up of program office activities to include but not limited to test planning and studies and analyses.</p> |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>   | -              | 11.281         | 19.400         |

| <b>D. Other Program Funding Summary (\$ in Millions)</b> |                |                |                         |                        |                          |                |                |                |                |                             |                   |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| <b>Line Item</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024<br/>Base</b> | <b>FY 2024<br/>OCO</b> | <b>FY 2024<br/>Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b> | <b>FY 2028</b> | <b>Cost To<br/>Complete</b> | <b>Total Cost</b> |
| • APAF 02 KC000Y:<br><i>Tanker Recapitalization</i>      | -              | -              | -                       | -                      | -                        | -              | -              | 1,341.077      | 2,966.731      | Continuing                  | Continuing        |
| • APAF 06 000999: <i>Initial Spares/Repair Parts</i>     | -              | -              | -                       | -                      | -                        | -              | -              | -              | 136.207        | Continuing                  | Continuing        |

**Remarks**

**E. Acquisition Strategy**  
The program office estimates it will have final Joint Requirements Oversight Council (JROC) validated requirements in 3QFY23. The Air Force will determine the acquisition strategy based on final Business Case Analysis (BCA) results and JROC validated requirements.



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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0605164F / Air Refueling Capability Modernization | <b>Project (Number/Name)</b><br>645164 / Continued Tanker Recapitalization RDT&E |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |  |
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| <b>Tanker Recap Development</b>  |  |
| JROC Validated KC-135 Replacement Aircraft CDD Coordination and Approval | ██████████   |
| Develop/Present Pre-Acquisition Strategy Panel                           | ██████████   |
| Industry engagement  | ██████████   |
| Acquisition Strategy Panel Coordination and Approval                     | ████   |
| RFP Development and Release  | ████████████████████   |
| Contract Award   | ████   |
| Milestone B  | ████████████████████   |
| Pre-Contract Award Activities and Contract Award                         | ██                     |
| EMD  | ██ |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0605164F / Air Refueling Capability Modernization | <b>Project (Number/Name)</b><br>645164 / Continued Tanker Recapitalization RDT&E |

Schedule Details

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Tanker Recap Development</i></b>                                   |         |      |         |      |
| JROC Validated KC-135 Replacement Aircraft CDD Coordination and Approval | 2       | 2023 | 3       | 2023 |
| Develop/Present Pre-Acquisition Strategy Panel                           | 2       | 2023 | 4       | 2023 |
| Industry engagement  | 2       | 2023 | 4       | 2023 |
| Acquisition Strategy Panel Coordination and Approval                     | 1       | 2024 | 1       | 2024 |
| RFP Development and Release  | 2       | 2023 | 3       | 2024 |
| Contract Award   | 4       | 2025 | 4       | 2025 |
| Milestone B  | 4       | 2025 | 1       | 2027 |
| Pre-Contract Award Activities and Contract Award                         | 3       | 2024 | 1       | 2027 |
| EMD  | 4       | 2025 | 4       | 2028 |



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605230F / <i>Ground Based Strategic Deterrent</i> |
|--|---|

| COST (\$ in Millions)                                  | Prior Years | FY 2022   | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|-----------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                                  | 0.000       | 2,464.875 | 0.000   | 0.000        | 0.000       | 0.000         | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 2,464.875  |
| 641025: <i>GROUND BASED STRATEGIC DETERRENT (GBSD)</i> | 0.000       | 2,464.875 | 0.000   | 0.000        | 0.000       | 0.000         | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 2,464.875  |
| Quantity of RDT&E Articles                             | -           | 4         | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**Program MDAP/MAIS Code:** 493

**Note**

In FY 2023, Program 0605230F, Ground Based Strategic Deterrent, Project 641025, Ground Based Strategic Deterrent, efforts were transferred to Program 0605238F, Ground Based Strategic Deterrent EMD, Project 655238, Ground Based Strategic Deterrent, in order to account for program transition to System Design and Development (Budget Activity 5).

**A. Mission Description and Budget Item Justification**

The Sentinel (GBSD) program has been designated as LGM-35A Sentinel. The Sentinel (GBSD) program will design, develop, produce and deploy a replacement for the current Minuteman III (MM III) Intercontinental Ballistic Missile (ICBM) weapon system in order to maintain a safe, secure, reliable, and effective nuclear deterrent. The Sentinel (GBSD) program will deliver a fully integrated weapon system beginning in Fiscal Year 2029 that will lower lifecycle costs and close key capability gaps and vulnerabilities identified in the Sentinel (GBSD) Capabilities Based Assessment, Sentinel (GBSD) Capabilities Development Document, and the Sentinel (GBSD) Analysis of Alternatives. Sentinel (GBSD) will also mitigate ground-based deterrent degradation due to MM III component age-out and attrition.

The Sentinel (GBSD) program will include prime contractor development of applicable support equipment, data, flight test hardware and infrastructure, and training systems while examining and mitigating risk during the MM III to Sentinel (GBSD) transition. The Sentinel (GBSD) program office has partnered with MM III program office to facilitate communication and integration of the weapon system recapitalization during the MM III to Sentinel (GBSD) transition. This program includes any needed nuclear surety and certification and system vulnerability assessments.

During the Engineering and Manufacturing Development (EMD) phase, the Sentinel (GBSD) program will execute 1) government system engineering, analytics, and test capability development; 2) air vehicle equipment development; 3) command & launch systems development; 4) infrastructure and deployment development; 5) support systems development; and 6) weapon system integration.

Government systems engineering investments include development in model-based systems engineering (MBSE), integration, test software, product life-cycle management framework, and modernization of existing system engineering/integration labs and infrastructure. Air vehicle equipment is an integrated missile stack including the propulsion, post-boost, guidance, and re-entry systems sub-components. Command & launch encompasses all command and control components and interfaces, associated ground hardware, ground control equipment and associated software directly related to the survivability, monitoring, and launch of the

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605230F / <i>Ground Based Strategic Deterrent</i> |
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replacement flight system. Launch systems include launch centers, launch facilities, and associated structures and ground mechanical systems. Support systems include operator and maintainer training systems hardware and software, security system architecture, transport support equipment, program office and weapon system facilities, and peculiar/common support equipment. Weapon system integration risk reduction includes non-proprietary open systems architecture with well-defined interfaces and a modular design at the weapon system level to allow future modification and technology insertion. As Sentinel (GBSD) progresses toward Critical Design Review (CDR), the Sentinel (GBSD) weapon system design will dictate the parameters for the MILCON real property requirements and their integration with the weapon system component requirements as these are inextricably linked.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program elements 0605833F or 0605831F. In FY 2022 17.0M was expended for civilian pay expenses in this program element, and in FY23 0.0M is forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 2,553.541      | 0.000          | 0.000               | 0.000              | 0.000                |
| Current President's Budget                        | 2,464.875      | 0.000          | 0.000               | 0.000              | 0.000                |
| Total Adjustments                                 | -88.666        | 0.000          | 0.000               | 0.000              | 0.000                |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -88.666        | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 0.000               | 0.000              | 0.000                |

**Change Summary Explanation**

FY22 reduced -88.666 million for Small Business Innovative Research (SBIR)

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Engineering & Manufacturing Development (EMD)   | 2,464.875      | 0.000          | 0.000          |
| <b>Description:</b> The objectives of EMD for GBSD are: 1) advance GBSD major activities, systems engineering activities, information technology, data management, analytical capabilities and deliver a flexible, integrated weapon system critical design, 2) prototype |                |                |                |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605230F / <i>Ground Based Strategic Deterrent</i> |
|--|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| and test mature technologies related to the major activities and demonstrate performance of sub-system and system capabilities through prototyping and testing and 3) engage in rapid prototyping events to mature future design increments. |                |                |                |
| <b>FY 2023 Plans:</b><br>N/A   |                |                |                |
| <b>FY 2024 Plans:</b><br>N/A   |                |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>N/A  |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 2,464.875      | 0.000          | 0.000          |

| <b>D. Other Program Funding Summary (\$ in Millions)</b>                   |                |                |                         |                        |                          |                |                |                |                |                             |                   |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| <b>Line Item</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024<br/>Base</b> | <b>FY 2024<br/>OCO</b> | <b>FY 2024<br/>Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b> | <b>FY 2028</b> | <b>Cost To<br/>Complete</b> | <b>Total Cost</b> |
| • RDTE 05 PE 0605238F: <i>Ground Based Strategic Deterrent EMD</i>         | 0.000          | 3,614.290      | 3,737.969               | -                      | 3,737.969                | 3,381.139      | 3,214.913      | 2,589.439      | 1,837.577      | 1,626.122                   | 20,001.449        |
| • RDTE 04 PE 0603851F: <i>Intercontinental Ballistic Missile - Dem/Val</i> | 73.894         | 46.432         | 45.217                  | -                      | 45.217                   | 56.424         | 0.000          | 0.000          | 0.000          | Continuing                  | Continuing        |
| • MPAF 01 Line Item MGBSD0: <i>Ground Based Strategic Deterrent</i>        | 10.895         | 0.000          | 539.300                 | -                      | 539.300                  | 502.720        | 6,773.441      | 7,422.434      | 6,131.595      | 40,187.246                  | 61,567.631        |
| • MILCON PE 0101233F: <i>GBSD SQUADRONS</i>                                | 168.099        | 444.000        | 143.039                 | -                      | 143.039                  | 489.001        | 699.387        | 722.469        | 765.498        | 5,720.844                   | 9,152.337         |
| • OPAF 03 WSC 834130: <i>AF Physical Security System</i>                   | 0.000          | 2.839          | 4.160                   | -                      | 4.160                    | 5.670          | 0.000          | 0.000          | 0.000          | 0.000                       | 12.669            |

**Remarks**

**E. Acquisition Strategy**  
The objective of the Sentinel (GBSD) program acquisition strategy is to deliver a full, integrated weapon system capability that meets Air Force Global Strike Command's Capability Development Document requirements beginning in Fiscal Year 2029. For the Engineering and Manufacturing Development (EMD) phase of this strategy, the Program Office awarded an EMD contract in the 4th quarter of Fiscal Year 2020. The objectives of EMD for Sentinel (GBSD) are as follows: 1) to deliver low-risk, technologically mature, integrated weapon system baseline design; 2) develop flexible system architecture with options for future on-ramps and off-ramps to mitigate program risks; 3) embrace MBSE/digital engineering to streamline system development activities and timelines; 4) align contract incentives to mitigate schedule and

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605230F / <i>Ground Based Strategic Deterrent</i> |
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performance risk; 5) utilize MBSE processes and tools to create schedule margin and accelerate surety, safety, cyber, and test activities for time certain delivery; 6) ensure government owns key interfaces and data rights; and 7) pursue "smart commonality" with U.S. Navy, U.S. Space Force, and Missile Defense Agency. The EMD phase includes an EMD Baseline Review, Critical Design Review, First Flight Test, Full Functional System Test, System Qualification/System Verification Review, Nuclear Certification, Developmental Test, Operational Test, and culminates with early production and weapon system deployment. The program will also assess the cost and schedule risks associated with every requirement. The EMD contract includes 5 options for early production and deployment. The period of performance, to include the production and deployment options, is fourth quarter of Fiscal Year 2020 to the second quarter of Fiscal Year 2028. These efforts will ultimately extend the capabilities of the ground-based leg of the nuclear triad through 2075.

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| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2024 Air Force</b> |  |  |  |  |  |  |  |  |  |  | <b>Date: March 2023</b> |  |  |  |  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                       |  |  |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0605230F / Ground Based Strategic Deterrent |  |  |  | <b>Project (Number/Name)</b><br>641025 / GROUND BASED STRATEGIC DETERRENT (GBSD) |  |  |                         |  |  |  |  |

| <b>Product Development (\$ in Millions)</b> |                                   |  |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---|-----------------------------------|--|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b>  | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| TMRR Contractor #1                          | C/CPFF                            | Boeing Def, Space, & Sec : Huntsville, AL  | 0.000              | -              |                   | -              |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 0.000             | 261.115                         |
| TMRR Contractor #2                          | C/CPFF                            | Northrop Grumman Sys Corp : El Segundo, CA | 0.000              | -              |                   | -              |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 0.000             | 370.790                         |
| EMD Contract                                | C/CPIF                            | Northrop Grumman Sys Corp : El Segundo, CA | 0.000              | 2,015.145      | Oct 2021          | -              |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 2,015.145         | 13,293.563                      |
| Security Classification Guide Compliance    | C/FFP                             | Lockheed Martin Corp : King of Prussia, PA | 0.000              | -              |                   | -              |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 0.000             | 1.506                           |
| <b>Subtotal</b>                             |                                   |  | 0.000              | 2,015.145      |                   | -              |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 2,015.145         | N/A                             |

**Remarks**  
 EMD Contract initiated in the fourth quarter FY20 under Program 0605230F, Ground Based Strategic Deterrent; beginning in FY23, funding shifted to Program 0605238F, Ground Based Strategic Deterrent EMD. Target Value of Contract is \$13,293.563 million across both programs.  
 GBSD TMRR Contractor #1 and #2 contracts were modified to include costs for Security Classification Guide Compliance.  
 GBSD Security Classification Guide Compliance includes compliance costs for the TMRR unsuccessful offeror.

| <b>Support (\$ in Millions)</b>            |                                   |  |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|--|-----------------------------------|--|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                  | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b>      | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| Integration Support Contract               | C/FFP                             | BAE : Hill AFB, UT                             | 0.000              | 75.322         | Oct 2021          | -              |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 75.322            | 519.735                         |
| Naval Surface Warfare Center Crane Support | MIPR                              | Naval Surface Warfare Center Crane : Crane, IN | 0.000              | 6.594          | Nov 2021          | -              |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 6.594             | -                               |
| Aerospace FFRDC Support                    | MIPR                              | Aerospace Corporation : El Segundo, CA         | 0.000              | 21.672         | Nov 2021          | -              |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 21.672            | -                               |
| MITRE FFRDC Support                        | MIPR                              | MITRE : Bedford, MA                            | 0.000              | 15.464         | Nov 2021          | -              |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 15.464            | -                               |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0605230F / Ground Based Strategic Det<br>errent | <b>Project (Number/Name)</b><br>641025 / GROUND BASED STRATEGIC<br>DETERRENT (GBSD) |
|--|--|---|

| <b>Support (\$ in Millions)</b>                         |                        |  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                                      | Contract Method & Type | Performing Activity & Location         | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Carnegie Mellon Software Engineering Institute Support  | MIPR                   | Carnegie Mellon : Pittsburgh, PA       | 0.000       | 6.934   | Nov 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 6.934      | -                        |
| Sandia FFRDC Reentry Systems Analysis Support           | MIPR                   | Sandia National Laboratories : Various | 0.000       | 1.000   | Oct 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 1.000      | -                        |
| Operations Research Analyst Support                     | C/FFP                  | Tecolote Research : Hill AFB, UT       | 0.000       | 5.364   | Oct 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 5.364      | 35.487                   |
| MIT Lincoln Labs FFRDC Reentry Systems Analysis Support | MIPR                   | MIT Lincoln Labs : Lexington, MA       | 0.000       | 1.365   | Oct 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 1.365      | -                        |
| Common Cryptographic Equipment                          | MIPR                   | Sandia National Labs : Various         | 0.000       | 18.320  | Nov 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 18.320     | -                        |
| Nuclear Surety & Certification Support                  | MIPR                   | Various : Various                      | 0.000       | 3.655   | Nov 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 3.655      | -                        |
| Mantech Support   | RO                     | Man Tech International : Herndon, VA   | 0.000       | 9.318   | Dec 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 9.318      | -                        |
| NEPA Analysis Support                                   | MIPR                   | Various : Various                      | 0.000       | 11.944  | Nov 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 11.944     | -                        |
| GBSD Direct Cite Civilian Pay                           | Various                | US Gov Civilians : Hill AFB, UT        | 0.000       | 17.000  | Oct 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 17.000     | -                        |
| Reentry Vehicle Sustainment Support                     | C/CPAF                 | Lockheed Martin Corp : Bethesda, MD    | 0.000       | 2.200   | Dec 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 2.200      | -                        |
| Sandia Integration Support                              | MIPR                   | Sandia National Labs : Various         | 0.000       | 0.700   | Nov 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 0.700      | -                        |
| GBSD Facility Execution Support                         | MIPR                   | Various : Various                      | 0.000       | 2.727   | Nov 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 2.727      | -                        |
| Space Dynamics Lab Support                              | C/CPFF                 | USU Space Dynamics Lab : Logan, UT     | 0.000       | 1.523   | Nov 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 1.523      | -                        |
| Test Range Support                                      | Various                | Various : Various                      | 0.000       | 1.571   | Nov 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 1.571      | -                        |
| GBSD Enterprise Support                                 | C/Various              | Various : Various                      | 0.000       | 1.760   | Dec 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 1.760      | -                        |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0605230F / Ground Based Strategic Deterrent | <b>Project (Number/Name)</b><br>641025 / GROUND BASED STRATEGIC DETERRENT (GBSD) |
|--|--|--|

| <b>Support (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item              | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| <b>Subtotal</b>                 |                        |                                | 0.000       | 204.433 |            | -       |            | -            |            | -           |            | -             | 0.000            | 204.433    | N/A                      |

**Remarks**  
 Integration Support Contract and Operations Research Analyst Support contracts initiated under Program 0605230F, Ground Based Strategic Deterrent; beginning in FY23, funding shifted to Program 0605238F, Ground Based Strategic Deterrent EMD. Target Value of Contract reflects value across both programs.

Additional Items:  
 - Space Dynamics Lab Support  
 - Test Range Support

| <b>Test and Evaluation (\$ in Millions)</b>  |                        |  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location                                   | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Johns Hopkins - Applied Physics Lab Support  | MIPR                   | Johns Hopkins University-Applied Physics Lab : Laurel, MD        | 0.000       | 29.760  | Oct 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 29.760     | -                        |
| Arnold Engineering Development Complex - Integrated Test Team                                      | PO                     | Arnold Engineering Development Complex : Arnold AFB, TN          | 0.000       | 11.454  | Oct 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 11.454     | -                        |
| Air Force Operational Test and Evaluation Center - Integrated Test Team                            | PO                     | Air Force Operational Test and Evaluation Center : Hill AFB, UT  | 0.000       | 3.700   | Oct 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 3.700      | -                        |
| Missile & Intelligence Center - Integrated Threat Analysis and Simulation Environment              | MIPR                   | DIA-Missile and Space Intelligence Center : Redstone Arsenal, AL | 0.000       | 4.300   | Nov 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 4.300      | -                        |
| National Air and Space Intelligence Center - Integrated Threat Analysis and Simulation Environment | MIPR                   | National Air and Space Intelligence Center : Fairborn, OH        | 0.000       | 0.000   | Nov 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 0.000      | -                        |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0605230F / <i>Ground Based Strategic Deterrent</i> | <b>Project (Number/Name)</b><br>641025 / <i>GROUND BASED STRATEGIC DETERRENT (GBSD)</i> |
|--|---|---|

| <b>Test and Evaluation (\$ in Millions)</b>            |                        |   |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|---|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                                     | Contract Method & Type | Performing Activity & Location                    | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Nuclear Dust and Debris Environments Study             | MIPR                   | Air Force Research Lab : Wright Patterson AFB, OH | 0.000       | 0.000   |            | -       |            | -            |            | -           |            | -             | 0.000            | 0.000      | -                        |
| 30th Space Wing Base Support                           | Various                | Various : Various                                 | 0.000       | 0.000   |            | -       |            | -            |            | -           |            | -             | 0.000            | 0.000      | -                        |
| 309th SMXG Software Engineering Support                | PO                     | 309th / 517th SWEG : Hill AFB, UT                 | 0.000       | 29.606  | Oct 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 29.606     | -                        |
| 309th SMXG Nuclear Safety Cross Check Analysis         | PO                     | 309th / 516th SWES : Hill AFB, UT                 | 0.000       | 13.211  | Oct 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 13.211     | -                        |
| Guidance Instrument Life Testing                       | MIPR                   | Aerospace Corporation : El Segundo, CA            | 0.000       | 0.000   | Nov 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 0.000      | -                        |
| Silo Fly-out Modeling and Simulation                   | MIPR                   | Various : Various                                 | 0.000       | 4.475   | Nov 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 4.475      | -                        |
| Rapid Assessment Technology                            | MIPR                   | Various : Various                                 | 0.000       | 18.910  | Mar 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 18.910     | -                        |
| Sandia Flight Test Vehicle Development                 | MIPR                   | Sandia National Labs : Various                    | 0.000       | 13.902  | Dec 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 13.902     | -                        |
| Lawrence Livermore Joint Environmental Test Unit       | MIPR                   | Lawrence Livermore Labs : Livermore, CA           | 0.000       | 0.000   | Dec 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 0.000      | -                        |
| Naval Surface Warfare Center Corona Support            | MIPR                   | Naval Surface Warfare Center : Corona, CA         | 0.000       | 1.201   | Dec 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 1.201      | -                        |
| Guidance Alt PIGA                                      | MIPR                   | NAVY SSP : Washington Navy Yard, DC               | 0.000       | 0.000   | Nov 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 0.000      | -                        |
| Combined Test Facility                                 | MIPR                   | Various : Various                                 | 0.000       | 7.858   | Dec 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 7.858      | -                        |
| RAND Study Support                                     | MIPR                   | RAND Corp : Santa Monica, CA                      | 0.000       | 0.000   | Apr 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 0.000      | -                        |
| Broad Ocean Area Terminal Area Scoring Test Capability | MIPR                   | Navy Strat Sys Program : Various                  | 0.000       | 5.500   | Apr 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 5.500      | -                        |



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0605230F / Ground Based Strategic Deterrent | <b>Project (Number/Name)</b><br>641025 / GROUND BASED STRATEGIC DETERRENT (GBSD) |
|--|--|--|

| <b>Test and Evaluation (\$ in Millions)</b>          |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                                   | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Little Mountain Test Facility Radiation Lab Upgrades | C/CPFF                 | The Boeing Co. : Layton, UT    | 0.000       | 1.027   | Jan 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 1.027      | -                        |
| GBSD Enterprise Test and Assessments                 | C/Various              | Various : Various              | 0.000       | 2.945   | Nov 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 2.945      | -                        |
| <b>Subtotal</b>                                      |                        |                                | 0.000       | 147.849 |            | -       |            | -            |            | -           |            | -             | 0.000            | 147.849    | N/A                      |

**Remarks**  
Added Item: Little Mountain Test Facility Radiation Lab Upgrades.

| <b>Management Services (\$ in Millions)</b>               |                        |   |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|---|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location              | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| GBSD Administrative Support                               | C/FFP                  | Delta Solutions, Inc : Colorado Springs, CO | 0.000       | 0.991   | Jan 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 0.991      | -                        |
| GBSD Enterprise Process Improvement Support               | C/FFP                  | Booz Allen Hamilton : McLean, VA            | 0.000       | 9.194   | Nov 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 9.194      | -                        |
| Temporary Facilities and Fit-out                          | Various                | Various : Various                           | 0.000       | 13.451  | Oct 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 13.451     | -                        |
| Hardware, Software, IT Resources                          | Various                | Various : Various                           | 0.000       | 23.535  | Oct 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 23.535     | -                        |
| GBSD DevSecOps, Software Factory, Cloud, & Infrastructure | Various                | Various : Various                           | 0.000       | 44.116  | Nov 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 44.116     | -                        |
| Enterprise PMA  | Various                | Various : Various                           | 0.000       | 6.161   | Oct 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 6.161      | -                        |
| <b>Subtotal</b>   |                        |   | 0.000       | 97.448  |            | -       |            | -            |            | -           |            | -             | 0.000            | 97.448     | N/A                      |

**Remarks**  
Mission Defense Operations renamed to Temporary Facilities and Fit-out

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|--|--------------------|----------------|--|---|--|---------------------|--------------------|---|-------------------------|-------------------|---------------------------------|
| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2024 Air Force</b> |                    |                |  |   |  |                     |                    | <b>Date: March 2023</b>   |                         |                   |                                 |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                       |                    |                |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0605230F / <i>Ground Based Strategic Deterrent</i> |  |                     |                    | <b>Project (Number/Name)</b><br>641025 / <i>GROUND BASED STRATEGIC DETERRENT (GBSD)</i> |                         |                   |                                 |
|  | <b>Prior Years</b> | <b>FY 2022</b> |  | <b>FY 2023</b>  |  | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b>  | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| <b>Project Cost Totals</b>   | 0.000              | 2,464.875      |  | -   |  | -                   |                    | -   | 0.000                   | 2,464.875         | N/A                             |

**Remarks**  
Starting in FY23, GBSD program funding will be reflected in Program Element 0605238F, project 655238.

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0605230F / <i>Ground Based Strategic Deterrent</i> | <b>Project (Number/Name)</b><br>641025 / <i>GROUND BASED STRATEGIC DETERRENT (GBSD)</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |            |
|--|------------|
| <b>Ground Based Strategic Deterrent (GBSD)</b> |            |
| EMD Phase                                      | [REDACTED] |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0605230F / <i>Ground Based Strategic Deterrent</i> | <b>Project (Number/Name)</b><br>641025 / <i>GROUND BASED STRATEGIC DETERRENT (GBSD)</i> |

Schedule Details

| Events by Sub Project                          | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b>Ground Based Strategic Deterrent (GBSD)</b> |         |      |         |      |
| EMD Phase                                      | 1       | 2022 | 4       | 2022 |

**Note**

In FY 2023, Program 0605230F, Ground Based Strategic Deterrent, Project 641025, Ground Based Strategic Deterrent, efforts were transferred to Program 0605238F, Ground Based Strategic Deterrent EMD, Project 655238, Ground Based Strategic Deterrent, in order to account for program transition to System Design and Development (Budget Activity 5).

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0207110F / <i>Next Generation Air Dominance</i> |
|--|--|

| COST (\$ in Millions)                                   | Prior Years | FY 2022   | FY 2023   | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025   | FY 2026   | FY 2027   | FY 2028   | Cost To Complete | Total Cost |
|---|-------------|-----------|-----------|--------------|-------------|---------------|-----------|-----------|-----------|-----------|------------------|------------|
| Total Program Element                                   | -           | 1,452.934 | 1,657.635 | 2,326.128    | 0.000       | 2,326.128     | 3,485.240 | 3,783.618 | 5,298.181 | 7,164.165 | Continuing       | Continuing |
| 646007: <i>AS 2030 Air Dominance Technologies (ADT)</i> | -           | 1,452.934 | 1,657.635 | 1,933.918    | 0.000       | 1,933.918     | 2,971.488 | 3,537.651 | 3,654.546 | 4,131.409 | Continuing       | Continuing |
| 647123: <i>Collaborative Combat Aircraft (CCA)</i>      | -           | 0.000     | 0.000     | 392.210      | 0.000       | 392.210       | 513.752   | 245.967   | 1,643.635 | 3,032.756 | Continuing       | Continuing |

**Note**

In FY 2024 PE 0207179F "Autonomous Collaborative Platforms", Project 647123 "Autonomous Collaborative Technologies" was retitled to "Collaborative Combat Aircraft" and was transferred to PE 0207110F "Next Generation Air Dominance" in order to align with the FoS portfolio of technologies.

**A. Mission Description and Budget Item Justification**

Next Generation Air Dominance (NGAD) Family of Systems (FoS) is a portfolio of technologies enabling Air Superiority for the Joint Force in the most challenging operational environments. Key NGAD FoS attributes include enhancements in survivability, lethality, persistence, crewed/uncrewed teaming and interoperability across a range of military operations. Program activities include the employment of digital acquisitions through the application of digital engineering, agile software development, open systems architectures and digital systems infrastructure. Funding provides for operational concept exploration, technology studies, multi-domain integration assessments, operational and system architecture development, maturation and risk reduction of air superiority related technologies, including autonomy, weapons systems and integrated system concept development and demonstration as well as program management support. Program management support costs includes but is not limited to A&AS, civilian pay, supplies, and facility related expenses. NGAD FoS technologies are available to other DoD systems based on emerging threats, AF priorities, and development capacity. DoD systems incorporating NGAD FoS technologies will include development, integration, and testing of capabilities. This program element supports the Secretary of the Air Force's Operational Imperatives, specifically "Defining the NGAD Family of Systems."

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 \$14.302M was expended for civilian pay expenses in this program element, and in FY23 \$24.621M is forecast for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force** **Date:** March 2023

|  |  |
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| <b>Appropriation/Budget Activity</b>   | <b>R-1 Program Element (Number/Name)</b>           |
| 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | PE 0207110F / <i>Next Generation Air Dominance</i> |

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 1,524.667      | 1,657.733      | 1,655.166           | 0.000              | 1,655.166            |
| Current President's Budget                        | 1,452.934      | 1,657.635      | 2,326.128           | 0.000              | 2,326.128            |
| Total Adjustments                                 | -71.733        | -0.098         | 670.962             | 0.000              | 670.962              |
| • Congressional General Reductions                | 0.000          | -0.098         |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | -17.800        | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -53.933        | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 670.962             | 0.000              | 670.962              |

**Change Summary Explanation**

In FY 2022, \$53.933M reduction due to SBIR. \$17.8M was reprogrammed for other AF priorities.

In FY 2023, \$0.098M reduction due to FFRDC.

In FY 2024, PE 0207179F, Project 647123 "Autonomous Collaborative Technologies" was retitled to "Collaborative Combat Aircraft" and transferred from PE 0207179F "Autonomous Collaborative Platforms" to PE 0207110F "Next Generation Air Dominance" in the amount of \$392.210.

Additional increase in FY 2024, PE 0207110F, Project 646007 in the amount of \$278.752M for risk reduction efforts.

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |   |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0207110F / Next Generation Air Dominance |                      |                |                | <b>Project (Number/Name)</b><br>646007 / AS 2030 Air Dominance Technologies (ADT) |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>  | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 646007: AS 2030 Air Dominance Technologies (ADT)                        | -                  | 1,452.934      | 1,657.635      | 1,933.918           | 0.000   | 1,933.918            | 2,971.488      | 3,537.651      | 3,654.546   | 4,131.409               | Continuing              | Continuing        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -   | -                    | -              | -              | -   | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

Next Generation Air Dominance (NGAD) is a portfolio of technologies enabling Air Superiority for the Joint Force in the most challenging operational environments. The NGAD program is influenced by the CSAF-approved Air Superiority Enterprise Capability Collaboration Team (ECCT) Flight Plan. The program matures technology and reduces risk through development, integration, and test activities. Key NGAD attributes include enhancements in survivability, lethality, persistence, and interoperability across a range of military operations. Program activities also include the employment of digital acquisitions through the application of digital engineering, agile software development, open systems architectures and digital systems infrastructure. Funding provides operational concept exploration, technology studies, multi-domain integration assessments, operational and system architecture development, maturation and risk reduction of air superiority related technologies, including weapons systems and integrated system concept development and demonstration as well as program management support. Program management support costs includes but is not limited to A&AS, civilian pay, supplies, and facility related expenses. NGAD technologies are designed to become available to other DoD systems based on emerging threats, AF priorities, and development capacity.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 \$14.302M was expended for civilian pay expenses in this program element, and in FY23 \$24.621M is forecast for civilian pay expenses in this program element.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> 2030+ Air Dominance   | 1,452.934      | 1,657.635      | 1,933.918      |
| <p><b>Description:</b> The 2030+ Air Dominance (AD) candidate concepts consist of operational analyses, threat studies and technology candidate assessments and prototyping to identify operational concepts and technologies that improve persistence, survivability, lethality, connectivity, interoperability and affordability in 2030 and beyond. These efforts will provide for contractors to conduct analyses, identify technology candidates and perform concept refinement. Furthermore, studies are required to develop operational/system architectures to include family of systems and spectral dominance platforms. In addition, technical risk reduction activities will be performed to include development, integration, test and building demonstrative prototypes.</p> <p>The 2030+ AD working groups methodically assessed candidate concepts using USAF directives and guidance that informed the NGAD Analysis of Alternatives (AoA) completed in 2019. Ongoing studies are conducted to refine system concepts and operational/system architectures incorporating family of systems and spectral dominance platforms that may be required to inform</p> |                |                |                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force   |   | <b>Date:</b> March 2023  |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4  | <b>R-1 Program Element (Number/Name)</b><br>PE 0207110F / <i>Next Generation Air Domina<br/>nce</i> | <b>Project (Number/Name)</b><br>646007 / <i>AS 2030 Air Dominance<br/>Technologies (ADT)</i> |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   |   | <b>FY 2022</b>   | <b>FY 2023</b> | <b>FY 2024</b> |
| <p>and support strategic choices. In addition, technical risk reduction studies concerning technology integration, operational and system trade space utilizing preliminary data from AD concept development have resulted in multiple activities and engagements to inform strategic USAF experimentation and prototyping efforts. Finally, technical overviews were presented to the Air Force - Scientific Advisory Board (AF-SAB) and other senior leaders.</p> <p><b>FY 2023 Plans:</b><br/>NGAD will continue to conduct analyses, identify technology candidates and perform concept refinements. Studies required to develop operational/system architectures to include family of systems and spectral dominance platforms will also mature. Technical risk reduction activities will continue to be performed to include development, integration, test and building demonstrative prototypes. Program activities will include the pursuit of open architecture solutions.</p> <p><b>FY 2024 Plans:</b><br/>NGAD will continue to conduct analyses, identify technology candidates and perform concept refinements. Studies required to develop operational/system architectures to include family of systems and spectral dominance platforms will also mature. Technical risk reduction activities will continue to be performed to include development, integration, test and building demonstrative prototypes. Program activities will include the pursuit of open architecture solutions.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding increased for continued technology maturation, risk reduction activities, and hardware prototyping efforts.</p> |   |  |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>   |   | 1,452.934  | 1,657.635      | 1,933.918      |
| <b>C. Other Program Funding Summary (\$ in Millions)</b>  |   |  |                |                |
| N/A   |   |  |                |                |
| <b>Remarks</b>  |   |  |                |                |
| <b>D. Acquisition Strategy</b>  |   |  |                |                |
| The Next Generation Air Dominance acquisition strategy is based on top-down, multi-domain capabilities development planning and oversight framework. Cross-functional teams will conduct analysis, demonstrations, and experiments to quantify the operational value of alternative concepts and technologies to provide solutions to current and future air superiority capability gaps.   |   |  |                |                |



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207110F / Next Generation Air Dominance | <b>Project (Number/Name)</b><br>646007 / AS 2030 Air Dominance Technologies (ADT) |
|--|---|---|

| <b>Product Development (\$ in Millions)</b> |                        |                                |             | FY 2022   |            | FY 2023   |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|-----------|------------|-----------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost      | Award Date | Cost      | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| NGAD Research/ Development Efforts          | Various                | Various : Various              | -           | 1,399.632 |            | 1,597.643 |            | 1,866.407    |            | -           |            | 1,866.407     | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 1,399.632 |            | 1,597.643 |            | 1,866.407    |            | -           |            | 1,866.407     | Continuing       | Continuing | N/A                      |

**Remarks**  
Contractual specifics are not available at this level of security classification.

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| NGAD Acquisition Support                    | Various                | Various : Various              | -           | 53.302  |            | 59.992  |            | 67.511       |            | -           |            | 67.511        | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 53.302  |            | 59.992  |            | 67.511       |            | -           |            | 67.511        | Continuing       | Continuing | N/A                      |

**Remarks**  
NGAD Acquisition Support includes but is not limited to A&AS, civilian pay, supplies, and facility related expenses.

|                            | Prior Years | FY 2022   | FY 2023   | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|-----------|-----------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | -           | 1,452.934 | 1,657.635 | 1,933.918    | -           | 1,933.918     | Continuing       | Continuing | N/A                      |

**Remarks**  
Details of contract data are not shown because of the level of security classification.

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0207110F / <i>Next Generation Air Domina<br/>nce</i> | <b>Project (Number/Name)</b><br>646007 / <i>AS 2030 Air Dominance<br/>Technologies (ADT)</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   |  |
|---|--|
| <b>AS 2030 Air Dominance Technologies (ADT)</b> |  |
| Concept Exploration                             |  |
| Integration Studies                             |  |
| Technology Risk Reduction / Prototyping         |  |
| FY23 Strategic Planning Choices Presented       |  |
| FY24 Strategic Planning Choices Presented       |  |
| FY25 Strategic Planning Choices Presented       |  |
| FY26 Strategic Planning Choices Presented       |  |
| FY27 Strategic Planning Choices Presented       |  |
| FY28 Strategic Planning Choices Presented       |  |
| FY29 Strategic Planning Choices Presented       |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0207110F / <i>Next Generation Air Dominance</i> | <b>Project (Number/Name)</b><br>646007 / <i>AS 2030 Air Dominance Technologies (ADT)</i> |

Schedule Details

| Events by Sub Project                           | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b>AS 2030 Air Dominance Technologies (ADT)</b> |         |      |         |      |
| Concept Exploration                             | 1       | 2022 | 4       | 2028 |
| Integration Studies                             | 1       | 2022 | 4       | 2028 |
| Technology Risk Reduction / Prototyping         | 1       | 2022 | 4       | 2028 |
| FY23 Strategic Planning Choices Presented       | 1       | 2022 | 1       | 2022 |
| FY24 Strategic Planning Choices Presented       | 1       | 2023 | 1       | 2023 |
| FY25 Strategic Planning Choices Presented       | 1       | 2024 | 1       | 2024 |
| FY26 Strategic Planning Choices Presented       | 1       | 2025 | 1       | 2025 |
| FY27 Strategic Planning Choices Presented       | 1       | 2026 | 1       | 2026 |
| FY28 Strategic Planning Choices Presented       | 1       | 2027 | 1       | 2027 |
| FY29 Strategic Planning Choices Presented       | 1       | 2028 | 1       | 2028 |

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |   |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0207110F / Next Generation Air Domina<br>nce |                      |                |                | <b>Project (Number/Name)</b><br>647123 / Collaborative Combat Aircraft<br>(CCA) |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>  | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 647123: Collaborative Combat Aircraft (CCA)                             | -                  | 0.000          | 0.000          | 392.210             | 0.000   | 392.210              | 513.752        | 245.967        | 1,643.635   | 3,032.756               | Continuing              | Continuing        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -   | -                    | -              | -              | -   | -                       |                         |                   |

**Note**

In FY 2024 PE 0207179F "Autonomous Collaborative Platforms", Project 647123 "Autonomous Collaborative Technologies" was retitled to "Collaborative Combat Aircraft" and was transferred to PE 0207110F "Next Generation Air Dominance" in order to align with the FoS portfolio of technologies.

**A. Mission Description and Budget Item Justification**

Collaborative Combat Aircraft (CCA) are un-crewed weapon systems capable of enhancing crewed weapon systems to achieve air superiority. The program matures and leverages relevant Science and Technology investments to reduce risk by conducting targeted development, integration and test activities. Key CCA attributes include tailored cost of platforms, mission integrated autonomy, multi-platform interoperability, and lethality enhancement. Program activities will include the employment of digital acquisitions through the application of digital engineering, agile software development, and open systems architectures. Funding provides information technology/test/training infrastructure investments, operational concept exploration, technology studies, multi-domain integration, operational assessments, architecture development, and multi-level prototyping as well as program management support. Program management support costs includes but is not limited to A&AS, civilian pay, supplies, and facility related expenses. This also includes risk reduction of air superiority related technologies including integrated weapons systems development and demonstration.

In FY24 PE 0207179F, Project 647123 "Autonomous Collaborative Technologies" was retitled to "Collaborative Combat Aircraft" and was transferred from PE 0207179F "Autonomous Collaborative Platforms" to PE 0207110F "Next Generation Air Dominance," in order to align with the SECAF's NGAD Family of Systems Operational Imperative. Funds requested for PE 0207110F, Project 647123 in FY24 are an administrative realignment only and do not constitute a new start.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Collaborative Combat Aircraft   | -              | 0.000          | 392.210        |
| <b>Description:</b> The Collaborative Combat Aircraft concepts of operational analyses/studies, technology candidate assessments, development, integration, prototyping, and demonstrations to identify operational concepts and technologies that project air power against adversaries. Ongoing studies are conducted to refine CCA concepts as well as air superiority related technologies. |                |                |                |
| <b>FY 2023 Plans:</b><br>N/A  |                |                |                |
| <b>FY 2024 Plans:</b>   |                |                |                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|---|-------------------------|

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207110F / <i>Next Generation Air Dominance</i> | <b>Project (Number/Name)</b><br>647123 / <i>Collaborative Combat Aircraft (CCA)</i> |
|--|--|---|

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | FY 2022 | FY 2023 | FY 2024 |
|--|---------|---------|---------|
| Collaborative Combat Aircraft will conduct analyses, identify technology candidates, perform concept refinement studies, development, integration, prototyping, and demonstrations to reduce risk and mature CCA concepts and air superiority related technologies in support of the NGAD family of systems. |         |         |         |
| <b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br>Funding increased due to realignment of BPAC 647123 to PE 0207110F  |         |         |         |
| <b>Accomplishments/Planned Programs Subtotals</b>  | -       | 0.000   | 392.210 |

| <b>C. Other Program Funding Summary (\$ in Millions)</b>      |                |                |                               |                              |                                |                |                |                |                |                         |                   |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| <u>Line Item</u>  | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
| • RDTE 04 0207179F: <i>Autonomous Collaborative Platforms</i> | 0.000          | 51.747         | 0.000                         | -                            | 0.000                          | -              | -              | -              | -              | 0.000                   | 51.747            |

**Remarks**

**D. Acquisition Strategy**  
The Collaborative Combat Aircraft acquisition strategy is based on a multi-domain capabilities, development, planning, and oversight framework. Cross-functional teams will conduct analysis, demonstrations, and experiments to quantify the operational value of alternative concepts and technologies to provide solutions to current and future air superiority capability gaps.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |  |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207110F / Next Generation Air Dominance | <b>Project (Number/Name)</b><br>647123 / Collaborative Combat Aircraft (CCA) |
|--|---|--|

| <b>Product Development (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| CCA Research/Development Efforts            | Various                           | Various : TBD                             | -                  | -              |                   | -              |                   | 379.776             |                   | -                  |                   | 379.776              | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>                             |                                   |   | -                  | -              |                   | -              |                   | 379.776             |                   | -                  |                   | 379.776              | Continuing              | Continuing        | N/A                             |

| <b>Support (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---------------------------------|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>       | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| CCA Acquisition Support         | Various                           | Various : TBD                             | -                  | -              |                   | -              |                   | 12.434              |                   | -                  |                   | 12.434               | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>                 |                                   |   | -                  | -              |                   | -              |                   | 12.434              |                   | -                  |                   | 12.434               | Continuing              | Continuing        | N/A                             |

| <b>Prior Years</b>         | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |     |
|----------------------------|----------------|----------------|---------------------|--------------------|----------------------|-------------------------|-------------------|---------------------------------|-----|
| <b>Project Cost Totals</b> | -              | -              | -                   | 392.210            | -                    | 392.210                 | Continuing        | Continuing                      | N/A |

**Remarks**  
CCA Acquisition Support includes Civilian Pay.

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0207110F / <i>Next Generation Air Domina<br/>nce</i> | <b>Project (Number/Name)</b><br>647123 / <i>Collaborative Combat Aircraft<br/>(CCA)</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   |  |
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| <b><i>Collaborative Combat Aircraft</i></b> |  |
| Concept Exploration                         |  |
| Integration Studies                         |  |
| Technology Risk Reduction / Prototyping     |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0207110F / <i>Next Generation Air Domina<br/>nce</i> | <b>Project (Number/Name)</b><br>647123 / <i>Collaborative Combat Aircraft<br/>(CCA)</i> |

Schedule Details

| Events by Sub Project                       | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Collaborative Combat Aircraft</i></b> |         |      |         |      |
| Concept Exploration                         | 1       | 2024 | 4       | 2028 |
| Integration Studies                         | 1       | 2024 | 4       | 2028 |
| Technology Risk Reduction / Prototyping     | 1       | 2024 | 4       | 2028 |



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0207179F / <i>Autonomous Collaborative Platforms</i> |
|--|---|

| COST (\$ in Millions)  | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element  | -           | 0.000   | 51.747  | 118.826      | 0.000       | 118.826       | 61.455  | 73.122  | 74.411  | 76.389  | Continuing       | Continuing |
| 643721: <i>Experimental Operations Unit (EOU)</i>                          | -           | 0.000   | 0.000   | 68.956       | 0.000       | 68.956        | 44.461  | 55.534  | 56.548  | 57.723  | Continuing       | Continuing |
| 645340: <i>Viper Experimentation and Next-gen Operations Model (VENOM)</i> | -           | 0.000   | 0.000   | 49.870       | 0.000       | 49.870        | 16.994  | 17.588  | 17.863  | 18.666  | Continuing       | Continuing |
| 647123: <i>Autonomous Collaborative Technologies</i>                       | -           | 0.000   | 51.747  | 0.000        | 0.000       | 0.000         | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 51.747     |

**Note**

This program, BA 4, PE 0207179F, project , Experimental Operations Unit, is a new start.  
 This program, BA 4, PE 0207179F, project , Viper Experimentation and Next-gen Operations Model, is a new start.

In FY2024 PE 0207179F, Project 647123 "Autonomous Collaborative Technologies" was retitled to "Collaborative Combat Aircraft" and transferred from PE 0207179F "Autonomous Collaborative Platforms" to PE 0207110F "Next Generation Air Dominance" in order to align with the SECAF's NGAD Family of Systems Operational Imperative.

**A. Mission Description and Budget Item Justification**

Autonomous Collaborative Platforms (ACP) are un-crewed weapon systems designed to work in conjunction with current and future aircraft to provide operational flexibility and enhance operational effectiveness. Key ACP attributes include tailored cost of platforms, rapidly updateable software, autonomy, interoperability with multiple platforms and network capabilities, agility of use, lethality, and ability to penetrate challenging air environments. The program matures technology to reduce risk through development, integration, experimentation and test activities. ACP will explore Doctrine, Organization, Training, Materiel, Leadership, Personnel, Facilities, and Policy (DOTMLPF-P) concepts for un-crewed vehicles. Program activities will include the employment of digital acquisitions through the application of digital engineering, agile software development, and open systems architectures. Funding provides program management support, digital systems infrastructure, operational concept exploration, technology studies, multi-domain integration assessments, operational and system architecture development, maturation and risk reduction of air superiority related technologies including weapons systems and integrated system concept development and demonstration.

FY24 PE 0207179F is submitting a Technical Adjustment to realign \$17.813 million to PE 0605807F for, RDT&E Management Support

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY2023, \$3.15M is forecast for civilian pay expenses in this program element.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0207179F / <i>Autonomous Collaborative Platforms</i> |
|--|---|

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b><u>FY 2022</u></b> | <b><u>FY 2023</u></b> | <b><u>FY 2024 Base</u></b> | <b><u>FY 2024 OCO</u></b> | <b><u>FY 2024 Total</u></b> |
|---|-----------------------|-----------------------|----------------------------|---------------------------|-----------------------------|
| Previous President's Budget                       | 0.000                 | 51.747                | 51.895                     | 0.000                     | 51.895                      |
| Current President's Budget                        | 0.000                 | 51.747                | 118.826                    | 0.000                     | 118.826                     |
| Total Adjustments                                 | 0.000                 | 0.000                 | 66.931                     | 0.000                     | 66.931                      |
| • Congressional General Reductions                | 0.000                 | 0.000                 |                            |                           |                             |
| • Congressional Directed Reductions               | 0.000                 | 0.000                 |                            |                           |                             |
| • Congressional Rescissions                       | 0.000                 | 0.000                 |                            |                           |                             |
| • Congressional Adds                              | 0.000                 | 0.000                 |                            |                           |                             |
| • Congressional Directed Transfers                | 0.000                 | 0.000                 |                            |                           |                             |
| • Reprogrammings                                  | 0.000                 | 0.000                 |                            |                           |                             |
| • SBIR/STTR Transfer                              | 0.000                 | 0.000                 |                            |                           |                             |
| • Other Adjustments                               | 0.000                 | 0.000                 | 66.931                     | 0.000                     | 66.931                      |

**Change Summary Explanation**

Funding increased due to two new BPAC's added to this PE (0207179F)

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207179F / Autonomous Collaborative P<br>latforms | <b>Project (Number/Name)</b><br>643721 / Experimental Operations Unit<br>(EOU) |
|--|--|--|

| COST (\$ in Millions)                             | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 643721: <i>Experimental Operations Unit (EOU)</i> | -           | 0.000   | 0.000   | 68.956       | 0.000       | 68.956        | 44.461  | 55.534  | 56.548  | 57.723  | Continuing       | Continuing |
| Quantity of RDT&E Articles                        | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**Note**  
This program, BA 4, PE 0207179F, project , Experimental Operations Unit, is a new start.

**A. Mission Description and Budget Item Justification**

The Experimental Operations Unit (EOU) program will begin to explore Doctrine, Organization, Training, Materiel, Leadership, Personnel, Facilities, and Policy (DOTMLPF-P) concepts for Collaborative Combat Aircraft (CCA). The program activities will reduce risk to operations of CCA employment with crewed aircraft. Funding provides program management and test support, operational concepts and studies, and infrastructure investment for information technology, test, and training. The program will serve as early risk reduction for employment of CCA's with crewed aircraft.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | FY 2022 | FY 2023 | FY 2024 |
|---|---------|---------|---------|
| <b>Title:</b> Experimental Operations Unit  | -       | 0.000   | 68.956  |
| <b>Description:</b> The EOU candidate concepts consist of operational analyses, studies and identifications of operation concepts. Ongoing studies are conducted to refine EOU concepts related to test and employment of un-crewed platforms as well as employment with crewed partners. |         |         |         |
| <b>FY 2023 Plans:</b><br>N/A  |         |         |         |
| <b>FY 2024 Plans:</b><br>EOU will conduct studies to refine EOU concepts related to test and employment of un-crewed platforms as well as employment with crewed partners.  |         |         |         |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funding increased due to the effort being a New Start   |         |         |         |
| <b>Accomplishments/Planned Programs Subtotals</b>   | -       | 0.000   | 68.956  |

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0207179F / <i>Autonomous Collaborative Platforms</i> | <b>Project (Number/Name)</b><br>643721 / <i>Experimental Operations Unit (EOU)</i> |

**D. Acquisition Strategy**

Experimental Operations Unit acquisition strategy is based on a multi-domain capabilities development planning and oversight framework. Cross-functional teams will conduct analysis, demonstrations, and experiments to develop and iterate CONOPS for CCA to provide solutions to current and future air superiority capability gaps.



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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |  |  | <b>Date:</b> March 2023 |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0207179F / <i>Autonomous Collaborative P<br/>latforms</i> | <b>Project (Number/Name)</b><br>643721 / <i>Experimental Operations Unit<br/>(EOU)</i> |                         |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

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| <b><i>Experimental Operations Unit</i></b> |  |
| Concept Exploration                        |  |
| Integration Studies                        |  |
| Risk Reduction                             |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0207179F / <i>Autonomous Collaborative Platforms</i> | <b>Project (Number/Name)</b><br>643721 / <i>Experimental Operations Unit (EOU)</i> |

Schedule Details

| Events by Sub Project                      | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Experimental Operations Unit</i></b> |         |      |         |      |
| Concept Exploration                        | 1       | 2024 | 4       | 2028 |
| Integration Studies                        | 1       | 2024 | 4       | 2028 |
| Risk Reduction                             | 1       | 2024 | 4       | 2028 |

**Note**

The EOU is an enduring program with iterative DOTMLPF-P activities that do not conform to discrete event timelines. Further specifics may be added as contracts are awarded.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207179F / Autonomous Collaborative Platforms | <b>Project (Number/Name)</b><br>645340 / Viper Experimentation and Next-gen Operations Model (VENOM) |
|--|--|--|

| COST (\$ in Millions)   | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 645340: Viper Experimentation and Next-gen Operations Model (VENOM) | -           | 0.000   | 0.000   | 49.870       | 0.000       | 49.870        | 16.994  | 17.588  | 17.863  | 18.666  | Continuing       | Continuing |
| Quantity of RDT&E Articles  | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**Note**

This program, BA 4, PE 0207179F, project , Viper Experimentation and Next-gen Operations Model, is a new start.

**A. Mission Description and Budget Item Justification**

The Viper Experimentation and Next-gen Operations Model (VENOM) project will serve as a flying autonomy testbed for the Collaborative Combat Aircraft (CCA) program. The program activities will reduce risk to CCA through test and demonstration of the autonomy reference architecture and autonomy skills on a man-on-the-loop aircraft. Funding provides program management and test support to mature autonomy architecture and software prior to transition to CCA. The program will enable testing of autonomy on a crewed aircraft to serve as early risk reduction for CCA autonomy.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | FY 2022 | FY 2023 | FY 2024 |
|---|---------|---------|---------|
| <b>Title:</b> Viper Experimentation and Next-gen Operations Model   | 0.000   | 0.000   | 49.870  |
| <b>Description:</b> The VENOM candidate concepts consist of establishing man-on-the-loop autonomy testbed and implementing initial autonomy reference architecture to reduce risk for CCA autonomy. |         |         |         |
| <b>FY 2023 Plans:</b><br>N/A  |         |         |         |
| <b>FY 2024 Plans:</b><br>VENOM will incorporate the latest autonomy reference architecture as well as implement and test autonomy skills to mature CCA autonomy.                                    |         |         |         |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funding increased due to the effort being a New Start   |         |         |         |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 0.000   | 0.000   | 49.870  |

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**



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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0207179F / <i>Autonomous Collaborative P<br/>latforms</i> | <b>Project (Number/Name)</b><br>645340 / <i>Viper Experimentation and Next-<br/>gen Operations Model (VENOM)</i> |

**D. Acquisition Strategy**

The VENOM acquisition strategy is based on modifying an existing man-on-the-loop aircraft to produce a flying testbed to implement autonomous reference architecture and autonomy skills. The autonomy testing on the crewed aircraft will serve as early risk reduction for CCA autonomy.



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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0207179F / <i>Autonomous Collaborative P</i><br><i>latforms</i> | <b>Project (Number/Name)</b><br>645340 / <i>Viper Experimentation and Next-</i><br><i>gen Operations Model (VENOM)</i> |

|  | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|  | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|                |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|----------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| <b>VENOM</b>   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Risk Reduction |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0207179F / <i>Autonomous Collaborative P<br/>latforms</i> | <b>Project (Number/Name)</b><br>645340 / <i>Viper Experimentation and Next-<br/>gen Operations Model (VENOM)</i> |

Schedule Details

| Events by Sub Project | Start   |      | End     |      |
|-----------------------|---------|------|---------|------|
|                       | Quarter | Year | Quarter | Year |
| <b>VENOM</b>          |         |      |         |      |
| Risk Reduction        | 1       | 2024 | 4       | 2028 |

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|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |  |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0207179F / Autonomous Collaborative P<br>latforms |                      |                |                | <b>Project (Number/Name)</b><br>647123 / Autonomous Collaborative<br>Technologies |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>   | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 647123: Autonomous Collaborative Technologies                           | -                  | 0.000          | 51.747         | 0.000               | 0.000  | 0.000                | 0.000          | 0.000          | 0.000   | 0.000                   | 0.000                   | 51.747            |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -  | -                    | -              | -              | -   | -                       |                         |                   |

**Note**

In FY2024 PE 0207179F, Project 647123 "Autonomous Collaborative Technologies" was retitled to "Collaborative Combat Aircraft" and transferred from PE 0207179F "Autonomous Collaborative Platforms" to PE 0207110F "Next Generation Air Dominance," in order to align with the SECAF's NGAD Family of Systems Operational Imperative.

**A. Mission Description and Budget Item Justification**

Autonomous Collaborative Technologies are un-crewed weapon systems primarily focused on projecting air power against adversaries. These new un-crewed air combat vehicles are designed to work in conjunction with current and future aircraft to provide operational flexibility, as directed by Department of the Air Force leadership. The program matures technology from the Science and Technology (S&T) Skyborg Vanguard program to reduce risk through development, integration and test activities, speeding capabilities to warfighters. Key ACP attributes include tailored cost of platforms, rapidly updateable software, autonomy, interoperability with multiple platforms and network capabilities, agility of use, lethality, and ability to penetrate challenging air environments. Program activities will include the employment of digital acquisitions through the application of digital engineering, agile software development, and open systems architectures. Funding provides program management support, operational concept exploration, technology studies, multi-domain integration assessments, operational and system architecture development, maturation and risk reduction of air superiority related technologies including weapons systems and integrated system concept development and demonstration.

FY24 PE 0207179F is submitting a Technical Adjustment to realign \$17.813 million to 0605807F for RDT&E Management Support.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY2023, \$3.15M is forecast for civilian pay expenses in this program element.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Autonomous Collaborative Platform   | 0.000          | 51.747         | 0.000          |
| <b>Description:</b> The Autonomous Collaborative Platform candidate concepts consist of operational analyses/studies, technology candidate assessments, development, integration, prototyping and demonstrations to identify operational concepts and technologies that project air power against adversaries. Ongoing studies are conducted to refine ACP concepts and air superiority related technologies. |                |                |                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0207179F / <i>Autonomous Collaborative Platforms</i> | <b>Project (Number/Name)</b><br>647123 / <i>Autonomous Collaborative Technologies</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p><b>FY 2023 Plans:</b><br/>Autonomous Collaborative Platform conducts analyses, identifies technology candidates, performs concept refinement studies, development, integration, prototyping and demonstrations to reduce risk and mature ACP concepts and air superiority related technologies.</p> <p><b>FY 2024 Plans:</b><br/>FY2024 efforts will be transferred to PE 0207110F</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding decreased due to the transfer to PE 0207110F</p> |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 0.000          | 51.747         | 0.000          |

| <b>C. Other Program Funding Summary (\$ in Millions)</b> |                |                |                               |                              |                                |                |                |                |                |                                   |                   |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| <u>Line Item</u>   | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
| • RDTE 04 0207110F: <i>Next Generation Air Dominance</i> | 0.000          | 0.000          | 392.210                       | 0.000                        | 392.210                        | 513.752        | 245.967        | 1,643.635      | 3,032.756      | Continuing                        | Continuing        |

**Remarks**

**D. Acquisition Strategy**  
The Autonomous Collaborative Platform acquisition strategy is based on a multi-domain capabilities development planning and oversight framework. Cross-functional teams will conduct analysis, demonstrations, and experiments to quantify the operational value of alternative concepts and technologies to provide solutions to current and future air superiority capability gaps.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207179F / Autonomous Collaborative Platforms | <b>Project (Number/Name)</b><br>647123 / Autonomous Collaborative Technologies |
|--|--|--|

| <b>Product Development (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| ACP Research/Development Efforts            | Various                | Various : TBD                  | -           | -       |            | 47.697  |            | -            |            | -           |            | -             | 0.000            | 47.697     | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | -       |            | 47.697  |            | -            |            | -           |            | -             | 0.000            | 47.697     | N/A                      |

**Remarks**  
Contractual specifics are not available at this level of security classification.

| <b>Support (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item              | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| ACP Acquisition Support         | Various                | Various : TBD                  | -           | -       |            | 4.050   |            | -            |            | -           |            | -             | 0.000            | 4.050      | -                        |
| <b>Subtotal</b>                 |                        |                                | -           | -       |            | 4.050   |            | -            |            | -           |            | -             | 0.000            | 4.050      | N/A                      |

**Remarks**  
Includes civilian pay

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | -           | -       | 51.747  | -            | -           | -             | 0.000            | 51.747     | N/A                      |

**Remarks**  
Contractual specifics are not available at this level of security classification.

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0207179F / <i>Autonomous Collaborative Platforms</i> | <b>Project (Number/Name)</b><br>647123 / <i>Autonomous Collaborative Technologies</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   |  |
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| <b><i>Autonomous Collaborative Platform</i></b> |  |
| Concept Exploration                             |  |
| Integration Studies                             |  |
| Technology Risk Reduction / Prototyping         |  |



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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0207179F / <i>Autonomous Collaborative Platforms</i> | <b>Project (Number/Name)</b><br>647123 / <i>Autonomous Collaborative Technologies</i> |

Schedule Details

| Events by Sub Project                           | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Autonomous Collaborative Platform</i></b> |         |      |         |      |
| Concept Exploration                             | 1       | 2023 | 4       | 2023 |
| Integration Studies                             | 1       | 2023 | 4       | 2023 |
| Technology Risk Reduction / Prototyping         | 1       | 2023 | 4       | 2023 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0207420F / <i>Combat Identification</i> |
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| COST (\$ in Millions)                         | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                         | -           | 0.000   | 1.866   | 1.902        | 0.000       | 1.902         | 1.910   | 1.994   | 2.034   | 2.028   | 0.000            | 11.734     |
| 642742: <i>IFF/ATC Test and Certification</i> | -           | 0.000   | 1.866   | 1.902        | 0.000       | 1.902         | 1.910   | 1.994   | 2.034   | 2.028   | 0.000            | 11.734     |
| Quantity of RDT&E Articles                    | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**A. Mission Description and Budget Item Justification**

Cooperative Combat Identification employs technologies required to rapidly identify friendly platforms. The program develops, integrates and evaluates technologies that provide Air Force platforms with a means of positively identifying an air or ground platform as a friendly, via active or passive cooperative identification capabilities. The development funded by this project ensures availability of a Mode 5 upgrade path for implementing ground and air platforms across the Air Force fleet. The Department of Defense International AIMSP0 has system level interoperability testing and certification responsibilities for the current Mark XIIB system, development and integration of new Identification Friend or Foe (IFF) system capabilities, and development/integration of civil Mode S capabilities into Mark XIIB Identification Friend or Foe equipment. The AIMSP0 ensures Identification Friend or Foe equipment/platform functionality in accordance with established standards and ensures total system interoperability to meet Department of Defense/Service mission areas (e.g. Offensive Counter Air, Defensive Counter Air, and Integrated Air and Missile Defense).

The cooperative goals will be to test and certify the Mark XIIB system, develop and integrate the new Mark XIIB Identification Friend or Foe system capability (Mode 5 Level 2 Broadcast) and also continue the development/integration of civil Mode S capabilities into Mark XIIB Identification Friend or Foe equipment using newly fielded M-code GPS receivers. The cooperative funds will be used to fund projects and personnel who develop and test technical standards, perform certification testing, process certifications and track all Office of the Secretary of Defense and Federal Aviation Administration guidelines to ensure the program remains current. The Office of the Secretary of Defense and Federal Aviation Administration guidelines required Mode 5 be fully implemented by FY 2020 but many platforms continue to integrate this capability. The Department of Defense AIMS Program will ensure those certifications are current on all applicable platforms/systems and work with both domestic and foreign military sales partners to ensure compliance. The funds also support Department of Defense representation to several military (United States and NATO) and civil (Federal Aviation Administration, International Civil Aviation Organization and Radio Technical Commission for Aeronautics) requirements meetings for Mode 5, Mode S and ADS-B. These important meetings allow the Department of Defense to remain interoperable with our foreign military partners as well as the United States and international civil aviation community. Department of Defense AIMS Program will continue to update the Department of Defense AIMS Mark XIIB Standards, Security Classification Guide, Handbook, and Test Requirements.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0207420F / <i>Combat Identification</i> |
|--|--|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 0.000          | 1.866          | 1.898               | 0.000              | 1.898                |
| Current President's Budget                        | 0.000          | 1.866          | 1.902               | 0.000              | 1.902                |
| Total Adjustments                                 | 0.000          | 0.000          | 0.004               | 0.000              | 0.004                |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 0.004               | 0.000              | 0.004                |

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
|---|----------------|----------------|----------------|

|  |       |       |       |
|--|-------|-------|-------|
| <b>Title:</b> Air Traffic Control and Radar Beacon Systems Identification Friend or Foe Mark XIIA System (AIMS) Program Office | 0.000 | 1.866 | 1.902 |
|--|-------|-------|-------|

**Description:** Develop and maintain technical standards on development, integration, testing, and certification of Department of Defense Identification Friend or Foe equipment. Coordinate and execute equipment/subsystem-level certifications and platform certifications of Identification Friend or Foe capabilities. Currently managing 49 active Foreign Military Sales Cases. Support NATO Identification Friend or Foe Capabilities Team (Mode 5 Identification Friend or Foe is a NATO waveform). Support International Civil Aviation Organization (ICAO) Technical Support Group (develops standards for world-wide civil Air Traffic Control). Create and maintain civil Mode S address assignments and military Mode 5 Platform Identification Number assignments for every Department of Defense platform using these waveforms in their interrogator and/or transponder equipment. The yearly User Working Group provides information to the Users on Identification Friend or Foe (IFF); provides seminars to the Users on Basic IFF, Advanced IFF, Mode 5 Test Sets and Crypto training. The main purpose of the Working Group is share solutions and resolutions between Users, NATO, COCOMs and Program Offices on IFF, Mode 5, Mode S (civil and Military).

**FY 2023 Plans:**  
Continue updating and developing Identification Friend standards and support Mode 5 equipment for Air Traffic Control and Radar Beacon Systems Identification Friend or Foe Mark XIIA System (AIMS) for interoperability Identification Friend testing (civil and military).

**FY 2024 Plans:**

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0207420F / <i>Combat Identification</i> |
|--|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | FY 2022 | FY 2023 | FY 2024 |
|--|---------|---------|---------|
| Continue updating and developing Identification Friend standards and support Mode 5 equipment for Air Traffic Control and Radar Beacon Systems Identification Friend or Foe Mark XIIA System (AIMS) for interoperability Identification Friend testing (civil and military). |         |         |         |
| <b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br>FY 2024 increased compared to FY 2023 by \$0.036 million. Justification for this increase is described in the plans above.  |         |         |         |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 0.000   | 1.866   | 1.902   |

**D. Other Program Funding Summary (\$ in Millions)**  
N/A

**Remarks**

**E. Acquisition Strategy**  
Combat Identification develops technologies for exploitation by the United States Air Force and the other services. Award multiple, competitive contract vehicles emphasizing off-the-shelf technology and maximizing the use of non-developmental items (NDIs). Management develops a technology to a point it can be demonstrated in a relative combat environment.



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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207420F / <i>Combat Identification</i> | <b>Project (Number/Name)</b><br>642742 / <i>IFF/ATC Test and Certification</i> |
|--|--|--|

|  | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|  | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

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| <b>Cooperative Identification Techniques</b>             |  |
| AIMS Program Office Activities                           |  |
| AIMS Program Office Annual User Working Group (May 2023) |  |
| AIMS Program Office Annual User Working Group (May 2024) |  |
| AIMS Program Office Annual User Working Group (May 2025) |  |
| AIMS Program Office Annual User Working Group (May 2026) |  |
| AIMS Program Office Annual User Working Group (May 2027) |  |
| AIMS Program Office Annual User Working Group (May 2028) |  |

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2024 Air Force **Date:** March 2023

|  |  |  |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207420F / <i>Combat Identification</i> | <b>Project (Number/Name)</b><br>642742 / <i>IFF/ATC Test and Certification</i> |
|--|--|--|

Schedule Details

| Events by Sub Project                                    | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Cooperative Identification Techniques</i></b>      |         |      |         |      |
| AIMS Program Office Activities                           | 1       | 2023 | 4       | 2028 |
| AIMS Program Office Annual User Working Group (May 2023) | 3       | 2023 | 3       | 2023 |
| AIMS Program Office Annual User Working Group (May 2024) | 3       | 2024 | 3       | 2024 |
| AIMS Program Office Annual User Working Group (May 2025) | 3       | 2025 | 3       | 2025 |
| AIMS Program Office Annual User Working Group (May 2026) | 3       | 2026 | 3       | 2026 |
| AIMS Program Office Annual User Working Group (May 2027) | 3       | 2027 | 3       | 2027 |
| AIMS Program Office Annual User Working Group (May 2028) | 3       | 2028 | 3       | 2028 |



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0207455F / <i>Three Dimensional Long-Range Radar (3DELRR)</i> |
|--|--|

| COST (\$ in Millions)   | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element   | 0.000       | 0.000   | 14.490  | 19.763       | 0.000       | 19.763        | 0.584   | 0.069   | 0.000   | 0.000   | 0.000            | 34.906     |
| 646002: <i>Three Dimensional Expeditionary Long Range Radar</i> | 0.000       | 0.000   | 14.490  | 19.763       | 0.000       | 19.763        | 0.584   | 0.069   | 0.000   | 0.000   | 0.000            | 34.906     |
| Quantity of RDT&E Articles                                      | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**Program MDAP/MAIS Code:** 393

**A. Mission Description and Budget Item Justification**

This budget line funds the Three-Dimensional Expeditionary Long-Range Radar (3DELRR) program. The 3DELRR program replaces the unsustainable AN/TPS-75 radar. The AN/TPS-75 radar was first fielded in the early 1970s, is at the end of its service life, and costly to maintain. The 3DELRR system will be the USAF's principal long-range, ground-based sensor for detecting, identifying, tracking, and reporting aerial tracks for the Joint Force Air Component Commander (JFACC).

The 3DELRR system will provide multiple benefits and increased capabilities to the USAF and the Joint Services, including but not limited to: 1) ability to detect and track highly maneuverable, small radar cross-section airborne targets (modern and emerging threats); 2) enable greater battlefield and battlespace awareness through its precise, real-time air picture of sufficient quality to control individual aircraft under a wide range of environmental and operational conditions; and 3) mitigate reliability, operational availability, maintainability, transportability and sustainability issues.

The 3DELRR system consists of the TPY-4 radar, two (2) Heavy Expanded Mobility Tactical Trucks (HEMTTS), one (1) trailer, four (4) Micro Grid generators, and other smaller Government Furnished Equipment (GFE) items.

FY2024 funding will support continued capability development for the 3DELRR system. Development of the system will consist of electronic protection (EP) techniques, classification and clutter algorithms, and enhanced radar capabilities across various operating environments. FY2024 funds will support integration of the 3DELRR system with the United States Army using the Integrated Fire Control Network (IFCN) interface and the United States Navy & Marine Corps using the Cooperative Engagement Capability/Composite Tacker Network (CEC/CTC) interfaces.

Test and evaluation will also continue with FY2024 funding to support development of the TPY-4 radar to include cybersecurity and performance assessments, mobility, evaluations, and initial maintenance demonstrations.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 \$0.00M was expended for civilian pay expenses in this program element, and in FY23 \$0.00M is forecasted for civilian pay expenses in this program element.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P) | <b>R-1 Program Element (Number/Name)</b><br>PE 0207455F I Three Dimensional Long-Range Radar (3DELRR) |
|---|---|

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 0.000          | 14.490         | 6.228               | 0.000              | 6.228                |
| Current President's Budget                        | 0.000          | 14.490         | 19.763              | 0.000              | 19.763               |
| Total Adjustments                                 | 0.000          | 0.000          | 13.535              | 0.000              | 13.535               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 13.535              | 0.000              | 13.535               |

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Development and test of the AN/TPY-4 radar  | 0.000          | 9.859          | 5.587          |
| <b>Description:</b> Funds will be used for the development, integration, and test activities of TPY-4 radar system.   |                |                |                |
| <b>FY 2023 Plans:</b>   |                |                |                |
| Activities supported with FY23 funding include, but are not limited to the following:   |                |                |                |
| -Will lead and manage program through daily interaction with contractor and key stakeholders  |                |                |                |
| -Will develop efforts for interoperability with external agencies as required   |                |                |                |
| -Will develop, test, and implement capability requirements for integrating data into the Army's Integrated Fire Control Network   |                |                |                |
| -Will develop, test, and implement capability requirements to provide better performance against more challenging radar environments, improve classification and provide a suite of more advanced electronic protection |                |                |                |
| -Will identify, monitor, mitigate and report program and known risks associated with hardware, software and testing   |                |                |                |
| -Will pursue required system and sub-system certification   |                |                |                |
| -Will develop technical manuals and training material   |                |                |                |
| -Will develop system integration & interoperability with operational Command and Control (C2) systems   |                |                |                |
| -Will conduct contractor integration testing of components & subsystems   |                |                |                |
| -Will verify, validate, and accredit modelling & simulation tools for use in test   |                |                |                |
| -Will conduct test readiness reviews prior to specific test events  |                |                |                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0207455F / <i>Three Dimensional Long-Range Radar (3DELRR)</i> |
|--|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <ul style="list-style-type: none"> <li>-Will conduct cybersecurity tabletop exercises</li> <li>-Will conduct integrated contractor/government developmental test &amp; evaluation to characterize performance and cybersecurity posture</li> <li>-Will conduct preparation for initial operational test &amp; evaluation and ensure entrance criteria are met</li> <li>-Will identify spares through the Provisioning Conference</li> <li>-Will finalize support equipment requirements</li> </ul> <p><b>FY 2024 Plans:</b><br/>Activities will include, but are not limited to the following:</p> <ul style="list-style-type: none"> <li>-Will finalize technical manuals and training material</li> <li>-Will conduct test readiness reviews prior to specific test events</li> <li>-Will continue integrated government developmental test &amp; evaluation and operational test &amp; evaluation to characterize performance and cybersecurity posture</li> <li>-Will conduct initial operational test &amp; evaluation to support fielding decision</li> <li>-Will develop, test, and implement future requirements based on mission needs</li> </ul> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>FY24 funds decrease to support the 3DELRR system transition into government test and evaluation activities.</p>  |                |                |                |
| <p><b>Title:</b> Government Development, Operational &amp; Integration Test and Evaluation Planning and Execution</p> <p><b>Description:</b> Planning and Execution of Government-led Developmental, &amp; Operational Test and Evaluation Activities</p> <p><b>FY 2023 Plans:</b><br/>Activities supported with FY23 funding include but are not limited to the following:</p> <ul style="list-style-type: none"> <li>-Will lead and manage program through daily interaction with contractor and key stakeholders</li> <li>-Will develop efforts for interoperability with external agencies as required</li> <li>-Will test and implement selected capability requirements based on mission needs</li> <li>-Will identify, monitor, mitigate and report program and known risks associated with hardware, software, and testing</li> <li>-Will conduct required system and sub-system certification</li> <li>-Will conduct system integration &amp; interoperability with operational Command and Control (C2) systems</li> <li>-Will verify, validate, and accredit modelling &amp; simulation tools for use in test</li> <li>-Will conduct Test Readiness Reviews prior to specific test events</li> <li>-Will conduct cybersecurity tabletop exercises</li> <li>-Will conduct integrated contractor/government developmental test &amp; evaluation to characterize performance and cybersecurity posture</li> </ul> | 0.000          | 4.631          | 14.176         |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0207455F / <i>Three Dimensional Long-Range Radar (3DELRR)</i> |
|--|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| -Will conduct preparation for initial operational test & evaluation and ensure entrance criteria are met  |                |                |                |
| <b><i>FY 2024 Plans:</i></b><br>Activities will include but are not limited to the following:<br>-Will conduct test readiness reviews prior to specific test events<br>-Will continue integrated government developmental test & evaluation and operational test & evaluation to characterize performance and cybersecurity posture<br>-Will conduct initial operational test & evaluation to support fielding decision<br>-Will test selected future requirements based on mission needs |                |                |                |
| <b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br>Funds increase to support the 3DELRR system transition into government test and evaluation activities.   |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 0.000          | 14.490         | 19.763         |

| <b>D. Other Program Funding Summary (\$ in Millions)</b>      |                |                |                               |                              |                                |                |                |                |                |                                   |                   |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| <u>Line Item</u>  | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
| • OPAF 03 833060: 3D<br><i>Expeditionary Long-Range Radar</i> | 96.186         | 92.587         | 83.735                        | -                            | 83.735                         | 95.961         | 106.860        | 110.182        | 113.048        | 0.000                             | 698.559           |

**Remarks**

**E. Acquisition Strategy**

The Service Acquisition Executive (SAE) designated the 3DELRR program a Middle Tier of Acquisition (MTA) Rapid Prototyping effort on 27 Dec 19. The program used Other Transactional Agreements to conduct the competitive prototype capability demonstrations. On 15 Mar 21, the SAE delegated contract award and downselect decision authority to the Air Force Program Executive Officer (PEO) Digital. On 1 Apr 22, the SAE designated 3DELRR an MTA Rapid Fielding effort, thereby concluding the Rapid Prototyping effort and enabling the program to start production of the first two initial production units. 3DELRR is tentatively scheduled to transition from an MTA to a Major Capability Acquisition program in early 2024.

The total cost of the 3DELRR MTA effort is \$360.5 million, including RDT&E and procurement of prototype units. The 3DELRR program is fully funded across the Future Years Defense Program.

The Milestone Decision Authority for the 3DELRR program is the Assistant Secretary of the Air Force for Acquisition, Technology, and Logistics. Program management for the 3DELRR program is under direction of PEO Digital, located at Hanscom AFB, MA. The Air Force Life Cycle Management Center located at Wright-Patterson AFB, OH is the contracting authority for the 3DELRR program. AFLCMC provides contracting, legal, comptroller, programmatic, engineering, test, and logistics support.

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| Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force           |                        |                                |             |   |            |         |            |   |            |             |            | Date: March 2023 |                  |            |                          |  |
|---|------------------------|--------------------------------|-------------|---|------------|---------|------------|---|------------|-------------|------------|------------------|------------------|------------|--------------------------|--|
| Appropriation/Budget Activity   |                        |                                |             | R-1 Program Element (Number/Name)                         |            |         |            | Project (Number/Name)                                     |            |             |            |                  |                  |            |                          |  |
| 3600 / 4  |                        |                                |             | PE 0207455F / Three Dimensional Long-Range Radar (3DELRR) |            |         |            | 646002 / Three Dimensional Expeditionary Long Range Radar |            |             |            |                  |                  |            |                          |  |
| <b>Product Development (\$ in Millions)</b>                           |                        |                                |             | FY 2022   |            | FY 2023 |            | FY 2024 Base  |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |  |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost  | Award Date | Cost    | Award Date | Cost  | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |  |
| TPY-4 Prime Contract  | C/FFP                  | Lockheed Martin : Syracuse, NY | 0.000       | -   |            | 10.574  |            | 9.075   |            | -           |            | 9.075            | 0.000            | 19.649     | -                        |  |
| <b>Subtotal</b>   |                        |                                | 0.000       | -   |            | 10.574  |            | 9.075   |            | -           |            | 9.075            | 0.000            | 19.649     | N/A                      |  |
| <b>Support (\$ in Millions)</b>                                       |                        |                                |             | FY 2022   |            | FY 2023 |            | FY 2024 Base  |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |  |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost  | Award Date | Cost    | Award Date | Cost  | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |  |
| System Engineering - C  | SS/CPFF                | GTRI : Atlanta, GA             | 0.000       | -   |            | 0.500   |            | 0.758   |            | -           |            | 0.758            | 0.000            | 1.258      | -                        |  |
| System Engineering - D  | SS/CPFF                | MITRE : Bedford, MA            | 0.000       | -   |            | 0.416   |            | 1.470   |            | -           |            | 1.470            | 0.000            | 1.886      | -                        |  |
| <b>Subtotal</b>   |                        |                                | 0.000       | -   |            | 0.916   |            | 2.228   |            | -           |            | 2.228            | 0.000            | 3.144      | N/A                      |  |
| <b>Test and Evaluation (\$ in Millions)</b>                           |                        |                                |             | FY 2022   |            | FY 2023 |            | FY 2024 Base  |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |  |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost  | Award Date | Cost    | Award Date | Cost  | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |  |
| Air Force Operational Test and Evaluation Center (AFOTEC)             | PO                     | AFOTEC Det 2/C2 : TBD          | 0.000       | -   |            | -       |            | 2.843   |            | -           |            | 2.843            | 0.000            | 2.843      | -                        |  |
| Government Developmental Test and Evaluation Planning and Preparation | PO                     | 46 TS : Eglin AFB, FL          | 0.000       | -   |            | 3.000   |            | 3.107   |            | -           |            | 3.107            | 0.000            | 6.107      | -                        |  |
| <b>Subtotal</b>   |                        |                                | 0.000       | -   |            | 3.000   |            | 5.950   |            | -           |            | 5.950            | 0.000            | 8.950      | N/A                      |  |
| <b>Management Services (\$ in Millions)</b>                           |                        |                                |             | FY 2022   |            | FY 2023 |            | FY 2024 Base  |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |  |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost  | Award Date | Cost    | Award Date | Cost  | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |  |
| Program Management Administration                                     | Various                | AFLCMC/HBDD : Hanscom AFB, MA  | 0.000       | -   |            | -       |            | 2.510   |            | -           |            | 2.510            | 0.000            | 2.510      | -                        |  |





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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0207455F / <i>Three Dimensional Long-Range Radar (3DELRR)</i> | <b>Project (Number/Name)</b><br>646002 / <i>Three Dimensional Expeditionary Long Range Radar</i> |

Schedule Details

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Three Dimensional Expeditionary Long Range Radar</i></b>               |         |      |         |      |
| Government Test  | 4       | 2023 | 4       | 2025 |
| Implement full complement of electronic protection techniques                | 2       | 2023 | 2       | 2026 |
| Implement unique classification techniques and additional clutter algorithms | 2       | 2023 | 2       | 2026 |
| Design radar templates for other natural and electronic attack environments  | 2       | 2023 | 2       | 2026 |



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0207522F / <i>Airbase Air Defense Systems (ABADS)</i> |
|--|--|

| COST (\$ in Millions)                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                            | -           | 10.526  | 47.465  | 78.867       | 0.000       | 78.867        | 10.654  | 12.938  | 15.223  | 15.597  | 0.000            | 191.270    |
| 640410: <i>Tech Maturation &amp; Risk Reduct</i> | -           | 10.526  | 47.465  | 78.867       | 0.000       | 78.867        | 10.654  | 12.938  | 15.223  | 15.597  | 0.000            | 191.270    |
| Quantity of RDT&E Articles                       | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**A. Mission Description and Budget Item Justification**

NOTE: These documents contain an update to the title of the missile defense effort to better communicate the distinction between overarching system and sub-efforts. The new designation is Airbase Air Defense Systems for Missile Defense (ABADS(MD)), instead of Airbase Air Defense Battle Management Command and Control (ABAD BMC2).

The Airbase Air Defense Systems (ABADS) program element is the principal Air Force (AF) program to provide the ability to detect, track, identify, and defeat airborne threats to missions and assets. These threats include small-unmanned aircraft systems (sUAS), Rockets, Artillery and Mortars (RAM), and cruise missiles. These three efforts (missile defense (MD), counter-sUAS (C-sUAS), and counter-RAM (C-RAM)) aim to protect personnel, assets, and infrastructure vital to supporting the national security strategy.

ABADS(MD) is architected as a configurable combination of Commercial Off the Shelf (COTS)/Government Off the Shelf (GOTS) sensor and non-kinetic effector technologies integrated with tailored Battle Management Command and Control (BMC2) software to provide adaptive, resilient, and dedicated air defense capability. The ABADS(MD) system is designed to operate independently or combine with other local and distributed capabilities to form a multi-layered defense-in-depth, improving airbase defense and airbase resiliency.

ABADS(MD) FY24 funding continues to mature the prototype design into a procurement ready system for FY25 fielding. The efforts planned for this fiscal year include continued software development, capability demonstrations, and operational testing during at least one joint exercise. The goal is for the system to meet Air Force requirements leading to a favorable fielding decision.

ABADS(C-sUAS) specifically aims to counter the threats posed by the rapid proliferation of inexpensive yet highly capable systems, and the enemies who target US Service members, Allies, and Coalition partners. The ABADS(C-sUAS) program will continue to analyze evolving threats, evaluate new capabilities, and design an open system architecture that reduces life cycle cost and enables fielding to all 180+ AF installations. ABADS(C-sUAS) features a system of systems approach to integrate sensors and effectors into a robust Command and Control (C2) interface able to detect, track, identify, and defeat sUAS threats. The AF works closely with the DoD Joint C-sUAS Office (JCO) to align annual efforts.

ABADS(C-sUAS) FY24 funding will further develop Command, Control, Communication, Computers, and Intelligence (C4I) systems. The centerpiece of this effort is the Medusa Command and Control (C2) system, whose Modular Open-Systems Architecture enables rapid integration with the Advanced Battle Management System

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0207522F / <i>Airbase Air Defense Systems (ABADS)</i> |
|--|--|

(ABMS), Link 16, and Universal Command & Control (UC2). The Medusa C2 system supports Joint All-Domain Command & Control (JADC2) development and employs electronic warfare capabilities, artificial intelligence for operator task automation, a closed-loop training system for operator certification and proficiency, and track fusion.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY2022 \$0 was expended for civilian pay expenses in this program element, and in FY2023 \$0 is forecasted for civilian pay expenses in this program element.

This requirement supports performance of a full financial audit as required by title 10 U.S.C. Chapter 9A, Sec 240-D.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 10.905         | 52.498         | 85.509              | 0.000              | 85.509               |
| Current President's Budget                        | 10.526         | 47.465         | 78.867              | 0.000              | 78.867               |
| Total Adjustments                                 | -0.379         | -5.033         | -6.642              | 0.000              | -6.642               |
| • Congressional General Reductions                | 0.000          | -5.000         |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -0.379         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | -0.033         | -6.642              | 0.000              | -6.642               |

**Change Summary Explanation**

FY2022 Reduction for SBIR of \$0.379M

FY2023 Reduction for FFRDC of \$0.033M

FY2024 Program Element funding request reduced by \$6.642M to account for the availability of prior year execution balances.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> ABADS(C-sUAS)                                 | 10.526         | 5.330          | 5.591          |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0207522F / <i>Airbase Air Defense Systems (ABADS)</i> |
|--|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
|---|----------------|----------------|----------------|

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| <b>Description:</b> The ABADS(C-sUAS) program will continue to defend against the emerging and growing airborne threats. This program protects strategic assets vital to national security while bedded down and while on the move. This program will continue to counter emerging threats posed by advancements in enemy employment tactics and commercially available technology. |  |  |  |
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| <p><b>FY 2023 Plans:</b></p> <ul style="list-style-type: none"> <li>- Update Medusa C2 software to further interoperability and incorporation within the ABMS architecture</li> <li>- Continue electronic warfare upgrades, to include but not limited to, new sensor and effector components, and improve Ninja to leverage full Ninja capability within Medusa C2</li> <li>- Continue efforts in alignment with the DoD's Joint C-sUAS Office</li> <li>- Evaluate new capabilities and add capabilities to the capability storefront to enable streamlined acquisition of capabilities for bases</li> <li>- Develop and test, via bi-weekly software sprints, an annual software upgrade for 19 fixed sites</li> <li>- Cyber harden all new system changes</li> <li>- Support management of JCO funded Ninja development</li> </ul> |  |  |  |
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| <p><b>FY 2024 Plans:</b></p> <ul style="list-style-type: none"> <li>- Will continue to update Medusa C2 software to further interoperability and incorporation within the ABMS architecture</li> <li>- Will continue to evaluate and add capabilities to enable streamlined acquisition</li> <li>- Will continue electronic warfare upgrades, to include but not limited to new sensor and effector components, and new Ninja skills which leverage full Ninja capability within Medusa C2</li> <li>- Will continue efforts in alignment with the DoD's JCO</li> </ul> |  |  |  |
|--|--|--|--|

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| <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding increased due to inflation costs</p> |  |  |  |
|--|--|--|--|

|                         |       |        |        |
|-------------------------|-------|--------|--------|
| <b>Title:</b> ABADS(MD) | 0.000 | 42.135 | 73.276 |
|-------------------------|-------|--------|--------|

|   |  |  |  |
|---|--|--|--|
| <p><b>Description:</b> The initial phase of this effort will leverage AF and Joint C2 capabilities to develop a prototype ABADS(MD) capability optimized for AF defense of airbases and other critical infrastructure. The AF will integrate the prototype BMC2 system with existing sensors and a classified non-kinetic defense capability.</p> |  |  |  |
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| <p><b>FY 2023 Plans:</b></p> <ul style="list-style-type: none"> <li>- Will define ABADS(MD) system requirements</li> <li>- Will initiate prototype efforts for ABADS(MD)</li> <li>- Will develop tailored ABADS(MD) BMC2 software application</li> <li>- Will identify and assess candidate Integrated Fire Control Center architecture solutions</li> </ul> |  |  |  |
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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0207522F / <i>Airbase Air Defense Systems (ABADS)</i> |
|--|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p>- Will identify and assess candidate platform/infrastructure agnostic ABADS(MD) BMC2 Software</p> <p><b>FY 2024 Plans:</b></p> <ul style="list-style-type: none"> <li>- Will continue software development utilizing an agile Development, Security, and Operations (DevSecOps) approach</li> <li>- Will integrate all software, including joint integrated fire control solution, track manager, tactical radios, ABMS network compatibility and other requirements as specified in the Rapid Prototyping Requirements Document (RPRD)</li> <li>- Will demonstrate joint service integration with JTMC and JTIFC capability in ABADS(MD)</li> <li>- Will demonstrate an interface into an agreed upon ABMS architecture and C-sUAS/C-RAM C2 networks</li> <li>- Will demonstrate compatibility with Tactical Operations Center (TOC) family of systems</li> <li>- Will demonstrate cost-effective integrated fire control solution for PACAF AOR</li> </ul> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>ABADS(MD) funding increased from FY23 to FY24 in order to support the rapid ramp-up of program prototyping efforts in line with program goals and schedule. The funding supports design, software development, system integration and testing activities for multiple vendors as they work to competitively deliver a solution for Air Force evaluation and selection.</p> |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 10.526         | 47.465         | 78.867         |

| <b>D. Other Program Funding Summary (\$ in Millions)</b>                              |                |                |                               |                              |                                |                |                |                |                |                                   |                   |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| <u>Line Item</u>  | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
| • OPAF 03 0207522F:<br><i>Airbase Air Defense Systems (ABADS) for Missile Defense</i> | -              | -              | -                             | -                            | -                              | 64.451         | 83.297         | 128.817        | 190.097        | Continuing                        | Continuing        |
| • OPAF 03 0207522F.:<br><i>Airbase Air Defense Systems (ABADS) for C-sUAS</i>         | 42.168         | 23.911         | 5.029                         | -                            | 5.029                          | 9.529          | 12.052         | 12.289         | 12.535         | Continuing                        | Continuing        |

**Remarks**

**E. Acquisition Strategy**  
ABADS(MD) is a Middle Tier of Acquisition, Rapid Prototyping, and follow-on Rapid Fielding effort. This strategy aims to develop -- production-ready -- airbase defense systems with a modern software architecture, processes, and support tools which enable the integration of cooperative defense systems. Example integration services include, but are not limited to, establishing CI/CD software pipelines, implementing Agile DevSecOps processes, and deploying model-based design. The AF plans to leverage existing ID/IQ contracts and parallel joint efforts to deliver system prototypes that meet warfighter requirements. The intent is to achieve validation of these

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0207522F / <i>Airbase Air Defense Systems (ABADS)</i> |
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systems via a series of tests and demonstrations in operationally relevant environments. The Milestone Decision Authority (MDA) for this effort is the Program Executive Officer (PEO) for the Command, Control, Communications and Battle Management (C3BM) portfolio.

C-sUAS implements a "Government-as-the-Integrator" approach by procuring engineering and integration services to supplement Government resources, in an effort to keep pace with the adversary threat environment. For FY24, the primary efforts endeavor to improve cybersecurity posture, and resolve system gaps. Example integration services also include, but are not limited to, establishing a continuous integration/continuous deployment (CI/CD) software pipeline, implementing Agile DevSecOps processes and deploying model-based design. As possible, the Government will leverage small business innovative research opportunities to generate new code to produce capabilities for detection and defeat of airborne threats. The MDA for this effort is the PEO for the Digital Systems portfolio.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207522F / Airbase Air Defense System<br>(ABADS) | <b>Project (Number/Name)</b><br>640410 / Tech Maturation & Risk Reduct<br>s |
|--|---|---|

| <b>Product Development (\$ in Millions)</b>             |                        |                                   |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|-----------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                                      | Contract Method & Type | Performing Activity & Location    | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| ABADS(C-sUAS) - Joint Serv System Development           | Various                | Not specified. : TBD              | -           | 1.704   | Jul 2022   | 1.552   | Nov 2022   | 1.231        | Nov 2023   | -           |            | 1.231         | Continuing       | Continuing | -                        |
| ABADS(C-sUAS) - New Platform Development                | Various                | Not specified. : TBD              | -           | 0.500   | Jan 2022   | 1.376   | May 2023   | 0.760        | May 2024   | -           |            | 0.760         | Continuing       | Continuing | -                        |
| ABADS(C-sUAS) - Software Development                    | Various                | Not specified. : TBD              | -           | 3.200   | Jul 2022   | 1.852   | May 2023   | 1.550        | May 2024   | -           |            | 1.550         | Continuing       | Continuing | -                        |
| ABADS(MD) - Prototype Development (Hardware / Software) | C/CPFF                 | 2.1 - Proto / 2.2 s/w : WPAFB, OH | -           | -       |            | 24.435  | May 2023   | 56.191       | May 2024   | -           |            | 56.191        | Continuing       | Continuing | -                        |
| ABADS(MD) - BMC2 Risk Reduction                         | MIPR                   | 2.1 - Prototyping : TBD           | -           | -       |            | 1.820   | Mar 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| ABADS(MD) - Non-Kinetic Effector Development            | C/CPFF                 | 2.1 - Prototyping : WPAFB, OH     | -           | -       |            | 6.000   | Mar 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| ABADS(MD) - Sensor Laydown Study                        | TBD                    | 2.1 - Prototyping : TBD           | -           | -       |            | 4.000   | Mar 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>   |                        |                                   | -           | 5.404   |            | 41.035  |            | 59.732       |            | -           |            | 59.732        | Continuing       | Continuing | N/A                      |

| <b>Support (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item              | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Direct Cite Authority           | Various                | Not specified. : TBD           | -           | 0.251   | Apr 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                 |                        |                                | -           | 0.251   |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | N/A                      |

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| ABADS(C-sUAS) - Test                        | Various                | Not specified. : TBD           | -           | 1.100   | Jun 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| ABADS(MD) - Test                            | Various                | 2.3 - System Testing : TBD     | -           | -       |            | 2.000   | Jun 2023   | 7.855        | Nov 2023   | -           |            | 7.855         | Continuing       | Continuing | 18.380                   |



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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0207522F / Airbase Air Defense System<br>(ABADS) | <b>Project (Number/Name)</b><br>640410 / Tech Maturation & Risk Reduct<br>s (ABADS) |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   |            |
|---|------------|
| <b>ABADS(C-sUAS) - Events</b>   |            |
| 1.1 - ABADS(C-sUAS) - Joint Service Lead System Development                 | [REDACTED] |
| 1.2 - ABADS(C-sUAS) - Software Development                                  | [REDACTED] |
| 1.3 - ABADS(C-sUAS) - Test  | [REDACTED] |
| 1.4 - ABADS(C-sUAS) - New Platform Development                              | [REDACTED] |
| 1.5 - ABADS(C-sUAS) - Systems Engineering                                   | [REDACTED] |
| <b>ABADS(MD) - Events</b>   |            |
| 2.1 - ABADS(MD) - Prototype Development                                     | [REDACTED] |
| 2.2 - ABADS(MD) - BMC2 Development (Software)                               | [REDACTED] |
| 2.3 - ABADS(MD) - Prototype Testing   | [REDACTED] |
| 2.4 - ABADS(MD) - Operational Software Continuous Integration/Test/Delivery | [REDACTED] |
| 2.5 - ABADS(MD) - Operations and Sustainment                                | [REDACTED] |



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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0207522F / Airbase Air Defense System<br>(ABADS) | <b>Project (Number/Name)</b><br>640410 / Tech Maturation & Risk Reduct<br>s (ABADS) |

Schedule Details

| Events by Sub Project   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b>ABADS(C-sUAS) - Events</b>   |         |      |         |      |
| 1.1 - ABADS(C-sUAS) - Joint Service Lead System Development                 | 2       | 2022 | 4       | 2028 |
| 1.2 - ABADS(C-sUAS) - Software Development                                  | 3       | 2022 | 4       | 2028 |
| 1.3 - ABADS(C-sUAS) - Test  | 3       | 2022 | 4       | 2028 |
| 1.4 - ABADS(C-sUAS) - New Platform Development                              | 2       | 2022 | 4       | 2028 |
| 1.5 - ABADS(C-sUAS) - Systems Engineering                                   | 2       | 2022 | 4       | 2028 |
| <b>ABADS(MD) - Events</b>   |         |      |         |      |
| 2.1 - ABADS(MD) - Prototype Development                                     | 3       | 2023 | 1       | 2025 |
| 2.2 - ABADS(MD) - BMC2 Development (Software)                               | 3       | 2023 | 1       | 2025 |
| 2.3 - ABADS(MD) - Prototype Testing   | 3       | 2024 | 4       | 2025 |
| 2.4 - ABADS(MD) - Operational Software Continuous Integration/Test/Delivery | 4       | 2025 | 4       | 2028 |
| 2.5 - ABADS(MD) - Operations and Sustainment                                | 4       | 2025 | 4       | 2028 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0208030F / <i>War Reserve Materiel - Ammunition</i> |
|--|--|

| COST (\$ in Millions)                                | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                                | -           | 3.943   | 10.288  | 8.175        | 0.000       | 8.175         | 10.380  | 10.425  | 10.512  | 10.892  | Continuing       | Continuing |
| 648030: <i>Operational Weaponeering and Analysis</i> | -           | 3.943   | 10.288  | 8.175        | 0.000       | 8.175         | 10.380  | 10.425  | 10.512  | 10.892  | Continuing       | Continuing |
| Quantity of RDT&E Articles                           | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**Note**

The AF has assumed operational support and development of the Integrated Munitions Effects Assessment (IMEA) software program from the Defense Threat Reduction Agency.

**A. Mission Description and Budget Item Justification**

The Operational Weaponeering and Analysis (OWA) branch in the Weapons PEO provides mission critical classified weapons' effectiveness analysis and Modeling and Simulation (M&S) tools in direct support of the Air Combat Command (ACC) Targeting mission. The M&S Targeting tool capabilities are designed to meet both Air Force (AF) Master Plan and DoD National Defense Strategy objectives and LOEs.

The Weapons PEO within AFLCMC is integrating ACC and AFRL MAJCOM goals to establish a Digital Engineering and Transformation path to create a 'pipeline' of capabilities that will support weapon and target requirements integration from R&D to Operational Warfighting within ACC, Combatant Commands (CCMDs), and other DoD Intelligence Agencies. OWA provides mission critical National Security Software (NSS) M&S software to meet instructions and directives found in CJCSI 3160 and 3170, as well as, AFI 14-401 and JP 3-60. M&S classified software tools are operationally critical to overall mission success and weapons employment. Weapons employment is not legally possible until a complete target and weapon analysis has been completed. The classified M&S software tools are in constant development to support evolving weapon phenomenology (conventional, directed energy, high power microwave, cyber, hypersonic, etc.) within the Weapons PEO and target modeling of a wide range of multi-domain targets, which includes structural, ground mobile, ships, and more.

The Integrated Munitions Effects Analysis (IMEA) software is a classified mission critical program that provides Air Force Operational Warfighters with unique analytical capabilities. These unique capabilities are associated with Hard Deeply Buried Targets (HDBTs), Nuclear Weapons, and Weapons of Counter Mass Destruction (C-WMD) weapons employment. In addition, IMEA also analyzes national strategic sites facility defeat information with Nuclear and WMD weapons in support of Global Strike Command operational warfighter requirement. IMEA is also the software for Massive Ordnance Penetrator (MOP) and Massive Ordnance Air Blast (MOAB) lethality estimates in DoD.

The Air Force Target and Effect Software (AFTES) provides an all-domain weapon and target capability to support Advanced Target Development and Intermediate Target Development within ACC and Joint environments. This classified software creates software that is digital, agile, and open. The tool is focused on integration of capabilities from ABMS into the JADC2 environment within a single open Modelling and Simulation (M&S) Engagement Framework to provide capabilities to the tactical edge. In addition, AFTES will draw its requirements from the ACC Agile Combat Employment (ACE) LOE to meet objectives laid out by the CSAF.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0208030F / <i>War Reserve Materiel - Ammunition</i> |
|--|--|

In addition to operational support, IMEA and AFTES provides analytical reachback for both operational and weapon acquisition communities. OWA also aligns with Air Force Research Laboratory (AFRL) and Defense Threat Reduction Agency (DTRA) Research and Development (R&D) weapon lethality and effectiveness missions to create an R&D pipeline of capabilities all maintained in a single M&S software framework which allows the software to be easily developed, deployed, and maintained within the OWA Division.

The AF assumed operational support and development of the IMEA program from the Defense Threat Reduction Agency in FY22. DTRA will continue to support Air Force with basic R&D research of new capabilities associated with HDBT, Nuclear, and WMD as defined by Memorandum of Agreement (MOA) between DTRA and the AF. OWA has become the operational transition partner for DTRA and AFRL to integrate and field all weapon and target R&D technology to AF and other Joint Environments.

This program leverages Digital acquisition tenets of open, agile, and digital. Invests in analytical, information management, data management, digital environments, networks, facilities, and security infrastructure upgrades directly supporting development and sustainment of this program's capabilities, while leveraging DoD and DAF enterprise IT solutions.

The FY2024 funding request was reduced by \$2.163 million to account for the availability of prior year execution balances.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 \$0.300M was expended for civilian pay expenses in this program element, and in FY23 \$0.350M is forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b><u>FY 2022</u></b> | <b><u>FY 2023</u></b> | <b><u>FY 2024 Base</u></b> | <b><u>FY 2024 OCO</u></b> | <b><u>FY 2024 Total</u></b> |
|---|-----------------------|-----------------------|----------------------------|---------------------------|-----------------------------|
| Previous President's Budget                       | 3.943                 | 10.288                | 10.315                     | 0.000                     | 10.315                      |
| Current President's Budget                        | 3.943                 | 10.288                | 8.175                      | 0.000                     | 8.175                       |
| Total Adjustments                                 | 0.000                 | 0.000                 | -2.140                     | 0.000                     | -2.140                      |
| • Congressional General Reductions                | 0.000                 | 0.000                 |                            |                           |                             |
| • Congressional Directed Reductions               | 0.000                 | 0.000                 |                            |                           |                             |
| • Congressional Rescissions                       | 0.000                 | 0.000                 |                            |                           |                             |
| • Congressional Adds                              | 0.000                 | 0.000                 |                            |                           |                             |
| • Congressional Directed Transfers                | 0.000                 | 0.000                 |                            |                           |                             |
| • Reprogrammings                                  | 0.000                 | 0.000                 |                            |                           |                             |
| • SBIR/STTR Transfer                              | 0.000                 | 0.000                 |                            |                           |                             |
| • Other Adjustments                               | 0.000                 | 0.000                 | -2.140                     | 0.000                     | -2.140                      |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0208030F / <i>War Reserve Materiel - Ammunition</i> |
|--|--|

**Change Summary Explanation**

The FY24 funding request was reduced by \$2.163 million to account for the availability of prior year execution balances.

**C. Accomplishments/Planned Programs (\$ in Millions)**

|   | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|---|---------|---------|--------------|-------------|---------------|
| <p><b>Title:</b> Operational Weaponing and Analysis</p> <p><b>Description:</b> The Operational Weaponing and Analysis (OWA) provides weapons' effectiveness data and classified software Modeling and Simulation (M&amp;S) tools to support the Air Force (AF) Requirements Process, Combatant Commands (COCOMs), and Major Commands (MAJCOMS).</p> <p><b>FY 2023 Plans:</b><br/>OWA will create an AF Weapon and Target (WEPTAR) Operational Users Working Group to review and approve software and targets supported in OWA software tools. OWA will provide this singularly unique forum for AF and Joint service level demonstrations of developmental methodologies and data to support weapon and target effectiveness. Collect, assess and inject operational user and analyst end user feedback into the product backlogs to enhance 'Speed to Fleet' efforts.</p> <p>Continue development and accreditation of the DEVSECOPS pipeline tool stack to support Agile Continuous Integration and Continuous Development (CI/CD) pipeline and provide quarterly Technical Product Previews (TPPs) of evolving phenomenology models and operational capabilities all vetted by the WEPTAR Operational Community stakeholders.</p> <p>Focus on all domain development to include kinetic and directed energy in FY23 to create KE/DE synergistic effects. Being review of Cyber integration into the EndGame Framework architecture. Continue kinetic weapon development to support target and new weapon data models including hypersonics to support multi-domain capabilities within both IMEA and AFTES using the EndGame Enterprise framework to support a common AF and Joint M&amp;S lethality framework. All weapon data, target data and methodology will be hosted in a the Air Force Combined Effects Repository (AFCER). The repository will be hosted on the AF WeaponOne (W1) / RogueOne (R1) Digital Engineering environment.</p> <p>Refactor IMEA weapon and target data and methodologies into a common engagement lethality architecture to enable CI/CD continuous Approval to Operate (cATO) pipeline using by AFTES. Continue to develop AFTES using the AFCER pipeline capabilities that will allow leveraging of hydrocode capabilities developed and supported by Department of Energy (DoE) national labs R&amp;D community.</p> | 3.943   | 10.288  | 8.175        | 0.000       | 8.175         |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0208030F / <i>War Reserve Materiel - Ammunition</i> |
|--|--|

**C. Accomplishments/Planned Programs (\$ in Millions)**

|  | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|--|---------|---------|--------------|-------------|---------------|
| <p>Develop, validate, and accredit improved computer vulnerability and weapons effectiveness in support of warfighter requirements. Integrate Verification, Validation and Accreditation (VV&amp;A) and Independent Verification and Validation (IV&amp;V) efforts into Agile product development processes.</p> <p><b>FY 2024 Base Plans:</b><br/>The AF Weapon and Target (WEPTAR) Operational Users Working Group will review and approve software and targets supported in OWA software tools. OWA will provide this singularly unique forum for AF and Joint service level demonstrations of developmental methodologies and data to support weapon and target effectiveness. Collect, assess and inject operational user and analyst end user feedback into the product backlogs to enhance 'Speed to Fleet' efforts.</p> <p>Will further the development and accreditation of the DEVSECOPS pipeline tool stack to support Agile Continuous Integration and Continuous Development (CI/CD) pipeline and provide quarterly Technical Product Previews (TPPs) of evolving phenomenology models and operational capabilities all vetted by the WEPTAR Operational Community stakeholders.</p> <p>Will continue focus on all domain development to include kinetic and directed energy in FY23 to create KE/DE synergistic effects. Review Cyber integration into the EndGame Framework architecture. Continue kinetic weapon development to support target and new weapon data models including hypersonics to support multi-domain capabilities within both IMEA and AFTES using the EndGame Enterprise framework to support a common AF and Joint M&amp;S lethality framework. All weapon data, target data and methodology will be stored in the Air Force Combined Effects Repository (AFCER), hosted on the AF WeaponOne (W1) / RogueOne (R1) Digital Engineering environment.</p> <p>Continue refactoring IMEA weapon and target data and methodologies into a common engagement lethality architecture to enable CI/CD continuous Approval to Operate (cATO) pipeline usage by AFTES. Continue to develop AFTES using the AFCER pipeline capabilities that will allow leveraging of hydrocode capabilities developed and supported by Department of Energy (DoE) national labs R&amp;D community.</p> |         |         |              |             |               |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0208030F / <i>War Reserve Materiel - Ammunition</i> |
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**C. Accomplishments/Planned Programs (\$ in Millions)**

|  | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|--|---------|---------|--------------|-------------|---------------|
| Develop, validate, and accredit improved computer vulnerability and weapons effectiveness in support of warfighter requirements. Integrate Verification, Validation and Accreditation (VV&A) and Independent Verification and Validation (IV&V) efforts into Agile product development processes.<br><br><b>FY 2024 OCO Plans:</b><br>N/A<br><br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funding decreased due to the availability of prior year execution balances. |         |         |              |             |               |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 3.943   | 10.288  | 8.175        | 0.000       | 8.175         |

**D. Other Program Funding Summary (\$ in Millions)**

| <u>Line Item</u>                                | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024 Base</u> | <u>FY 2024 OCO</u> | <u>FY 2024 Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
|---|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| • PAAF 01 355990:<br><i>Items Less Than \$5</i> | 9.164          | 0.000          | -                   | -                  | -                    | -              | -              | -              | -              | Continuing              | Continuing        |

**Remarks**

**E. Acquisition Strategy**

Performance-based contracts are primarily used for this support. IMEA and AFTES maximize the use of competitive awards and uses various contract types, employs large and small contractors, and is focused to achieve agency socio-economic goals and incorporate DoD acquisition reform initiatives.

Both AFTES and IMEA are paralleling AF Digital Engineering contracting effort to add Agile capabilities into performance contracts. IMEA and AFTES use physics based modeling requiring specialized methodology development unique to specific weapon capabilities. The Operational and Analysis (OWA) has identified multiple sources of software development include both commercial and defense working capital.

OWA identified multiple contacts to support software development efforts including five year indefinite delivery/indefinite quantity contracts (IDIQs) awarded by Army Contracting Command (ACC), General Services Administration (GSA), and Air Force. We are working to award additional GSA contracts to support software development in the future.





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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0208030F / <i>War Reserve Materiel - Ammunition</i> | <b>Project (Number/Name)</b><br>648030 / <i>Operational Weaponeering and Analysis</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |  |
|--|--|
| <b><i>Integrated Munitions Effects Assessment (IMEA)</i></b>   |  |
| Integrated Munitions Effects Assessment (IMEA)                 |  |
| <b><i>Air Force Targeting and Effects Software (AFTES)</i></b> |  |
| Air Force Targeting and Effects Software (AFTES)               |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0208030F / <i>War Reserve Materiel - Ammunition</i> | <b>Project (Number/Name)</b><br>648030 / <i>Operational Weaponeering and Analysis</i> |

Schedule Details

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Integrated Munitions Effects Assessment (IMEA)</i></b>   |         |      |         |      |
| Integrated Munitions Effects Assessment (IMEA)                 | 1       | 2022 | 4       | 2028 |
| <b><i>Air Force Targeting and Effects Software (AFTES)</i></b> |         |      |         |      |
| Air Force Targeting and Effects Software (AFTES)               | 1       | 2022 | 4       | 2028 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0304369F / <i>Cyber Capabilities Support Office (CCSO)</i> |
|--|---|

| COST (\$ in Millions)                                  | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                                  | -           | 16.949  | 0.000   | 0.000        | 0.000       | 0.000         | 0.000   | 0.000   | 0.000   | 0.000   | Continuing       | Continuing |
| 646008: <i>US Cyber Command Technology Development</i> | -           | 16.949  | 0.000   | 0.000        | 0.000       | 0.000         | 0.000   | 0.000   | 0.000   | 0.000   | Continuing       | Continuing |

**A. Mission Description and Budget Item Justification**

**Mission Description.**

The Cyber Capabilities Support Office (CCSO) within the Air Force Concepts, Development, and Management (SAF/CDM) Office is partnered with the New Mexico Institute of Mining and Technology (NMT) to develop the Playas Training and Research Environment (PTRE) at the NMT. This team will: develop a vision and strategy for Multi Domain Operations at the PTRE, facilitate build-out of a research and experimentation environment supporting evaluation and development of Full-Spectrum Multi-Domain Operations from Cyber, Cognitive, Supervisory control and data acquisition (SCADA), to include Terrestrial and airspace through space domains. The development team will also design and develop an "Operator in the Loop" research methodology enabling researchers to evaluate research hypotheses via access to operational platforms to simultaneously conduct integrated training and exercise events. Additionally, the team will establish and re-engineer business processes and usher programs/projects from conceptualization through transition to operational and Service components. Detachment (Det) 1, HQ 55th Wing (WG) provides Information Warfare integration and organizational oversight for operations, training, and infrastructure build-up of PTRE.

**Budget Item Justification**

The NMT in conjunction with the Cyber Capabilities Support Office, and Det 1 HQ 55th Wing is developing an environment at the Playas Training and Research Environment (PTRE) to advance DoD Information Dominance capabilities and effectiveness in support of the National Defense Strategy by replicating a multi-domain, information warfare combat environment for simultaneous operations, cyber enabled kinetic operations, or physically enabled cyber operations, while reducing the research-to-operational fielding timeline.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program 0304369F. In PY \$0.317 M was expended for civilian pay expenses in this program element, and in CY \$0.000 M is forecasted for civilian pay expenses in this program element

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0304369F / <i>Cyber Capabilities Support Office (CCSO)</i> |
|--|---|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 0.000          | 0.000          | 0.000               | 0.000              | 0.000                |
| Current President's Budget                        | 16.949         | 0.000          | 0.000               | 0.000              | 0.000                |
| Total Adjustments                                 | 16.949         | 0.000          | 0.000               | 0.000              | 0.000                |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 17.500         | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -0.551         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 0.000               | 0.000              | 0.000                |

**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

**Project:** 646008: *US Cyber Command Technology Development*

Congressional Add: *U Cyber Command Technology Development*

|   | <b>FY 2022</b> | <b>FY 2023</b> |
|---|----------------|----------------|
|   | 16.949         | 0.000          |
| Congressional Add Subtotals for Project: 646008 | 16.949         | 0.000          |
| Congressional Add Totals for all Projects       | 16.949         | 0.000          |

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|---|----------------|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |   |                      |                |   |                | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0304369F / <i>Cyber Capabilities Support Office (CCSO)</i> |                      |                | <b>Project (Number/Name)</b><br>646008 / <i>US Cyber Command Technology Development</i> |                |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>  | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b>  | <b>FY 2027</b> | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 646008: <i>US Cyber Command Technology Development</i>                  | -                  | 16.949         | 0.000          | 0.000               | 0.000   | 0.000                | 0.000          | 0.000   | 0.000          | 0.000                   | Continuing              | Continuing        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -   | -                    | -              | -   | -              | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

**Mission Description.**

The Cyber Capabilities Support Office (CCSO) within the Air Force Concepts, Development, and Management (SAF/CDM) Office is partnered with the New Mexico Institute of Mining and Technology (NMT) to develop the Playas Training and Research Environment (PTRE) at the NMT. This team will: develop a vision and strategy for Multi Domain Operations at the PTRE, facilitate build-out of a research and experimentation environment supporting evaluation and development of Full-Spectrum Multi-Domain Operations from Cyber, Cognitive, Supervisory control and data acquisition (SCADA), to include Terrestrial and airspace through space domains. The development team will also design and develop an "Operator in the Loop" research methodology enabling researchers to evaluate research hypotheses via access to operational platforms to simultaneously conduct integrated training and exercise events. Additionally, the team will establish and re-engineer business processes and usher programs/projects from conceptualization through transition to operational and Service components. Detachment (Det) 1, HQ 55th Wing (WG) provides Information Warfare integration and organizational oversight for operations, training, and infrastructure build-up of PTRE.

**Budget Item Justification**

The NMT in conjunction with the Cyber Capabilities Support Office, and Det 1 HQ 55th Wing is developing an environment at the Playas Training and Research Environment (PTRE) to advance DoD Information Dominance capabilities and effectiveness in support of the National Defense Strategy by replicating a multi-domain, information warfare combat environment for simultaneous operations, cyber enabled kinetic operations, or physically enabled cyber operations, while reducing the research-to-operational fielding timeline..

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program 0304369F. In PY \$0.317 M was expended for civilian pay expenses in this program element, and in CY \$0.000 M is forecasted for civilian pay expenses in this program element

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  |                |                |
|--|----------------|----------------|
| <b>Congressional Add:</b> U Cyber Command Technology Development   | <b>FY 2022</b> | <b>FY 2023</b> |
|  | 16.949         | 0.000          |
| <b>FY 2022 Accomplishments:</b> - Refined the vision and strategy for Multi Domain Operations at the Playas Training and Research Environment (PTRE) and validated the business case value to the Air Force; engaged with organizations across OSD and academia to support PTRE long-term investment |                |                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0304369F / <i>Cyber Capabilities Support Office (CCSO)</i> | <b>Project (Number/Name)</b><br>646008 / <i>US Cyber Command Technology Development</i> |

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | <b>FY 2022</b> | <b>FY 2023</b> |
|---|----------------|----------------|
| - Continued build-out of the research and experimentation environment supporting evaluation and development of Full-Spectrum Multi-Domain Operations, and Cyber, Cognitive, Supervisory control and data acquisition (SCADA), Terrestrial, Airspace through Space domains. Enhanced infrastructure components expanding research and operational nodes across the complex; Created secure storage for sensitive equipment and enhanced OPSEC through installation of additional security infrastructure and establishment of additional security protocols; acquired additional low cost threat emitters and sensors to expand the threat environment; expanded remote functions; and continued to add additional SCADA testing environments. |                |                |
| - Continued the Development of an "Operator in the Loop" research methodology that enables researchers to evaluate research hypotheses utilizing access to operational platforms to simultaneously develop and conduct integrated training and exercise events. Key elements included enhancement of DET 1 abilities to integrate, manage and prioritize development of PTRE, incorporation of real-world operational imperatives into testing and evaluation objectives, and use of Training, Integration, Experimentation, and Research (TIER) events to evaluate, experiment, and research with new tactics, techniques, processes, and technologies.  |                |                |
| - Continued establishing, re-engineering, and evaluating business processes, ushering programs/projects from conceptualization through transition to operational and Service components.  |                |                |
| <b>FY 2023 Plans:</b> N/A   |                |                |
| <b>Congressional Adds Subtotals</b>   | 16.949         | 0.000          |

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

The Cyber Capabilities Support Office utilizes a tailorable acquisition strategy that facilitates rapid delivery of material and non-material solutions to solve operational Offensive Cyber Operations requirements. This approach allows flexibility for solutions to enter the acquisitions process at any phase of the acquisition life cycle. All plans contain sufficient information for the Milestone Decision Authority to determine readiness to enter into the applicable phase of the acquisition process. CCSO, in conjunction with the Air Force Research Lab (AFRL) and the New Mexico Institute of Mining and Technology (NMT), provides the direction, equipment, research and development, developmental testing, operational test and evaluation, necessary facilities, legal and associated costs supporting cyber innovation leveraging cyber kinetic combat environment funding. In FY21 funds primarily utilize the Playas Electronic Attack & Cyber Environment (PEACE) contract held by AFRL. The PEACE contract provides acquisition of the infrastructure, material and services necessary to implement the strategic vision and assist in the transition of operations to ACC in FY23. In addition, GSA contracts will provide MAJCOM Liaison, SME Program Management Support and SME SETA support.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0304369F / <i>Cyber Capabilities Support Office (CCSO)</i> | <b>Project (Number/Name)</b><br>646008 / <i>US Cyber Command Technology Development</i> |
|--|---|---|

| <b>Product Development (\$ in Millions)</b>   |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Develop vision and strategy; build-out of a research and experimentation environment; Develop "Operator in the Loop" research methodology; Establish and re-engineer business processes | SS/<br>Various         | New Mexico Tech :<br>NM        | -           | 13.406  | Sep 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 13.406     | 13.406                   |
| <b>Subtotal</b>   |                        |                                | -           | 13.406  |            | -       |            | -            |            | -           |            | -             | 0.000            | 13.406     | N/A                      |

| <b>Support (\$ in Millions)</b>   |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Air Combat Command Liaison ,Subject Matter Expert Program Support - Smartronix 47QFCA19F0003  | C/CPAF                 | Smartronix :<br>California, MD | -           | 1.400   | Dec 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 1.400      | 1.400                    |
| Systems Engineering and Technical Assistance (SETA) Support - GSA Noblis 47QFNA19F0075  | SS/CPAF                | Noblis : Reston, VA            | -           | 0.125   | Jul 2023   | -       |            | -            |            | -           |            | -             | 0.000            | 0.125      | 0.123                    |
| Senior Advisor, Information Environment Systems and Programs advises the Director, CDM on strategic direction, messaging, and organization design for Department and Joint OIE efforts. | C/CPAF                 | TBD : TBD                      | -           | 0.467   | May 2023   | -       |            | -            |            | -           |            | -             | 0.000            | 0.467      | 0.467                    |
| Information Warfare integration and organizational oversight for  | MIPR                   | USAF 55 Wing :<br>Offutt, NE   | -           | 0.732   | Jun 2023   | -       |            | -            |            | -           |            | -             | 0.000            | 0.732      | 0.732                    |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0304369F / <i>Cyber Capabilities Support Office (CCSO)</i> | <b>Project (Number/Name)</b><br>646008 / <i>US Cyber Command Technology Development</i> |
|--|---|---|

| <b>Support (\$ in Millions)</b>  |                        |                                  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|----------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location   | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| operations, training, and infrastructure build-up the PTRE - Detachment (Det) 1, HQ 55th Wing (WG) |                        |                                  |             |         |            |         |            |              |            |             |            |               |                  |            |                          |
| Gov Civilian Pay   | SS/FP                  | US Gov Civilian : Washington, DC | -           | 0.317   | Oct 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 0.317      | 0.317                    |
| <b>Subtotal</b>  |                        |                                  | -           | 3.041   |            | -       |            | -            |            | -           |            | -             | 0.000            | 3.041      | N/A                      |

| <b>Management Services (\$ in Millions)</b>  |                        |   |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|---|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location                    | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Contract Management: Playas Electronic Attack and Cyber Environment (PEACE) Contract | SS/FP                  | Air Force Research Lab : Wright-Patterson AFB, OH | -           | 0.502   | Sep 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 0.502      | 0.502                    |
| <b>Subtotal</b>  |                        |   | -           | 0.502   |            | -       |            | -            |            | -           |            | -             | 0.000            | 0.502      | N/A                      |

|  | Prior Years                | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |       |        |
|--|----------------------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|-------|--------|
|  | <b>Project Cost Totals</b> |         |         | -            | 16.949      | -             | -                | -          | -                        | 0.000 | 16.949 |

**Remarks**





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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0304369F / <i>Cyber Capabilities Support Office (CCSO)</i> | <b>Project (Number/Name)</b><br>646008 / <i>US Cyber Command Technology Development</i> |

Schedule Details

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Cyber Training Range</i></b>   |         |      |         |      |
| Refine the vision and strategy for Multi Domain Operations at the Playas Training and Research Environment (PTRE)) | 4       | 2022 | 4       | 2023 |
| Continue build-out of the research and experimentation environment   | 4       | 2022 | 4       | 2023 |
| Continue the Development of an "Operator in the Loop research methodology  | 4       | 2022 | 4       | 2023 |
| Continue establishing, re-engineering, and evaluating business processes   | 4       | 2022 | 4       | 2023 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0305236F I <i>Common Data Link Executive Agent (CDL EA)</i> |
|--|--|

| COST (\$ in Millions)                 | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                 | -           | 43.881  | 37.460  | 25.157       | 0.000       | 25.157        | 33.291  | 34.119  | 34.820  | 36.080  | Continuing       | Continuing |
| 641334: <i>Common Data Link (CDL)</i> | -           | 43.881  | 37.460  | 25.157       | 0.000       | 25.157        | 33.291  | 34.119  | 34.820  | 36.080  | Continuing       | Continuing |
| Quantity of RDT&E Articles            | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

Common Data Link Executive Agent (CDL EA) provides the DoD standard for interoperable, multi-service, multi-agency, Intelligence, Surveillance, and Reconnaissance (ISR) datalinks for 15,000 DoD manned/unmanned airborne and ground terminals. As the DoD CDL EA, the Air Force is responsible for cross-service application of CDL RDT&E Military Intelligence Program (MIP) funds facilitating compliance to DoD mandates. The CDL EA develops, modifies, distributes, and maintains specifications for the CDL waveform family; ensuring design configuration control, commonality, and interoperability among ISR platforms. Additionally, funds support managing resources allocated for development, maturation, and migration of CDL technologies.

CDL EA enables compliance with OSD mandates to effectively utilize spectrum, use approved cryptographic equipment, and provide direct support to current operations. CDL is a vital link in DoD's existing and emerging communication architectures, providing flexibility to accommodate Command and Control (C2) data and myriad types of Signals Intelligence (SIGINT), Geospatial Intelligence (GEOINT), and Full-Motion Video (FMV) data. The CDL specifications permit current and future ISR asset operations worldwide by providing sensor data directly via point-to-point and air-to-air or compatible satellite broadcast links to ground sites, airborne platforms, and dismounted users to support Joint All-Domain Command and Control (JADC2) warfare.

CDL EA's research and development activities support a broad array of tactical (including tactical data links (TDL) and high capacity backbone (HCB)), operational, and strategic ISR users. High priority investment activities support and include: achieving higher data rates, open architecture development, multi-access and multi-node network management, cryptographic modernization, advancements needed to operate in contested environments, terminal and antenna design enhancements, operations in other spectral bands for spectrum efficiency. Activities also include studies and analysis to support current and future requirements documentation, program planning and execution. CDL prototype terminal designs provide for future technology insertion and reduce non-recurring engineering and life-cycle costs to the user.

In addition, the Cryptographic Core Modernization (CCM) thrust enables CDL to develop a miniaturized gigabit rate cybersecurity devices capable of securing CDL data through improving Transportation Security (TRANSEC) capabilities. The miniaturized Cybersecurity device will allow faster throughput while reducing Size, Weight, and Power (SWaP) requirements.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F,

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|  |  |
|--|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i> |
|--|--|

0606398F. In FY22 \$0.444M was expended for civilian pay expenses in this program element, and in FY23 \$0.450M is forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024 Base</u> | <u>FY 2024 OCO</u> | <u>FY 2024 Total</u> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 43.881         | 37.460         | 32.487              | 0.000              | 32.487               |
| Current President's Budget                        | 43.881         | 37.460         | 25.157              | 0.000              | 25.157               |
| Total Adjustments                                 | 0.000          | 0.000          | -7.330              | 0.000              | -7.330               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | -7.330              | 0.000              | -7.330               |

**Change Summary Explanation**

The FY 2024 funding request was reduced by [7.330] million to account for the availability of prior year execution balances.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Common Data Link (CDL) Technology Advancement   | 19.100         | 14.062         | 11.757         |
| <b>Description:</b> CDL evolutionary concept development, exploratory prototyping, advanced technology demonstrations, and studies of emerging technologies and capability gaps.  |                |                |                |
| <b>FY 2023 Plans:</b>   |                |                |                |
| - Continue to research and evaluate technology developments for enhancing the CDL enterprise networking architecture, to include network management devices, applications and advanced algorithms.                        |                |                |                |
| - Continue to research, evaluate and develop more spectrally efficient waveforms to support Combatant Command demand for higher bandwidth transmission and improved jam resistant capabilities.                           |                |                |                |
| - Continue to research, evaluate and develop improvements to CDL waveforms to lower probability of detection and interception to support Combatant Command demand for improved covertiness of ground and airborne forces. |                |                |                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|--|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i> |
|--|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <ul style="list-style-type: none"> <li>- Continue development of enhanced, CDL-based Intelligence, Surveillance and Reconnaissance (ISR) communication capabilities across multiple platforms and echelons among U.S and allied partners.</li> <li>- Continue development of a collaborative CDL modeling and simulation environment using Navy Research Lab's Extendable Mobile Ad-Hoc Network Emulator (EMANE) framework for CDL performance analysis and waveform advancements. The CDL EMANE environment will be the baseline for joint Service and vendor collaboration as the community modernizes CDL for the future fight.</li> <li>- Continue waveform performance analysis of current CDL capabilities and future enhancements on their ability to achieve mission success in National Defense Strategy (NDS) derived scenarios to focus future CDL modernization efforts to update the CDL specifications.</li> <li>- Continue analysis and study of multi-beam antenna technology to further improve CDL networking and Low Probability of Interception / Low Probability of Detection / Anti-Jam (LPI/LPD/AJ) capabilities in future contested battlespace.</li> <li>- Continue antenna array modernization with the Extremely Wideband Operations (EWO) antenna array research and development.</li> <li>- Continue to research, evaluate and develop an Open Systems Architecture to improve CDL enterprise interoperability and terminal design flexibility.</li> <li>- Continue prototyping and advanced technology demonstrations in support of emerging communication backbone architecture, including high capacity backbone (HCB) development, across multi-domains.</li> <li>- Continue requirements and design improvements for more robust BE-CDL support to smaller Group 1 UAV.</li> <li>- Continue exploratory prototyping efforts and advanced technology demonstrations in support of emerging communication backbone architecture, including HCB development, across air, space and terrestrial layers, to include agile high capacity data transport, assured communications and multi-mode access network.</li> <li>- Continue research and evaluate developing Artificial Intelligence (AI) technologies to support faster correlation and fusion of ISR and CDL network management processes.</li> <li>- Continue to research and evaluate developing technologies to minimize the National Security Agency (NSA) required certification requirements for terminals while standardizing Communications Security (COMSEC) and Transmission Security (TRANSEC) implementation.</li> </ul> <p><b>FY 2024 Plans:</b></p> <ul style="list-style-type: none"> <li>- Will continue to research and evaluate technology developments for enhancing the CDL enterprise networking architecture, to include network management devices, applications and advanced algorithms.</li> <li>- Will continue to research, evaluate and develop more spectrally efficient waveforms to support Combatant Command demand for higher bandwidth transmission and improved jam resistant capabilities.</li> <li>- Will continue to research, evaluate and develop improvements to CDL waveforms to lower probability of detection and interception to support Combatant Command demand for improved covertness of ground and airborne forces.</li> </ul> |                |                |                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force   |  | <b>Date:</b> March 2023  |                |                |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>   |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i> |                |                |
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  |  | <b>FY 2022</b>   | <b>FY 2023</b> | <b>FY 2024</b> |
| <ul style="list-style-type: none"> <li>- Will continue development of enhanced, CDL-based Intelligence, Surveillance and Reconnaissance (ISR) communication capabilities across multiple platforms and echelons among U.S and allied partners.</li> <li>- Will continue development of a collaborative CDL modeling and simulation environment using Navy Research Lab's Extendable Mobile Ad-Hoc Network Emulator (EMANE) framework for CDL performance analysis and waveform advancements. The CDL EMANE environment will be the baseline for joint Service and vendor collaboration as the community modernizes CDL for the future fight.</li> <li>- Will continue waveform performance analysis of current CDL capabilities and future enhancements on their ability to achieve mission success in National Defense Strategy (NDS) derived scenarios to focus future CDL modernization efforts to update the CDL specifications.</li> <li>- Will continue analysis and study of multi-beam antenna technology to further improve CDL networking and Low Probability of Interception / Low Probability of Detection / Anti-Jam (LPI/LPD/AJ) capabilities in future contested battlespace.</li> <li>- Will continue antenna array modernization with the Extremely Wideband Operations (EWO) antenna array research and development.</li> <li>- Will continue to research, evaluate and develop an Open Systems Architecture to improve CDL enterprise interoperability and terminal design flexibility.</li> <li>- Will continue prototyping and advanced technology demonstrations in support of emerging communication backbone architecture, including high capacity backbone (HCB) development, across multi-domains.</li> <li>- Will continue requirements and design improvements for more robust BE-CDL support to smaller Group 1 UAV.</li> <li>- Will continue exploratory prototyping efforts and advanced technology demonstrations in support of emerging communication backbone architecture, including HCB development, across air, space and terrestrial layers, to include agile high capacity data transport, assured communications and multi-mode access network.</li> <li>- Will continue research and evaluate developing Artificial Intelligence (AI) technologies to support faster correlation and fusion of ISR and CDL network management processes.</li> <li>- Will continue to research and evaluate developing technologies to minimize the National Security Agency (NSA) required certification requirements for terminals while standardizing Communications Security (COMSEC) and Transmission Security (TRANSEC) implementation.</li> </ul> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Decrease in technology advancement funding relates to transfer of funds from test and evaluation funding to prepare for next formal publication of updated CDL Specification advancements in late FY2025.</p> |  |  |                |                |
| <b>Title:</b> Common Data Link (CDL) Specification Development, Validation, Test and Maintenance   |  | 15.000   | 15.298         | 8.300          |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i> |
|--|--|

|   |                |                |                |
|---|----------------|----------------|----------------|
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|

**Description:** Systems engineering lifecycle for CDL and NATO STANAG 7085 specification development: requirement decomposition, specification development (modeling, maturation, documentation), specification validation (and associated component prototyping), testing, configuration management, and process maintenance.

**FY 2023 Plans:**

- Continue development of vendor and government owner reference implementation of the new LPI/LPD/AJ waveform to perform future test and validation to ensure the CDL specification is accurate and can be built by multiple vendors in the future, therefore keeping the market space open.
- Continue evaluation, analysis and study of network management devices, network and waveform configuration tool development; transition improved technologies into CDL Specification baseline that increases data sharing across Service-specific networks.
- Continue development and advancement of dynamical control algorithms to enable terminals to more efficiently use CDL spectrum. This work is also to validate the CDL Common Control Interface.
- Continue to work with CDL industry partners and DoD Services and Agencies to document, validate, and test common terminal control interfaces through use of commercially recognized standards.
- Continue configuration control of the CDL architecture, standards, specifications and reference artifacts to support open interoperability and open competition.
- Continue development of CDL test equipment capable of compliance testing to the latest, validated version of CDL specifications.

**FY 2024 Plans:**

- Will continue development of vendor and government owner reference implementation of the new LPI/LPD/AJ waveform to perform future test and validation to ensure the CDL specification is accurate and can be built by multiple vendors in the future, therefore keeping the market space open.
- Will continue evaluation, analysis and study of network management devices, network and waveform configuration tool development; transition improved technologies into CDL Specification baseline that increases data sharing across Service-specific networks.
- Will continue development and advancement of dynamical control algorithms to enable terminals to more efficiently use CDL spectrum. This work is also to validate the CDL Common Control Interface.
- Will continue to work with CDL industry partners and DoD Services and Agencies to document, validate, and test common terminal control interfaces through use of commercially recognized standards.
- Will continue configuration control of the CDL architecture, standards, specifications and reference artifacts to support open interoperability and open competition.

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| <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i> |
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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p>- Will continue development of CDL test equipment capable of compliance testing to the latest, validated version of CDL specifications.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Decrease in technology advancement funding relates to, in part a relative allocation of funds from test evaluation funding to prepare for the next formal publication of updated CDL Specification advancements in late FY025.</p>  |                |                |                |
| <p><b>Title:</b> Common Data Link (CDL) Cryptographic Modernization</p> <p><b>Description:</b> Phased development effort to modernize CDL Communications Security (COMSEC) and Transmission Security (TRANSEC) devices and standards to maximize performance and reduce Size Weight and Power (SWaP) requirements while supporting interoperability, commonality, modularity, portability, remote management, multi-level security and release to Allied and Coalition partners.</p> <p><b>FY 2023 Plans:</b></p> <ul style="list-style-type: none"> <li>- Continue to research and evaluate developing technologies to minimize the National Security Agency (NSA) required certification requirements for terminals while standardizing Communications Security (COMSEC) implementation.</li> <li>- Continue incorporating data Transmission Security (TRANSEC) support, data handling capabilities, and new cryptographic algorithms into all cryptographic core form factors (i.e., Nano, Mini and Mega).</li> <li>- Complete the upgrades for Nano and Mini crypto cores with customer requested Engineering Change Proposals (ECP) and complete Security Validation Testing (SVT) and subsequent National Security Agency (NSA) Cyber Security Certification.</li> <li>- Continue to ensure CDL family of waveforms meet developing Transmission Security (TRANSEC) requirements as outlined by the Office of Secretary of Defense Chief Information Officer (DoD CIO).</li> <li>- Continue development, prototyping, and First Implementer integration testing of multi-channel, gigabit data rate (Mega) cryptographic cores.</li> <li>- Continue to work with Army Reconfigurable Communications for Small Unmanned Systems (RCSUS) Acquisition program to develop a Type 1 cryptographic solution (Pico) for Group 1 Unmanned Aerial Vehicles (UAVs) that provides algorithmic interoperability, using CCM cryptography, for Full Motion Video (FMV) datalinks with existing manned and unmanned ISR platforms and ground stations.</li> <li>- Continue development and design of common End Cryptographic Units (ECUs) for use with medium- and large-sized ISR terminals.</li> <li>- Continue development of a reference ECU using the Mega CCM crypto core for hardware/software and interface documentation validation.</li> <li>- Continue the advancement of standardized CCM interface specifications for modularity to ease future systems upgrades, facilitate competitive terminal procurements, promote innovation, and maintain backward compatibility with existing Intelligence, Surveillance and Reconnaissance (ISR) systems.</li> </ul> | 9.781          | 8.100          | 5.100          |



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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i> |
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|---|----------------|----------------|----------------|
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|

|  |  |  |  |
|--|--|--|--|
| <ul style="list-style-type: none"> <li>- Continue development, advancement and instantiation of CCM algorithms to support FIVE EYE (FVEY), North Atlantic Treaty Organization (NATO), and Coalition operations for secure encrypted and interoperable ISR data exchange among allied and partner nations.</li> <li>- Continue participating in FVEY, NATO and Coalition forums, testing venues and exercises (including live-fly) to ensure secure encrypted and interoperable ISR data exchange among allied and partner nations.</li> </ul> <p><b>FY 2024 Plans:</b></p> <ul style="list-style-type: none"> <li>- Will continue to research and evaluate developing technologies to minimize the National Security Agency (NSA) required certification requirements for terminals while standardizing Communications Security (COMSEC) implementation.</li> <li>- Will continue incorporating data Transmission Security (TRANSEC) support, data handling capabilities, and new cryptographic algorithms into all cryptographic core form factors (i.e., Nano, Mini and Mega).</li> <li>- Will continue to upgrade Nano and Mini crypto cores with customer requested Engineering Change Proposals (ECP) and complete Security Validation Testing (SVT) and subsequent National Security Agency (NSA) Cyber Security Certification.</li> <li>- Will continue to ensure CDL family of waveforms meet developing Transmission Security (TRANSEC) requirements as outlined by the Office of Secretary of Defense Chief Information Officer (DoD CIO).</li> <li>- Will complete development, prototyping, integration testing and Cyber Security Certification of multi-channel, gigabit data rate (Mega) cryptographic cores and move into full rate production and delivery to ISR platforms.</li> <li>- Will continue development, prototyping, and First Implementer integration and testing on a Type 1 cryptographic solution (Pico) for Group 1 Unmanned Aerial Vehicles (UAVs) that provides algorithmic interoperability, using CCM cryptography, for Full Motion Video (FMV) datalinks with existing manned and unmanned ISR platforms and ground stations.</li> <li>- Will continue development and design of common End Cryptographic Units (ECUs) for use with medium- and large-sized ISR terminals.</li> <li>- Will continue development of a reference ECU using the Mega CCM crypto core for hardware/software and interface documentation validation.</li> <li>- Will continue the advancement of standardized CCM interface specifications for modularity to ease future systems upgrades, facilitate competitive terminal procurements, promote innovation, and maintain backward compatibility with existing Intelligence, Surveillance and Reconnaissance (ISR) systems.</li> <li>- Will continue development, advancement and instantiation of CCM algorithms to support FIVE EYE (FVEY), North Atlantic Treaty Organization (NATO), and Coalition operations for secure encrypted and interoperable ISR data exchange among allied and partner nations.</li> </ul> |  |  |  |
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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i> |
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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| - Will continue participating in FVEY, NATO and Coalition forums, testing venues and exercises (including live-fly) to ensure secure encrypted and interoperable ISR data exchange among allied and partner nations.<br><br><b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br>Decrease in funding due to completion of Generation 2 development and production of Nano, Mini and Mega core processors. Future funding focused on advancing internal TRANSEC capabilities and reducing SWaP for support to Group 1 (less than 20 pounds dry weight) ISR assets. |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 43.881         | 37.460         | 25.157         |

**D. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**E. Acquisition Strategy**

The Air Force serves as the DoD Common Data Link Executive Agent, with support from each Service's designated CDL lead and AFLCMC/HNA (Airborne Network Division). The CDL EA develops interoperable ISR data links mandated for use by DoD CIO policy. Once CDL technology development matures and a specification is published, services are responsible for CDL compliant platform and terminal procurement; National Security Agency (NSA) and Joint Interoperability Test Command (JITC) ensure compliance certifications; integration; and installation. Acquisition strategy varies by contract. Whenever possible, contracts are awarded under full and open competition.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i> | <b>Project (Number/Name)</b><br>641334 / <i>Common Data Link (CDL)</i> |
|--|--|--|

| <b>Product Development (\$ in Millions)</b>                                   |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Cryptographic Modernization   | MIPR                   | NSA : Ft Meade, MD             | -           | 8.100   | Dec 2021   | 8.100   | Nov 2022   | 5.173        |            | -           |            | 5.173         | Continuing       | Continuing | -                        |
| Generic ECU   | C/Various              | MIT/LL : San Antonio, TX       | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| CDL Network Modernization   | MIPR                   | Air Force and Navy : Various   | -           | 4.750   | Apr 2022   | 4.216   | Feb 2023   | 4.000        |            | -           |            | 4.000         | Continuing       | Continuing | -                        |
| A2AD Waveform Advancement   | C/CPAF                 | Army : Various                 | -           | 2.500   | Apr 2022   | 2.500   | Mar 2023   | 1.500        |            | -           |            | 1.500         | Continuing       | Continuing | -                        |
| CDL Multi Beam Survey and Demonstration                                       | C/Various              | Navy : Various                 | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| CDL Cognitive Radio Networking Element (CRNE)                                 | C/Various              | Navy : Various                 | -           | 1.330   | Feb 2022   | 0.500   | Dec 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| CDL Performance Analysis  | SS/FP                  | JHU/APL : Various              | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| CDL Resource Management and Bridging Network                                  | C/CPAF                 | Navy : Various                 | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| CDL Life Cycle Cost Analysis  | C/CPAF                 | Various : Various              | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Flexible Ku-Band Adaptive Coding and Group 1/2 UAV CDL and Cryptographic SWaP | C/CPAF                 | Marine Corps : Various         | -           | 2.100   | Jan 2022   | 1.100   | Mar 2023   | 1.000        |            | -           |            | 1.000         | Continuing       | Continuing | -                        |
| Pseudorandom Noise (PM) Code Generation                                       | C/CPAF                 | Air Force : Various            | -           | 0.700   | Jan 2022   | 0.700   | Nov 2022   | 0.300        |            | -           |            | 0.300         | Continuing       | Continuing | -                        |
| CDL Network Control Application   | C/CPAF                 | Air Force : TBD                | -           | 1.950   | Feb 2022   | 1.950   | Aug 2023   | 0.400        |            | -           |            | 0.400         | Continuing       | Continuing | -                        |
| Open Systems Architecture Framework   | C/CPAF                 | Navy : Various                 | -           | 1.000   | Jan 2022   | 0.500   | Mar 2023   | 0.500        |            | -           |            | 0.500         | Continuing       | Continuing | -                        |
| Antenna Array Modernization   | C/CPAF                 | Various : Various              | -           | 1.500   | Oct 2021   | 1.500   | Dec 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Over the Air Parameter Administration   | C/CPAF                 | Various : Various              | -           | 1.000   | Jan 2022   | 0.250   | Feb 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i> | <b>Project (Number/Name)</b><br>641334 / <i>Common Data Link (CDL)</i> |
|--|--|--|

| <b>Product Development (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| <b>Subtotal</b>                             |                        |                                | -           | 24.930  |            | 21.316  |            | 12.873       |            | -           |            | 12.873        | Continuing       | Continuing | N/A                      |

| <b>Support (\$ in Millions)</b>         |                        |                                  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|----------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                      | Contract Method & Type | Performing Activity & Location   | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Service Tech Support & Spec Development | MIPR                   | Various : Various                | -           | 4.200   | Dec 2021   | 3.000   | Dec 2022   | 3.134        |            | -           |            | 3.134         | Continuing       | Continuing | -                        |
| Joint Staff CDL Requirements Support    | MIPR                   | Joint Staff - J6 : Arlington, VA | -           | -       |            | 0.225   | Feb 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| NATO STANAG 7085 Support                | MIPR                   | Air Force : Various              | -           | 0.500   | Feb 2022   | 0.500   | Apr 2023   | 0.350        |            | -           |            | 0.350         | Continuing       | Continuing | -                        |
| Fielded Terminals Database              | C/CPFF                 | Booz Allen : McLean, VA          | -           | 0.800   | Jan 2022   | 0.500   | Mar 2023   | 0.400        |            | -           |            | 0.400         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                         |                        |                                  | -           | 5.500   |            | 4.225   |            | 3.884        |            | -           |            | 3.884         | Continuing       | Continuing | N/A                      |

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Joint Interoperability Test Command Support | Various                | Not specified. : TBD           | -           | 0.800   | Feb 2022   | 0.800   | Jun 2023   | 0.400        |            | -           |            | 0.400         | Continuing       | Continuing | -                        |
| CDL Exercise Support                        | MIPR                   | Various : Various              | -           | 0.500   | Apr 2022   | 0.500   | Jan 2023   | 0.500        |            | -           |            | 0.500         | Continuing       | Continuing | -                        |
| CDL Mode 303/304 Security Validation        | C/CPAF                 | Various : Various              | -           | 1.200   | Feb 2022   | 1.200   | Feb 2023   | 0.500        |            | -           |            | 0.500         | Continuing       | Continuing | -                        |
| Compliance Test Tool                        | C/CPAF                 | Various : Various              | -           | 1.500   | Feb 2022   | 1.000   | Dec 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Cyber Security Initiative                   | C/CPAF                 | Navy : San Diego, CA           | -           | 0.650   | Jan 2022   | 0.650   | Dec 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 4.650   |            | 4.150   |            | 1.400        |            | -           |            | 1.400         | Continuing       | Continuing | N/A                      |



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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i> | <b>Project (Number/Name)</b><br>641334 / <i>Common Data Link (CDL)</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

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| <b>Common Data Link</b>   |  |
| CDL Technology Advancement  |  |
| - CDL Protective Waveform (LPD/AJ) Advancement                      |  |
| - Networking (Multi-Access) Advancement                             |  |
| - Antenna Modernization (Networking and LPD/AJ)                     |  |
| - BE CDL to Group 1 UAV   |  |
| CDL Specification Development, Validation, Test and Maintenance     |  |
| CDL Cryptographic Modernization                                     |  |
| - US/Coalition Multi-algorithm Crypto Core Modules (Generation 2/3) |  |
| - US Multi-algorithm Crypto Core Modules (Generation 2/3)           |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i> | <b>Project (Number/Name)</b><br>641334 / <i>Common Data Link (CDL)</i> |

Schedule Details

| Events by Sub Project   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b>Common Data Link</b>   |         |      |         |      |
| CDL Technology Advancement  | 1       | 2022 | 4       | 2028 |
| - CDL Protective Waveform (LPD/AJ) Advancement                      | 1       | 2022 | 4       | 2028 |
| - Networking (Multi-Access) Advancement                             | 1       | 2022 | 4       | 2028 |
| - Antenna Modernization (Networking and LPD/AJ)                     | 1       | 2022 | 4       | 2028 |
| - BE CDL to Group 1 UAV   | 1       | 2022 | 3       | 2026 |
| CDL Specification Development, Validation, Test and Maintenance     | 1       | 2022 | 4       | 2028 |
| CDL Cryptographic Modernization                                     | 1       | 2022 | 4       | 2028 |
| - US/Coalition Multi-algorithm Crypto Core Modules (Generation 2/3) | 1       | 2022 | 4       | 2028 |
| - US Multi-algorithm Crypto Core Modules (Generation 2/3)           | 1       | 2022 | 2       | 2028 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0305601F / <i>Mission Partner Environments</i> |
|--|---|

| COST (\$ in Millions)            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|----------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element            | -           | 15.819  | 17.378  | 17.727       | 0.000       | 17.727        | 16.757  | 17.157  | 17.491  | 18.103  | Continuing       | Continuing |
| 643783: <i>CENTRIXs Networks</i> | -           | 15.819  | 17.378  | 17.727       | 0.000       | 17.727        | 16.757  | 17.157  | 17.491  | 18.103  | Continuing       | Continuing |
| Quantity of RDT&E Articles       | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

Mission Partner Environment (MPE) enables secure sharing of operational information for collaboration between and among the U.S. and mission partners to include federal, state, local, and tribal agencies, allies, coalition members, host nations, and other nations, United States (US) and international Non-Governmental Organizations, multinational treaty organizations, and private sector organizations. The MPE program enables the United States (US) Department of Defense (DoD) to execute its assigned missions with mission partners across all ranges and phases of military operations to enable combined command and control (C2) of coalition forces while promoting effective exchange of C2 and intelligence information to enable effective use of the US and partner nation military power. MPE improves survivability and lethality of US Forces by incorporating coalition partners and allies ability to share information to include the secret and below releasable environment.

DoD Directive 5101.22E, effective August 5, 2020, designated the Secretary of the Air Force as Executive Agent (EA) for the DoD MPE. The EA, through the Mission Partner Capabilities Office provides DoD wide enterprise-level development, integration, systems engineering, architecture, and synchronized delivery of mission capabilities to include DoD-wide enterprise services that support joint and multinational warfighting functional information sharing. Additionally, the EA executes enterprise-level MPE Planning Programming Budgeting and Execution (PPBE) activities to coordinate the development of MPE budget requirements and provide recommendations to OSD Principle Staff Assistants for PPBE guidance and to the DoD Component heads for performance guidance. The EA also documents the DoD MPE to provide a comprehensive understanding that informs future technical solutions. The FY2024 funding continues the development, integration, and testing of an enterprise architectural engineering solution in alignment with the federated mission networking framework to combine multiple coalition information sharing capabilities into a single MPE, to include modifications necessary to absorb legacy systems capabilities and capacities. In addition, this funding further supports Coalition Interoperability Assurance and Validation (CIAV) technical, analytical, and engineering support to resolve C2 interoperability challenges and evaluate existing and emerging cyber capabilities in support of the MPE ecosystem.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In PY 0.00M was expended for civilian pay expenses in this program element, and in CY 0.00M is forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P) | <b>R-1 Program Element (Number/Name)</b><br>PE 0305601F I Mission Partner Environments |
|---|--|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 16.420         | 17.378         | 17.727              | 0.000              | 17.727               |
| Current President's Budget                        | 15.819         | 17.378         | 17.727              | 0.000              | 17.727               |
| Total Adjustments                                 | -0.601         | 0.000          | 0.000               | 0.000              | 0.000                |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -0.601         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 0.000               | 0.000              | 0.000                |

**Change Summary Explanation**

N/A

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
|---|----------------|----------------|---------------------|--------------------|----------------------|

|   |        |        |        |       |        |
|---|--------|--------|--------|-------|--------|
| <b>Title:</b> Mission Partner Environment   | 15.819 | 17.378 | 17.727 | 0.000 | 17.727 |
| <b>Description:</b> Mission Partner Environment (MPE) enables secure sharing of operational information for collaboration between and among the United States (US) and mission partners to include federal, state, local, and tribal agencies, allies, coalition members, host nations, and other nations, US and international Non-Governmental Organizations, multinational treaty organizations, and private sector organizations. |        |        |        |       |        |
| <b>FY 2023 Plans:</b><br>Continue development, integration, and testing of an enterprise architectural engineering solution in alignment with the federated mission networking framework to combine multiple coalition information sharing capabilities into a single Mission Partner Environment, to include modifications necessary to absorb legacy systems capabilities and capacities.   |        |        |        |       |        |
| <b>FY 2024 Base Plans:</b><br>Continue development, integration, and testing of an enterprise architectural engineering solution in alignment with the federated mission networking framework to combine multiple coalition information sharing capabilities  |        |        |        |       |        |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0305601F / <i>Mission Partner Environments</i> |
|--|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | FY 2022 | FY 2023 | FY 2024<br>Base | FY 2024<br>OCO | FY 2024<br>Total |
|--|---------|---------|-----------------|----------------|------------------|
| into a single Mission Partner Environment, to include modifications necessary to absorb legacy systems capabilities and capacities.<br><br><b>FY 2024 OCO Plans:</b><br>N/A<br><br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funding increased due to inflation. |         |         |                 |                |                  |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 15.819  | 17.378  | 17.727          | 0.000          | 17.727           |

| <b>D. Other Program Funding Summary (\$ in Millions)</b>       |                |                |                         |                        |                          |                |                |                |                |                             |                   |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| <u>Line Item</u>   | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024<br/>Base</u> | <u>FY 2024<br/>OCO</u> | <u>FY 2024<br/>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To<br/>Complete</u> | <u>Total Cost</u> |
| • O&M BA 01 PE 0305601F:<br><i>Mission Partner Environment</i> | 117.619        | 148.402        | 211.769                 | -                      | 211.769                  | 202.229        | 206.251        | 209.001        | 181.060        | Continuing                  | Continuing        |
| • OPAF 03 834010: <i>General Information Technology</i>        | 0.000          | 14.887         | 10.535                  | -                      | 10.535                   | 2.046          | 2.090          | 2.163          | 2.209          | Continuing                  | Continuing        |

**Remarks**  
N/A

**E. Acquisition Strategy**  
Performance-based contracts are primarily used for this support. MPE maximizes the use of competitive awards and uses various contract types, employs large and small contractors, and is focused to achieve agency socio-economic goals and incorporate DoD acquisition reform initiatives.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
|--|---|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0305601F / <i>Mission Partner Environments</i> | <b>Project (Number/Name)</b><br>643783 / <i>CENTRIXs Networks</i> |
|--|---|---|

| <b>Product Development (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| Cross Domain Solution Ops Capabilities      | C/FFP                             | General Dynamics Msn Sys : Fairfax, VA    | -                  | 15.819         | Mar 2022          | 17.378         | Mar 2023          | 17.727              | Feb 2024          | -                  |                   | 17.727               | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>                             |                                   |   | -                  | 15.819         |                   | 17.378         |                   | 17.727              |                   | -                  |                   | 17.727               | Continuing              | Continuing        | N/A                             |
| <b>Project Cost Totals</b>                  |                                   |   | -                  | 15.819         |                   | 17.378         |                   | 17.727              |                   | -                  |                   | 17.727               | Continuing              | Continuing        | N/A                             |

**Remarks**  
N/A

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|   |  |   |
|---|--|---|
| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0305601F / <i>Mission Partner Environmen</i><br><i>ts</i> | <b>Project (Number/Name)</b><br>643783 / <i>CENTRIXs Networks</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

*Development, testing of capabilities, and integration of capacities into mission capabilities with continuity of operations for enterprise services*

Mission Partner Environment

*Development, integration & testing of legacy systems into a combined coalition sharing capability that encompasses a single environment with modified legacy systems capabilities*

Mission Partner Environment

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|  |  |   |
|--|--|---|
| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0305601F / <i>Mission Partner Environmen</i><br><i>ts</i> | <b>Project (Number/Name)</b><br>643783 / <i>CENTRIXs Networks</i> |

Schedule Details

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <i>Development, testing of capabilities, and integration of capacities into mission capabilities with continuity of operations for enterprise services</i>                                   |         |      |         |      |
| Mission Partner Environment  | 1       | 2022 | 4       | 2028 |
| <i>Development, integration &amp; testing of legacy systems into a combined coalition sharing capability that encompasses a single environment with modified legacy systems capabilities</i> |         |      |         |      |
| Mission Partner Environment  | 1       | 2022 | 4       | 2028 |

**Note**  
N/A

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |  |
|--|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0306250F / <i>Cyber Operations Technology Support</i> |
|--|--|

| COST (\$ in Millions)                                  | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                                  | -           | 272.404 | 272.583 | 0.000        | 0.000       | 0.000         | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 544.987    |
| 646008: <i>US Cyber Command Technology Development</i> | -           | 272.404 | 272.583 | 0.000        | 0.000       | 0.000         | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 544.987    |
| Quantity of RDT&E Articles                             | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**Note**  
In FY 2024, PE 0306250F, (Cyber Operations Technology Development), Project 646008, (US Cyber Command Technology Development) efforts were transferred to PE 0306250JCY, (Cyber Operations Technology Support), Project CY06, (Cyber Weapons/Tools), in order to satisfy SECDEF requirements to transfer combatant command support agent responsibilities from the Air Force to the Army.

**A. Mission Description and Budget Item Justification**

US Cyber Command's (USCYBERCOM) mission is to deter or defeat strategic threats to US interests and infrastructure, provide mission assurance for the operations and defense of the Department of Defense information environment, and support the achievement of Joint Force Commander objectives.

USCYBERCOM in conjunction with the Services and National Agencies will develop and expand infrastructure architectures and capabilities/tools to support Cyber Mission Forces (CMF). Focus is on four broad program areas: Joint Common Services, Joint Access Platforms, Joint Weapons, and Joint Sensors.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 \$0.000M was expended for civilian pay expenses in this program element, and in FY23 \$0.000M is forecasted for civilian pay expenses in this program element.

The specific details and aspects of these cyber activities are classified and will be provided on a need-to-know basis.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |  |
|--|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0306250F / <i>Cyber Operations Technology Support</i> |
|--|--|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 282.218        | 234.576        | 0.000               | 0.000              | 0.000                |
| Current President's Budget                        | 272.404        | 272.583        | 0.000               | 0.000              | 0.000                |
| Total Adjustments                                 | -9.814         | 38.007         | 0.000               | 0.000              | 0.000                |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 41.900         |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -9.814         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | -3.893         | 0.000               | 0.000              | 0.000                |

**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

**Project:** 646008: *US Cyber Command Technology Development*

Congressional Add: *Cyber Mission Force Operational Support*

Congressional Add: *Joint Cyberspace Warfighting Architecture*

Congressional Add: *Cyber Command Hunt Forward*

Congressional Add Subtotals for Project: 646008

Congressional Add Totals for all Projects

|   | <b>FY 2022</b> | <b>FY 2023</b> |
|---|----------------|----------------|
|   | 0.000          | 16.000         |
|   | 0.000          | 10.900         |
|   | 0.000          | 15.000         |
| Congressional Add Subtotals for Project: 646008 | 0.000          | 41.900         |
| Congressional Add Totals for all Projects       | 0.000          | 41.900         |

**Change Summary Explanation**

FY23: -\$3.893M in Other Adjustments due to FFRDC reductions.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
|---|----------------|----------------|----------------|

**Title:** Joint Common Services

**Description:** Provides mission/business enabling IT infrastructures, business IT capabilities and life-cycle sustainment; supports internal mission/business operations for USCYBERCOM; and enables JCWA efforts across USCYBERCOM.

The origin, details, and specific aspects of these efforts are classified and will be provided on a need-to-know basis.

**FY 2023 Plans:**

|  |        |        |       |
|--|--------|--------|-------|
|  | 60.504 | 60.550 | 0.000 |
|--|--------|--------|-------|



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|--|--|--|----------------|----------------|
| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force   |  | <b>Date:</b> March 2023  |                |                |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>   |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0306250F / <i>Cyber Operations Technology Support</i> |                |                |
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  |  | <b>FY 2022</b>   | <b>FY 2023</b> | <b>FY 2024</b> |
| <ul style="list-style-type: none"> <li>- Iterate on development of the JCWA as the common joint capability to enable split-based, offensive and defensive operations. Continue sustainment of cyber operations capabilities in support of the CMF.</li> <li>- Develop USCYBERCOM cross-domain solutions that enable automated data flow from access platform to data repository and enable enrichment of data and reporting across security domains.</li> <li>- Expand and sustain fielded capabilities in support of cyber operations.</li> <li>- Develop technologies, policies, and processes needed to enable Intelligence and "indicator" sharing across the DODIN tiers and domains.</li> <li>- Provide enrichment of USCYBERCOM Title 10 data with additional Title 50 sources.</li> <li>- Drive standards and interoperability of JCWA.</li> <li>- Provide critical support to a developing and maturing Acquisition and Contracting entities and improve the efficiency and effectiveness of program management and acquisition processes.</li> </ul> <p><b>FY 2024 Plans:</b><br/>N/A</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>FY24 funds transferred to the Army in accordance with SECDEF requirements.</p> |  |  |                |                |
| <p><b>Title:</b> Joint Access Platforms</p> <p><b>Description:</b> Delivers infrastructures and systems that enable access to networks through traditional and non-traditional means.</p> <p>The origin, details, and specific aspects of these efforts are classified and will be provided on a need-to-know basis.</p> <p><b>FY 2023 Plans:</b></p> <ul style="list-style-type: none"> <li>- Perform technology refresh and upgrade of the Security Operations Center (SOC) to conduct advanced analytics of on-net operations infrastructure</li> <li>- Develop OpenCPI applications against strategic targets and expand the suite of supported hardware</li> <li>- Scale the deployment of proven access enabling components across strategic target spaces and integrate resulting data feeds into Common Operating Pictures</li> </ul> <p><b>FY 2024 Plans:</b><br/>N/A</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>FY24 funds transferred to the Army in accordance with SECDEF requirements.</p>  |  | 68.571   | 48.328         | 0.000          |
| <p><b>Title:</b> Joint Weapons</p>   |  | 121.763  | 115.225        | 0.000          |

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|   |  |  |                |                |
|---|--|--|----------------|----------------|
| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force  |  | <b>Date:</b> March 2023  |                |                |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>  |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0306250F / <i>Cyber Operations Technology Support</i> |                |                |
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   |  | <b>FY 2022</b>   | <b>FY 2023</b> | <b>FY 2024</b> |
| <p><b>Description:</b> Capabilities that are developed, tested, stored, and employed for cyberspace operations.</p> <p>The origin, details, and specific aspects of these efforts are classified and will be provided on a need-to-know basis.</p> <p><b>FY 2023 Plans:</b></p> <ul style="list-style-type: none"> <li>- Enhance and sustain common service exploitation frameworks supporting CMF operations based on evolving operational requirements.</li> <li>- Research, develop, integrate, and procure mission-focused exploit capabilities as a common service to support CMF operations.</li> <li>- Update Personal Security Protection Testing Services to ensure they support current test needs and facilitate delivered cyber weapons through operational acceptance.</li> <li>- Perform Functional Acceptance Testing and deliver fully tested foundational cyber weapons into the Government's Development Evaluation (DE) and Operational Evaluation (OE) processes.</li> <li>- Develop and deliver independently-tested foundational tools suites to incrementally achieve a full complement of required capabilities. The foundational tool suites will provide operational agility for CMF cyberspace operations.</li> <li>- Measure signatures on each spiral of delivered tools to verify uniqueness of tools and diversity of source code.</li> <li>- Develop and deliver specialized tools, exploits, and research to CMF that will enable access to "hard targets."</li> </ul> <p><b>FY 2024 Plans:</b><br/>N/A</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>FY24 funds transferred to the Army in accordance with SECDEF requirements.</p> |  |  |                |                |
| <p><b>Title:</b> Joint Sensors</p> <p><b>Description:</b> Development of capabilities to collect, process, analyze, and share data elements both on- and off-DoDIN environments. Includes both dynamically emplaced capabilities and static, enduring systems and applications.</p> <p>The origin, details and specific aspects of these efforts are classified and will be provided on a need-to-know basis.</p> <p><b>FY 2023 Plans:</b><br/>NC3 Mission pilot was 2 year funding with the results provided to STRATCOM.</p> <p><b>FY 2024 Plans:</b><br/>N/A</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b></p>   |  | 21.566   | 6.580          | 0.000          |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P) | <b>R-1 Program Element (Number/Name)</b><br>PE 0306250F I Cyber Operations Technology Support |
|---|---|

|  |                |                |                |
|--|----------------|----------------|----------------|
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>                | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
| FY24 funds transferred to the Army in accordance with SECDEF requirements. |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>                          | 272.404        | 230.683        | 0.000          |

|  | FY 2022 | FY 2023 |
|--|---------|---------|
| <b>Congressional Add:</b> Cyber Mission Force Operational Support<br><b>FY 2022 Accomplishments:</b> N/A<br><b>FY 2023 Plans:</b> - Improves survivability, sustainability, and adaptability of alias persona  | 0.000   | 16.000  |
| <b>Congressional Add:</b> Joint Cyberspace Warfighting Architecture<br><b>FY 2022 Accomplishments:</b> N/A<br><b>FY 2023 Plans:</b> - Provides additional full time equivalent support at the JCWA Integration Office for systems engineering, enterprise architecture, and agile DevSecOps Management<br>- Provides FTE support for JCWA program integration and management<br>- Accelerates integration of advanced capabilities into JCWA | 0.000   | 10.900  |
| <b>Congressional Add:</b> Cyber Command Hunt Forward<br><b>FY 2022 Accomplishments:</b> N/A<br><b>FY 2023 Plans:</b> - Develops and delivers additional hardware and software kits for Hunt Forward  | 0.000   | 15.000  |
| <b>Congressional Adds Subtotals</b>  | 0.000   | 41.900  |

**D. Other Program Funding Summary (\$ in Millions)**

| Line Item                               | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| • OPAF 03 834320:<br>C3 Countermeasures | 9.881   | 3.808   | 0.000        | -           | 0.000         | 0.000   | 0.000   | 0.000   | 0.000   | Continuing       | Continuing |

**Remarks**

**E. Acquisition Strategy**  
 Facilitate the delivery of technology capabilities to the Cyber Mission Forces, by applying innovative solutions for existing and emerging technologies. Contracts are awarded under full and open competition whenever possible. Variations of both Fixed Price (FP) and Cost Plus (CP) contracting vehicles and the use of Other Transactional Authority (OTA) will be implemented leveraging USCYBERCOM Acquisition authorities. USCYBERCOM will also rely on various Service Component, Combatant Command and National Security Agency contracting offices for procurement of cyber capabilities and contractor support.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
|--|---|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0306250F / <i>Cyber Operations Technol<br/>ogy Support</i> | <b>Project (Number/Name)</b><br>646008 / <i>US Cyber Command Technology<br/>Development</i> |
|--|---|---|

| <b>Product Development (\$ in Millions)</b>                  |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Joint Common Services  | Various                | Multiple Agencies : Various    | -           | 59.403  | Apr 2022   | 59.175  | Apr 2023   | -            |            | -           |            | -             | 0.000            | 118.578    | -                        |
| Joint Access Platforms                                       | Various                | Multiple Agencies : Various    | -           | 67.323  | Apr 2022   | 47.190  | Apr 2023   | -            |            | -           |            | -             | 0.000            | 114.513    | -                        |
| Joint Tools  | Various                | Multiple Agencies : Various    | -           | 119.400 | Apr 2022   | 112.863 | Apr 2023   | -            |            | -           |            | -             | 0.000            | 232.263    | -                        |
| Joint Sensors  | Various                | Multiple Agencies : Various    | -           | 21.173  | Apr 2022   | 6.437   | Apr 2023   | -            |            | -           |            | -             | 0.000            | 27.610     | -                        |
| Congressional Add: Cyber Mission Force Operational Support   | TBD                    | Multiple Agencies : Various    | -           | -       |            | 16.000  | Apr 2023   | -            |            | -           |            | -             | 0.000            | 16.000     | -                        |
| Congressional Add: Cyber Command Hunt Forward                | TBD                    | Multiple Agencies : Various    | -           | -       |            | 15.000  | Apr 2023   | -            |            | -           |            | -             | 0.000            | 15.000     | -                        |
| Congressional Add: Joint Cyberspace Warfighting Architecture | TBD                    | Multiple Agencies : Various    | -           | -       |            | 10.900  | Apr 2023   | -            |            | -           |            | -             | 0.000            | 10.900     | -                        |
| <b>Subtotal</b>  |                        |                                | -           | 267.299 |            | 267.565 |            | -            |            | -           |            | -             | 0.000            | 534.864    | N/A                      |

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| PMA   | Various                | Various : Various              | -           | 5.105   | Apr 2022   | 5.018   | Apr 2023   | -            |            | -           |            | -             | 0.000            | 10.123     | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 5.105   |            | 5.018   |            | -            |            | -           |            | -             | 0.000            | 10.123     | N/A                      |

|                            |  |  | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|--|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> |  |  | -           | 272.404 | 272.583 | -            | -           | -             | 0.000            | 544.987    | N/A                      |

**Remarks**

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0306250F / <i>Cyber Operations Technology Support</i> | <b>Project (Number/Name)</b><br>646008 / <i>US Cyber Command Technology Development</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

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|--|--|
| <b><i>Cyber Operations Technology Development</i></b>                |  |
| Scalable resilient infrastructure (Joint Common Services)            |  |
| CYBERCOM access platform build out capacity (Joint Access Platforms) |  |
| Mission-based platform FOC (Joint Access Platforms)                  |  |
| DDoS for DODIN spiral development (Joint Access Platforms)           |  |
| Cyber UCAP spiral development - 1 (Joint Weapons)                    |  |
| Exploitation framework spiral development (annual) - (Joint Weapons) |  |
| Foundational tool suites (spirals annual) (Joint Weapons)            |  |
| Analytics development (Joint Sensors)                                |  |
| <b><i>Congressional Adds</i></b>                                     |  |
| Cyber Mission Force Operational Support                              |  |
| Cyber Command Hunt Forward   |  |
| Joint Cyberspace Warfighting Architecture                            |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0306250F / <i>Cyber Operations Technology Support</i> | <b>Project (Number/Name)</b><br>646008 / <i>US Cyber Command Technology Development</i> |

Schedule Details

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Cyber Operations Technology Development</i></b>                |         |      |         |      |
| Scalable resilient infrastructure (Joint Common Services)            | 1       | 2022 | 4       | 2023 |
| CYBERCOM access platform build out capacity (Joint Access Platforms) | 1       | 2022 | 4       | 2023 |
| Mission-based platform FOC (Joint Access Platforms)                  | 1       | 2022 | 3       | 2023 |
| DDoS for DODIN spiral development (Joint Access Platforms)           | 1       | 2022 | 4       | 2023 |
| Cyber UCAP spiral development - 1 (Joint Weapons)                    | 3       | 2022 | 2       | 2023 |
| Exploitation framework spiral development (annual) - (Joint Weapons) | 1       | 2022 | 4       | 2023 |
| Foundational tool suites (spirals annual) (Joint Weapons)            | 1       | 2022 | 4       | 2023 |
| Analytics development (Joint Sensors)                                | 1       | 2022 | 4       | 2023 |
| <b><i>Congressional Adds</i></b>                                     |         |      |         |      |
| Cyber Mission Force Operational Support                              | 3       | 2023 | 3       | 2024 |
| Cyber Command Hunt Forward   | 3       | 2023 | 3       | 2024 |
| Joint Cyberspace Warfighting Architecture                            | 3       | 2023 | 3       | 2024 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |   |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0306415F / <i>Enabled Cyber Activities</i> |
|--|---|

| COST (\$ in Millions)                                  | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                                  | -           | 23.511  | 16.728  | 0.000        | 0.000       | 0.000         | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 40.239     |
| 646008: <i>US Cyber Command Technology Development</i> | -           | 23.511  | 16.728  | 0.000        | 0.000       | 0.000         | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 40.239     |
| Quantity of RDT&E Articles                             | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**Note**

In FY 2024, PE 0306415F, (Cyber Operations Technology Development), Project 646008, (US Cyber Command Technology Development) efforts were transferred to PE 0208059JCYF, (CYBERCOM Activities), Project CY04, (CYBERCOM Activities), in order to satisfy SECDEF requirements to transfer combatant command support agent responsibilities from the Air Force to the Army.

**A. Mission Description and Budget Item Justification**

US Cyber Command's (USCYBERCOM) mission is to deter or defeat strategic threats to US interests and infrastructure, provide mission assurance for the operations and defense of the Department of Defense information environment, and support the achievement of joint force commander objectives.

USCYBERCOM develops or procures capabilities to enable Electronic Warfare and cyber-peculiar technologies for use by the Cyber Mission Forces (CMF).

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 \$0.000M was expended for civilian pay expenses in this program element, and in FY23 \$0.000M is forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0306415F / <i>Enabled Cyber Activities</i> |
|--|---|

| <b>B. Program Change Summary (\$ in Millions)</b> | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024 Base</u> | <u>FY 2024 OCO</u> | <u>FY 2024 Total</u> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 24.359         | 16.728         | 0.000               | 0.000              | 0.000                |
| Current President's Budget                        | 23.511         | 16.728         | 0.000               | 0.000              | 0.000                |
| Total Adjustments                                 | -0.848         | 0.000          | 0.000               | 0.000              | 0.000                |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -0.848         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 0.000               | 0.000              | 0.000                |

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Cyber Technology Development  | 23.511         | 16.728         | 0.000          |
| <b>Description:</b> Adapted Electronic Warfare (EW) technology to facilitate the development and delivery of EW and cyber-peculiar capabilities.            |                |                |                |
| The origin, details and specific aspects of these efforts are classified.   |                |                |                |
| <b>FY 2023 Plans:</b>   |                |                |                |
| - Adapt EW technology and cyber-peculiar capabilities to gain access to targeted enemy forces.  |                |                |                |
| - Enhance the open source Open CPI framework that will allow the services and USCYBERCOM to develop Title 10 off-net effects.                               |                |                |                |
| - Migrate segregated capabilities and Cyber/EW weapons systems onto Common Attack Platforms by implementing common frameworks and common hosting solutions. |                |                |                |
| - The specific details and aspects of these cyber activities are classified and will be provided on a need-to-know basis.                                   |                |                |                |
| <b>FY 2024 Plans:</b>   |                |                |                |
| N/A   |                |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b>  |                |                |                |
| FY24 funding transferred to the Army in accordance SECDEF requirements.   |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 23.511         | 16.728         | 0.000          |



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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0306415F / <i>Enabled Cyber Activities</i> |
|--|---|

**D. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**E. Acquisition Strategy**

Facilitate the delivery of new Electronic Warfare (EW) cyber capability, by applying innovative solutions for existing and emerging technologies. Contracts are awarded under full and open competition whenever possible. Variations of both Fixed Price (FP) and Cost Plus (CP) contracting vehicles will be executed and managed by USCYBERCOM Acquisition authority, as well as various Service Component contracting offices, other Defense Agency contracting offices and the National Security Agency contracting offices.



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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0306415F / <i>Enabled Cyber Activities</i> | <b>Project (Number/Name)</b><br>646008 / <i>US Cyber Command Technology Development</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |  |
|--|--|
| <b><i>Electronic Warfare (EW) Capabilities</i></b> |  |
| EW Capability Spiral (annual)                      |  |
| SATCOM Capability Spiral (annual)                  |  |
| Communications Capabiliy Spiral (annual)           |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0306415F / <i>Enabled Cyber Activities</i> | <b>Project (Number/Name)</b><br>646008 / <i>US Cyber Command Technology Development</i> |

Schedule Details

| Events by Sub Project                              | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Electronic Warfare (EW) Capabilities</i></b> |         |      |         |      |
| EW Capability Spiral (annual)                      | 1       | 2022 | 4       | 2023 |
| SATCOM Capability Spiral (annual)                  | 1       | 2022 | 4       | 2023 |
| Communications Capabiliy Spiral (annual)           | 1       | 2022 | 4       | 2023 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0708051F / <i>Rapid Sustainment Modernization (RSM)</i> |
|--|--|

| COST (\$ in Millions)                                       | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                                       | -           | 90.117  | 69.000  | 43.431       | 0.000       | 43.431        | 26.976  | 23.734  | 24.387  | 26.118  | 0.000            | 303.763    |
| 648051: <i>Rapid Sustainment Modernization Technologies</i> | -           | 90.117  | 69.000  | 43.431       | 0.000       | 43.431        | 26.976  | 23.734  | 24.387  | 26.118  | 0.000            | 303.763    |
| Quantity of RDT&E Articles                                  | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**A. Mission Description and Budget Item Justification**

The Rapid Sustainment Modernization program provides funding to the Rapid Sustainment Office (RSO). The RSO will develop, test and deploy new technologies for implementation across the sustainment enterprise, to improve readiness, and reduce sustainment costs.

RSO will achieve this by reaching across the sustainment enterprise to include the warfighter, depot maintenance, field maintenance, supply chain and program offices to identify enterprise needs. RSO will then identify, assess, develop, validate and verify new technology projects that support these areas, all while reducing costs and increasing aircraft readiness

RSO New Sustainment technologies such as; Conditioned Based Mtx Plus (CBM+), Advanced Manufacturing (Additive Manufacturing/Coldspray), RSM Technologies to include Digital Engineering, Automation/Robotics, Augmented and Virtual Reality, Austere/Contested environments, Intermittent Fault Detection (IFD) and Black Gold compressor blade coating are evaluated across the technology space in support of the Department of the Air Force (DAF) sustainment enterprise.

This is a new program element created based off the FY 2021 appropriation line item 56A. This requirement is not a new start as it was previously funded and executed with DAF Research, Development, Test and Evaluation (RDT&E) funding.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2023 \$0 was expended for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P) | <b>R-1 Program Element (Number/Name)</b><br>PE 0708051F I Rapid Sustainment Modernization (RSM) |
|---|---|

| <b>B. Program Change Summary (\$ in Millions)</b> | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024 Base</u> | <u>FY 2024 OCO</u> | <u>FY 2024 Total</u> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 65.000         | 0.000          | 0.000               | 0.000              | 0.000                |
| Current President's Budget                        | 90.117         | 69.000         | 43.431              | 0.000              | 43.431               |
| Total Adjustments                                 | 25.117         | 69.000         | 43.431              | 0.000              | 43.431               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 19.445         | 69.000         |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 5.672          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 43.431              | 0.000              | 43.431               |

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u> |
|--|----------------|----------------|----------------|
| <b>Title:</b> Rapid Sustainment Modernization-AM   | 90.117         | 69.000         | 36.231         |
| <b>Description:</b> Advanced Repair and Qualification  |                |                |                |
| <b>FY 2023 Plans:</b><br>Assess new technologies/equipment and develop standardizes processes to allow for procurement of equipment with appropriate funding<br>Bring AM under a single umbrella program to focus technology growth via the RSM AM AGORA Marketplace: a centralized platform accessible via Cloud One to access Government AM capabilities, AM part requests/approvals, and approved AM hardware                         |                |                |                |
| <b>FY 2024 Plans:</b><br>Continue to assess new technologies/equipment and develop standardizes processes to allow for procurement of equipment with appropriate funding<br>Continue to bring AM under a single umbrella program to focus technology growth via the RSM AM AGORA Marketplace: a centralized platform accessible via Cloud One to access Government AM capabilities, AM part requests/approvals, and approved AM hardware |                |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funds decreased due to reduced congressional add funds   |                |                |                |
| <b>Title:</b> Rapid Sustainment Modernization-RSM Technologies   | -              | 0.000          | 5.300          |
| <b>Description:</b> RSM Technologies   |                |                |                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force   |  | <b>Date:</b> March 2023  |                |                |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>   |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0708051F / <i>Rapid Sustainment Modernization (RSM)</i> |                |                |
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  |  | <b>FY 2022</b>   | <b>FY 2023</b> | <b>FY 2024</b> |
| <p><b>FY 2023 Plans:</b><br/>None</p> <p><b>FY 2024 Plans:</b><br/>Intermittent Fault Detection (IFD): Supports efforts to address the No Fault Found issue by enabling the investigation of IFD technologies and the associated process by which to test, evaluate, identify best of breed, deploy, and sustain the assets.</p> <p>Black Gold: Accomplish testing and evaluation of the Black Gold compressor blade coating on turbine engines to enable certification and fleet integration of the coatings on aircraft engines for enhancement of fuel efficiency, improved erosion protection, and associated sustainment benefits.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Increase due to receiving RSIP funds</p>   |  |  |                |                |
| <p><b>Title:</b> Rapid Sustainment Modernization-CBM+</p> <p><b>Description:</b> CBM+</p> <p><b>FY 2023 Plans:</b><br/>None</p> <p><b>FY 2024 Plans:</b><br/>Implementation, expansion, sustainment, and enhancement of CBM+ SBA processes and CBM+ tool-kit to improve reliability of weapon systems, minimize Logistics Analytics Data Environment (BLADE) to enhance the synthesis of data across the enterprise and enhance analysis/unscheduled repairs, synchronize maintenance actions, reduce mission aborts, decrease maintenance costs, and reduce cycle time through Enhanced Reliability Centered Maintenance (eRCM) and Sensor Based Algorithms (SBAs) CBM+ will use databases and information systems such as Basing and decision making information in the RSM CBM+ tool-kit (PANDA)<br/>Investment funding will be used for expansion of software enhancements in Panda and sensor based efforts such as aircraft (a/c) sensor 1553 (BUS) box decoders, sniffers, and SBA advancements.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Increase due to receiving RSIP funds</p> |  | -  | 0.000          | 1.900          |
| <b>Accomplishments/Planned Programs Subtotals</b>  |  | 90.117   | 69.000         | 43.431         |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|  |  |
|--|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0708051F / <i>Rapid Sustainment Modernization (RSM)</i> |
|--|--|

**D. Other Program Funding Summary (\$ in Millions)**

| <u>Line Item</u>                                 | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • OPAF 04 845010: <i>Base Procured Equipment</i> | 0.000          | 0.000          | 20.345                        | 0.000                        | 20.345                         | 20.723         | 21.159         | 21.589         | 22.236         | 0.000                             | 106.052           |

**Remarks**

**E. Acquisition Strategy**

Funding in this program is used toward Rapid Sustainment Office requirements.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0708051F / <i>Rapid Sustainment Modernization (RSM)</i> | <b>Project (Number/Name)</b><br>648051 / <i>Rapid Sustainment Modernization Technologies</i> |
|--|--|--|

| <b>Product Development (\$ in Millions)</b>    |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                             | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Advanced Manufacturing(Additive and Coldspray) | Various                | Various : Wright Patterson, OH | -           | 84.445  | Mar 2023   | 69.000  | Dec 2023   | 34.420       | Dec 2023   | -           |            | 34.420        | Continuing       | Continuing | -                        |
| Conditioned Based Maintenance(CBM+)            | Various                | Various : Wright Patterson, OH | -           | 0.000   | Dec 2022   | -       |            | 1.800        | Dec 2023   | -           |            | 1.800         | Continuing       | Continuing | -                        |
| RSM Technologies                               | Various                | Various : Wright Patterson, OH | -           | 5.672   | Apr 2023   | -       |            | 5.039        | Dec 2023   | -           |            | 5.039         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                                |                        |                                | -           | 90.117  |            | 69.000  |            | 41.259       |            | -           |            | 41.259        | Continuing       | Continuing | N/A                      |

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Program Management Adminstration (PMA)      | Various                | Various : Wright Patterson, OH | -           | -       |            | -       |            | 2.172        | Dec 2023   | -           |            | 2.172         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | -       |            | -       |            | 2.172        |            | -           |            | 2.172         | Continuing       | Continuing | N/A                      |

|  | Prior Years                | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |            |
|--|----------------------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|------------|
|  | <b>Project Cost Totals</b> |         | -       | 90.117       | 69.000      | 43.431        | -                | 43.431     | Continuing               | Continuing |

**Remarks**

FY20 - New areas of additive manufacturing and cold spray technologies, equipment and qualification processes that are maturing and providing benefit to the DAF

FY21 - Digital Engineering/Digital Twin: digital transformation of the existing Air Force fleet to increase operational readiness levels, decrease parts obsolescence and diminishing manufacturing sources required to get mission capable rates to acceptable levels

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0708051F / <i>Rapid Sustainment Modernization (RSM)</i> | <b>Project (Number/Name)</b><br>648051 / <i>Rapid Sustainment Modernization Technologies</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

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| <b><i>Advanced Repair and Qualification Processes</i></b> |  |
| AM/Cold Spray   |  |
| <b><i>Conditioned Based Maintenance Plus</i></b>          |  |
| CBM+  |  |
| <b><i>RSM Technologies</i></b>                            |  |
| RSM Technologies  |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0708051F / <i>Rapid Sustainment Modernization (RSM)</i> | <b>Project (Number/Name)</b><br>648051 / <i>Rapid Sustainment Modernization Technologies</i> |

Schedule Details

| Events by Sub Project                                     | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Advanced Repair and Qualification Processes</i></b> |         |      |         |      |
| AM/Cold Spray   | 2       | 2022 | 4       | 2028 |
| <b><i>Conditioned Based Maintenance Plus</i></b>          |         |      |         |      |
| CBM+  | 2       | 2022 | 4       | 2028 |
| <b><i>RSM Technologies</i></b>                            |         |      |         |      |
| RSM Technologies  | 2       | 2022 | 4       | 2028 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0808737F I <i>Integrated Primary Prevention</i> |
|--|--|

| COST (\$ in Millions)                        | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                        | -           | 0.000   | 9.315   | 9.364        | 0.000       | 9.364         | 8.355   | 7.343   | 7.343   | 7.499   | Continuing       | Continuing |
| 648737: <i>Sexual Assault Prvntion Study</i> | -           | 0.000   | 9.315   | 9.364        | 0.000       | 9.364         | 8.355   | 7.343   | 7.343   | 7.499   | Continuing       | Continuing |
| Quantity of RDT&E Articles                   | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

Following completion of a Presidentially-directed Independent Review Committee [IRC] on Sexual Assaults for the Department of Defense, the Secretary of Defense [SECDEF] directed the implementation of multiple IRC recommendations. The Integrated Prevention PE contains two programs in support of those recommendations: The Air Force Office of Special Investigations [OSI], Records, Investigations and Operations Network [ORION] program and the Interpersonal Self-Directed Violence (ISDV) Prevention program.

Air Force Office of Special Investigations [OSI], Records, Investigations and Operations Network [ORION]:

The Department of the Air Force [DAF] Office of Special Investigations [OSI] is DAF's sole felony-level criminal investigative agency mandated to investigate criminal offenses, to include sexual offenses and interpersonal violence. IRC recommendations C2, C3, C4, 1.8, 2.6a, 3.1, and 3.3a, directed the DAF to increase its ability to collect, analyze, and integrate data related to sexual offenses and interpersonal violence to inform and guide prevention and response. The DAF will develop and deploy the OSI Investigations, Operations, and Records Network [ORION] information system as to satisfy SECDEF requirements.

In tandem with the context above, another key driver for development of ORION is the DAF's requirement to identify a central case management system solution to allow for more effective oversight of and more efficient execution of the DAF's criminal indexing process.

ORION will be a cloud-based, next-generation case management system used to document, manage, store, and report criminal investigative and counterintelligence information involving violations of the Uniform Code of Military Justice and the United States Code. ORION will serve as OSI's central mission application capable of ensuring sexual assaults, intimate partner violence, violent extremism, service-member deaths, and dozens of other crimes are properly investigated and recorded. ORION will be used by over 3,000 OSI personnel including nearly 2,000 federally-credentialed Special Agents at OSI's 300+ global operating locations.

ORION will enable the DAF to modernize criminal indexing processes both operationally and technologically. Operationally, ORION will reduce redundancy, streamline processes, encourage standardization, and decrease administrative burden. The DAF is exploring options to use ORION to replace other systems and enable data transfer to other stakeholders with the goal to increase integration and productivity and avoid duplicative data entry. ORION could also be leveraged to be placed on one or more Special Access Programs [SAP] networks to become a system of record for OSI investigative and security support to DAF SAP programs. Technologically, ORION leverages the affordability, scalability, security, and services provided by cloud computing. Additionally, ORION will be mobile-ready, enabling agents to securely

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force Date: March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0808737F I <i>Integrated Primary Prevention</i> |
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access and document investigative data from mobile devices whenever and wherever needed, thereby increasing efficiency and reducing delays. Lastly, ORION will be built on a low-code/no-code enterprise platform which enables the rapid development, deployment, and sustainment of capability.

The DAF is considering options to leverage ORION and its enterprise low-code/no-code platform for other DAF case management and/or business process management requirements. Such a platform, operated and sustained at the enterprise level, has potential to yield cost savings, operational enhancements, and technical efficiencies as well as reduce DAF overhead. With ORION serving as the initial application, the case management platform could promote the expedited development, deployment, and sustainment of future case management systems at economies of scale.

Air Force Integrated Resilience Office [A1Z], Interpersonal Self-Directed Violence Prevention:

The Department of the Air Force [DAF] Integrated Resilience Directorate [A1Z] is the Air Force's lead agency for the research, development, and analysis of ISDV prevention and resilience programming across The Force. The IRC recommended multiple initiatives to help the Services research, develop, and assess interpersonal and self-directed violence [ISDV] prevention strategies. ISDV encompasses sexual assault, domestic violence, suicide, and resilience. IRC recommendations 2.3, 2.4, 2.6, and 3.5 directed the DAF to implement prevention strategies at organizational and community levels through the modernization of prevention education, training, program evaluation, and improved processes for data collection and analysis. The DAF will execute the IRC's recommendations in support of initiatives to include, but not limited to:

- The Tech-based Machine Learning Initiative - A state-of-the-art DoD prevention research capability that utilizes machine learning algorithms to analyze qualitative data to identify trends that lead to ISDV.
- The Community Prevention Platform [CPP] - A web-based software system that will maintain Installation and Major Command community action plans and facilitate DAF Headquarters ability to track and assess plans.
- The Peer-Network Resilience Training Program [PRTP] - An initiative to analyze and modernize current resilience training processes to more effectively reflect today's generation of Service members.
- The Project Proficiency-based Sexual Assault Training [PSAT] - This initiative will similarly update and expand the current Air Force sexual assault training by implementing tailored-training based on subject knowledge as well as long-term training-competency tracking for Airmen/Guardians over their career cycle.
- The Sexual Assault Prevention Response Virtual Reality [SAPR V] - This initiative will further enhance training initiatives by implementing cutting-edge Virtual Reality capability to more effectively enable Airmen and Guardians to recognize and prevent sexual assault.

The DAF is committed to implementing the Commission's recommendations to more effectively identify behavioral and cultural contributors to ISDV, educate/train Airmen and Guardians to facilitate ISDV prevention, and transparently document and track Installation-level strategies to facilitate evaluation.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0808737F / <i>Integrated Primary Prevention</i> |
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY2022 \$0 was expended for civilian pay expenses in this program element, and in FY2023 \$0 is forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 0.000          | 9.315          | 9.342               | 0.000              | 9.342                |
| Current President's Budget                        | 0.000          | 9.315          | 9.364               | 0.000              | 9.364                |
| Total Adjustments                                 | 0.000          | 0.000          | 0.022               | 0.000              | 0.022                |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 0.022               | 0.000              | 0.022                |

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <b>Title:</b> ORION Continuous Capability & Case Management Framework Development  | 0.000          | 4.140          | 4.174          |
| <b>Description:</b> ORION will be developed, optimized, and enhanced through the completion of iterative software development cycles using an agile software development methodology. Development will focus on building functionality and capability for ORION. Development activities include licensing, system design and architecture, requirements analysis, product building, planning and testing, data migration as required, systems integration, and the establishment and incorporation of various cloud services. Additionally, development includes various services and program support activities for ORION and enabling a larger Air Force Case Management Platform. |                |                |                |
| <b>FY 2023 Plans:</b>  |                |                |                |
| - Initiate development activities for ORION  |                |                |                |
| - Conduct iterative software development and integration of the ORION application  |                |                |                |
| - Optimize, test and complete ORION cloud implementation   |                |                |                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force  |  | <b>Date:</b> March 2023  |                |                |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>  |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0808737F <i>I Integrated Primary Prevention</i> |                |                |
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   |  | <b>FY 2022</b>   | <b>FY 2023</b> | <b>FY 2024</b> |
| <ul style="list-style-type: none"> <li>- Establish an Air Force Case Management Framework</li> <li>- Establish, test, and complete new and existing ORION integrations with other OSI, Air Force, DoD, and criminal justice systems to increase data sharing and mission effectiveness.</li> <li>- Ensure robust ORION system security and support the Risk Management Framework [RMF] through continuous monitoring activities</li> <li>- Support 24/7 operations for global ORION user community through Help Desk operations, functional expertise, technical support, and other user needs</li> <li>- Operate, manage, and maintain ORION application and ORION cloud environment</li> <li>- Deploy fixes to address new and existing software defects and user-identified problems</li> <li>- Develop integrated ORION Business Intelligence [BI] functionality to enhance reporting capability</li> <li>- Initiate discovery planning and development of classified components of ORION</li> <li>- Establish ORION in IL-6 classified cloud environment</li> </ul> <p><b>FY 2024 Plans:</b></p> <ul style="list-style-type: none"> <li>- Will continue iterative software development and integration of the ORION application</li> <li>- Will optimize, test and sustain ORION cloud implementations</li> <li>- Will establish, test, and complete new and existing ORION integrations with other OSI, Air Force, DoD, and criminal justice systems to increase data sharing and mission effectiveness.</li> <li>- Will continue to ensure robust ORION system security and support the Risk Management Framework [RMF] through continuous monitoring activities</li> <li>- Will continue to support 24/7 operations for global ORION user community through Help Desk operations, functional expertise, technical support, and other user needs</li> <li>- Will continue to operate, manage, and maintain ORION application and ORION cloud environment</li> <li>- Will continue deploy fixes to address new and existing software defects and user-identified problems</li> <li>- Will continue planning and development of classified components of ORION</li> </ul> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding increased to cover labor cost.</p> |  |  |                |                |
| <b>Title:</b> ISDVP Research & Development  |  | 0.000  | 5.175          | 5.190          |
| <b>Description:</b> The DAF will conduct numerous research and development initiatives to more effectively determine trends in ISDV events, precursors, and preventative factors. These initiatives include modernizing prevention education and training programs and evaluating their effectiveness; developing software solutions to streamline, modernize, and improve community-level prevention strategies; and leveraging machine learning to determine trends that engender ISDV activities. All initiatives  |  |  |                |                |



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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0808737F / <i>Integrated Primary Prevention</i> |
|--|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| address IRC recommendations and will be designed to improve the overall health and well-being of Total Force Airmen and Guardians.   |                |                |                |
| <p><b>FY 2023 Plans:</b></p> <ul style="list-style-type: none"> <li>- Identify software solutions and develop minimum viable capability to store and track community action plans</li> <li>- Conduct business process mapping initiatives to refine requirements and plan interface coordination</li> <li>- Integrate data push/pull mechanisms with software programs</li> <li>- Develop key markers of success for prevention program evaluation and modernization efforts</li> <li>- Evaluate existing ISDV prevention education/training programs and develop a prioritized modernization strategy</li> <li>- Develop, test, and deploy modernized ISDV prevention education/training programs leveraging advanced training techniques, such as virtual reality</li> <li>- Develop and pilot career-long evaluation plans to track effectiveness</li> <li>- Develop, test, and refine Machine Learning models for to conduct trend analysis on years of Airmen and Guardians' climate surveys and other feedback mechanisms</li> </ul> <p><b>FY 2024 Plans:</b></p> <ul style="list-style-type: none"> <li>- Identify software solutions and develop minimum viable capability to store and track community action plans</li> <li>- Conduct business process mapping initiatives to refine requirements and plan interface coordination</li> <li>- Integrate data push/pull mechanisms with software programs</li> <li>- Develop key markers of success for prevention program evaluation and modernization efforts</li> <li>- Evaluate existing ISDV prevention education/training programs and develop a prioritized modernization strategy</li> <li>- Develop, test, and deploy modernized ISDV prevention education/training programs leveraging advanced training techniques, such as virtual reality</li> <li>- Develop and pilot career-long evaluation plans to track effectiveness</li> <li>- Develop, test, and refine Machine Learning models for to conduct trend analysis on years of Airmen and Guardians' climate surveys and other feedback mechanisms</li> </ul> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding increased to cover labor cost.</p> |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 0.000          | 9.315          | 9.364          |

**D. Other Program Funding Summary (\$ in Millions)**  
N/A

**Remarks**

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force Date: March 2023

**Appropriation/Budget Activity**  
3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)

**R-1 Program Element (Number/Name)**  
PE 0808737F I Integrated Primary Prevention

**E. Acquisition Strategy**

ORION:

ORION will adopt an agile, phased approach to application development and deployment. ORION development will be a collaborative process to include a cadre of experienced Special Agents, functional experts, and software developers. In addition to managing OSI's law enforcement-related criminal investigations information, ORION will also manage counterintelligence investigations and operations. Ultimately, the classified and unclassified versions of ORION will share limited data through an automated, bi-directional, cross-domain solution to ensure users have ready access to both criminal and counterintelligence information. Once complete, ORION will fully subsume OSI's current management systems and serve as OSI's investigative system of record.

In tandem with ORION development, the DAF is considering options to leverage this program to enable a larger DAF Case Management Platform. This platform would provide DAF customers requiring similar case management capabilities with the ability to share and modify system components and workflows, establish best practices, benefit from economies of scale, share/reduce costs, implement uniformity across systems, and decrease time required to deliver capability to end-users. This platform would also lessen overall administrative burdens associated with Clinger-Cohen Act compliance, the Business Capability Acquisition Cycle (BCAC), and program management.

ISDV Prevention:

This effort explores numerous initiatives to ultimately prevent ISDV. The DAF will execute agile processes within all initiatives. Software solutions will develop and deploy minimum viable capability early and continue to refine based on prioritized need. Research and analysis initiatives will seek industry best practices to implement novel technological solutions to these tough problem sets.

Contract strategies will require multiple approaches with a focus on best value and rapid execution. Efforts may also leverage existing AFRL SBIRs and Air University collaborations with Subject Matter Experts (SMEs) and nationally recognized experts from Industry and Academia.

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| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2024 Air Force</b> |  |  |  |  |  |  |  |   |  |  | <b>Date: March 2023</b> |  |  |  |  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                       |  |  |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0808737F / <i>Integrated Primary Prevention</i> |  |  |  | <b>Project (Number/Name)</b><br>648737 / <i>Sexual Assault Prvntion Study</i> |  |  |                         |  |  |  |  |

| <b>Product Development (\$ in Millions)</b>             |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> |                         |                   |                                 |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                               | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| ORION: Application Development & Cloud Implementation   | C/CPAF                            | TBD : TBD                                 | -                  | 0.000          |                   | 2.655          | Feb 2023          | 3.195               | Feb 2024          | -                  |                   | 3.195                | Continuing              | Continuing        | -                               |
| ORION: Cloud Hosting                                    | MIPR                              | AFLCMC : Hanscom, MA                      | -                  | 0.000          |                   | 0.385          | Dec 2022          | 0.396               | Dec 2023          | -                  |                   | 0.396                | Continuing              | Continuing        | -                               |
| ISDVP: Application Development                          | C/FFP                             | TBD : TBD                                 | -                  | -              |                   | 0.624          | Mar 2023          | 0.625               | Mar 2024          | -                  |                   | 0.625                | Continuing              | Continuing        | -                               |
| ISDVP: Edu/Training Modernization                       | C/FFP                             | TBD : TBD                                 | -                  | -              |                   | 0.400          | Mar 2023          | 0.401               | Mar 2024          | -                  |                   | 0.401                | Continuing              | Continuing        | -                               |
| ISDVP: Trend Analysis                                   | C/FFP                             | TBD : TBD                                 | -                  | -              |                   | 0.500          | Mar 2023          | 0.500               | Mar 2024          | -                  |                   | 0.500                | Continuing              | Continuing        | -                               |
| ISDVP: Curriculum Development/Implementation/Evaluation | C/FFP                             | TBD : TBD                                 | -                  | -              |                   | 3.089          | Mar 2023          | 3.095               | Mar 2024          | -                  |                   | 3.095                | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>   |                                   |   | -                  | 0.000          |                   | 7.653          |                   | 8.212               |                   | -                  |                   | 8.212                | Continuing              | Continuing        | N/A                             |

**Remarks**  
- ORION: ORION program consolidated cloud and application management services.

| <b>Test and Evaluation (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> |                         |                   |                                 |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| ORION: Cybersecurity                        | C/CPAF                            | TBD : TBD                                 | -                  | 0.000          |                   | 0.205          | Dec 2022          | 0.232               | Dec 2023          | -                  |                   | 0.232                | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>                             |                                   |   | -                  | 0.000          |                   | 0.205          |                   | 0.232               |                   | -                  |                   | 0.232                | Continuing              | Continuing        | N/A                             |

| <b>Management Services (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> |                         |                   |                                 |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| ORION: Cloud & Application Management       | C/CPAF                            | TBD : TBD                                 | -                  | 0.000          |                   | 0.670          | Dec 2022          | 0.689               | Oct 2023          | -                  |                   | 0.689                | Continuing              | Continuing        | -                               |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0808737F / <i>Integrated Primary Prevention</i> | <b>Project (Number/Name)</b><br>648737 / <i>Sexual Assault Prvntion Study</i> |
|--|--|---|

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| ORION: Program Support                      | C/CPAF                 | TBD : TBD                      | -           | 0.000   |            | 0.225   | Dec 2022   | 0.231        | Dec 2023   | -           |            | 0.231         | Continuing       | Continuing | -                        |
| ISDVP: Application Management               | C/CPAF                 | TBD : TBD                      | -           | -       |            | 0.312   | Mar 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| ISDVP: Program Support                      | C/CPAF                 | TBD : TBD                      | -           | -       |            | 0.250   | Mar 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 0.000   |            | 1.457   |            | 0.920        |            | -           |            | 0.920         | Continuing       | Continuing | N/A                      |

**Remarks**  
- ORION: ORION program consolidated cloud and application management services.

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | -           | 0.000   | 9.315   | 9.364        | -           | 9.364         | Continuing       | Continuing | N/A                      |

**Remarks**

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|   |  |   |
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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0808737F / <i>Integrated Primary Prevention</i> | <b>Project (Number/Name)</b><br>648737 / <i>Sexual Assault Prvntion Study</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |  |
|--|--|
| <b>ORION Capability Development Requirements</b>                     |  |
| Application & Cloud Management                                       |  |
| Cybersecurity Implementation & Maintenance                           |  |
| Establish IL6 Cloud Environment                                      |  |
| Initiate ORION-Classified Development                                |  |
| Further Development of ORION Capabilities                            |  |
| ORION Iterative Sustainment Activities                               |  |
| Field ORION Classified   |  |
| Cross Domain Solution Development                                    |  |
| <b>ISDVP Research &amp; Development</b>                              |  |
| Pre-Acquisition activities   |  |
| Community Action Plan System Development, Test, & Deployment         |  |
| Education/Training Modernization Development, Test, & Implementation |  |
| Trend Analysis   |  |
| Curriculum Development/Implementation, & Evaluation                  |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0808737F / <i>Integrated Primary Prevention</i> | <b>Project (Number/Name)</b><br>648737 / <i>Sexual Assault Prvntion Study</i> |

Schedule Details

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>ORION Capability Development Requirements</i></b>              |         |      |         |      |
| Application & Cloud Management                                       | 2       | 2023 | 4       | 2028 |
| Cybersecurity Implementation & Maintenance                           | 2       | 2023 | 4       | 2028 |
| Establish IL6 Cloud Environment                                      | 2       | 2023 | 4       | 2024 |
| Initiate ORION-Classified Development                                | 2       | 2023 | 4       | 2025 |
| Further Development of ORION Capabilities                            | 2       | 2023 | 4       | 2028 |
| ORION Iterative Sustainment Activities                               | 1       | 2026 | 4       | 2028 |
| Field ORION Classified   | 3       | 2024 | 2       | 2025 |
| Cross Domain Solution Development                                    | 2       | 2025 | 4       | 2025 |
| <b><i>ISDVP Research &amp; Development</i></b>                       |         |      |         |      |
| Pre-Acquisition activities   | 1       | 2023 | 2       | 2023 |
| Community Action Plan System Development, Test, & Deployment         | 2       | 2023 | 1       | 2025 |
| Education/Training Modernization Development, Test, & Implementation | 1       | 2023 | 4       | 2027 |
| Trend Analysis   | 1       | 2023 | 4       | 2025 |
| Curriculum Development/Implementation, & Evaluation                  | 1       | 2023 | 4       | 2027 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0901410F / <i>Contracting Information Technology System</i> |
|--|--|

| COST (\$ in Millions)      | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element      | -           | 19.733  | 14.050  | 28.294       | 0.000       | 28.294        | 28.944  | 30.032  | 30.210  | 27.024  | Continuing       | Continuing |
| 643483: <i>CON-IT</i>      | -           | 19.733  | 14.050  | 28.294       | 0.000       | 28.294        | 28.944  | 30.032  | 30.210  | 27.024  | Continuing       | Continuing |
| Quantity of RDT&E Articles | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

The Contracting Information Technology (CON-IT) system enables the Department of the Air Force (DAF) to accomplish its mission effectively and securely in today's rapidly changing and increasingly contested cyber domain. The Air and Space Forces require a single, 21st century contract management solution to enable DAF mission execution, from acquiring and sustaining weapon system platforms, to supporting contingency operations overseas. CON-IT supplies this single solution by consolidating and replacing numerous aging and increasingly unsupportable, legacy contract writing and management systems, while enabling the Air and Space Forces to procure vital capability faster and with increased data accuracy through built-in automation.

Specifically, CON-IT's functionality provides contract data sharing interoperability across all DAF contracting communities and external business partners such as Defense Contract Management Agency, Defense Finance and Accounting Service, and industry partners. In addition, CON-IT facilitates the execution of the DAF's \$200+ billion annual budget, ensuring global procurement operations are timely, auditable, and secure.

CON-IT enables the DAF to anticipate and respond to the changing pace and dynamic nature of processes, regulations, compliance and technologies across the contracting domain. It empowers the contracting community to comply with Financial Improvement Audit Readiness (FIAR). CON-IT supports performance of a full financial audit as required by title 10 U.S.C. Chapter 9A, Sec 240-D. CON-IT is the DAF's only contract writing system meeting Section 862 of FY13 NDAA requirements implementing DoD Procurement Data Standards (PDS). In addition, CON-IT implements Section 508 of the Rehabilitation Act of 1973 (as amended) to make Electronic and Information Technology (EIT) accessible to people with disabilities.

To modernize the DAF contracting infrastructure, requirements are divided into 2 objectives.

Objective 1: Develop the following 8 capabilities, organized primarily by contract writing community:

- Capability 1: Modernize contract writing for 3,800 operational/installation contracting users, sunseting the Standard Procurement System (SPS) system. (Completed in FY19; first and only service to comply with OSD's original SPS sunset mandate)
- Capability 2: Modernize contract writing capability for the contingency contracting community, sunseting O'Contrax system. (Completed in FY20)
- Capability 3: Modernize contract writing capability for 2,500 Weapon Systems contracting users, sunseting ConWrite, a 20+ year-old system containing contracts worth more than \$2 trillion for major weapon system programs such as B-21, KC-46, and more. (Completed 3 Limited Deployments between FY21-FY23)

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0901410F / <i>Contracting Information Technology System</i> |
|--|--|

- Capability 4: Deliver Business Intelligence (BI) capability to provide timely and reliable data for decision makers across the entire DAF.
- Capability 5: Modernize capability to meet the unique classified needs within all contracting communities. This capability is on the critical path to sunset ConWrite (Capability 3).
- Capability 6: Modernize capability to meet the unique needs of the R&D community to execute grants and cooperative agreements. This capability is on the critical path to sunset ConWrite (Capability 3).
- Capability 7: Add E-Filing capability to provide a single, authoritative source for electronic contract file storage with capability to search and review individual documents.
- Capability 8: Modernize contract writing capability for 1,500 Logistics contracting community users to award weapon system sustainment product support/logistics requirements. Enables the DAF to sunset the Automated Contract Preparation System (ACPS), a 30+ years old legacy system.

Thus far, CON-IT has successfully fielded two of the eight established capabilities, modernizing contract writing and management for both the operational and contingency contracting communities. Fielding these capabilities resulted in the replacement of two of four contract writing systems.

Objective 2: Maintain Compliance. CON-IT has awarded over 239,000 contract actions, totaling \$72 billion through 1QFY23. The system is currently deployed to 4,900 users across 212 installations worldwide. In FY22 CON-IT awarded 68,000 contract actions totaling \$20B, compared to 63,000 contract actions at \$15B in FY21. The DAF continuously addresses numerous technical debt backlog requirements to maintain system functionality and meet modern data standards. These initiatives also develop capability to maintain compliance with Federal and OSD mandates, coordinate DevSecOps, and improve infrastructure and system performance.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2022 \$0.000M was expended for civilian pay expenses in this program element, and in FY 2023 \$0.000M is forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.



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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0901410F / <i>Contracting Information Technology System</i> |
|--|--|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 20.343         | 14.050         | 14.343              | 0.000              | 14.343               |
| Current President's Budget                        | 19.733         | 14.050         | 28.294              | 0.000              | 28.294               |
| Total Adjustments                                 | -0.610         | 0.000          | 13.951              | 0.000              | 13.951               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -0.610         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 13.951              | 0.000              | 13.951               |

**Change Summary Explanation**

FY 2024 funding increased to expedite retirement of legacy contract writing systems in order to advance procurement system compliance with FIAR objectives, procurement data standards, and contract writing mandates.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <p><b>Title:</b> CON-IT System Development</p> <p><b>Description:</b> CON-IT development is accomplished using agile software development practices to build upon a Government-off-the-Shelf contract management system to replace four legacy contract writing systems and multiple support systems. Development efforts are phased into 8 major capabilities according to the requirements of each contracting community (i.e., Weapon Systems, Classified, Research and Development, and Logistics). This enables phased transitions from the various legacy systems to CON-IT. Thus far, the DAF completed Capabilities 1 and 2, and deployed CON-IT to the operational/installation and contingency contracting communities. Capabilities 3 and 4 are in work. Within Capability 3, the DAF delivered CON-IT to 1,349 weapon systems contracting users. Additional users will be added as capabilities are developed; including Weapon System, Classified and Logistics users in FY23. Capability 4 impacts all contracting communities. Consistent CLIN-level data collection increased BI capability resulting in a DAF Acquisition Excellence Award. BI efforts continue to be refined and automated; enhancements are delivered as they are developed. Capabilities are fielded utilizing the Minimum Viable Product (MVP) concept for each user group. The MVP contains the minimum set of requirements users need to complete their mission. The deployed MVP is then continually enhanced and refined in future capability releases.</p> <p>Based on lessons learned from other DAF and sister service business systems, the DAF re-evaluated its previously-accomplished business process mapping procedures for Capabilities 3, 4, and 6 as well as scaling requirements for the underlying system. While on-going development initiatives still support numerous FY22 capability deliveries, the entire schedule has been re-aligned</p> | 19.733         | 14.050         | 28.294         |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|--|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0901410F / <i>Contracting Information Technology System</i> |
|--|--|

|   |                |                |                |
|---|----------------|----------------|----------------|
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|

to better meet requirements, enable more robust testing, improve interface exchange management, and more effectively balance risk. Capability 3 and 5 deliveries are anticipated to be complete in 4QFY24 and 4QFY25 respectively. Capability 6 development activities will begin in 4QFY23.

**FY 2023 Plans:**

The DAF will continue to develop Capabilities 3, 4, and 5, and plan development activities for Capabilities 6 (R&D) and 7 (E-filing). CON-IT does not contain an existing baseline to develop R&D capability. R&D business processes will be developed from scratch, implementing a new data standard that OSD is currently developing for use across all Services.

Examples of specific requirements to be addressed in FY23 are included below:

- Provide complex capability enhancements to incentive contract types
- Provide complex capability enhancements to capture Undefined Contract Actions (UCAs)
- Upgrade system to process PDS 2.6.2.1. Data Schema, most current deployed by DPC
- Field MVP version of disconnected/classified CON-IT with limited deployment to 1-2 sites
- Implement capability to create and protect Source Selection Contract Award documents
- Implement capability to capture data required for multiple Contract Action Reports (CAR)
- Begin to construct database backbone and business logic for grants and cooperative agreements
- Begin developing E-Filing capability to host and capture contract file documentation
- Continue to develop Business Intelligence functionality to enhance contract writing and reporting capability
- Develop business rules to improve data compliance by ensuring users comply with existing regulations and Procurement Data Standard (PDS)
- Continue to leverage Agile methods and cadence to resolve existing/new defects and add enhancements in the production environment
- Develop system updates required to maintain compliance with Federal and Office of the Secretary of Defense (OSD) contract writing mandates. The regulations and laws surrounding contracting can change frequently, Contract Writing Systems must be adaptable to allow updates to maintain currency with all mandated changes.
- Continue planning development activities for all remaining Capabilities

**FY 2024 Plans:**

The DAF will continue to develop Capabilities 3 and 5, and plan development activities for Capabilities 6 (R&D) and 7 (E-filing).

Examples of specific requirements to be addressed in FY24 are included below:

- Will continue construction of database and business logic for grants and cooperative agreements
- Will implement capability to store the long line of accounting as segmented data and store as Standard Line of Accounting (SLOA)

|  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
|  |                |                |                |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P) | <b>R-1 Program Element (Number/Name)</b><br>PE 0901410F I Contracting Information Technology System |
|---|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <ul style="list-style-type: none"> <li>- Will implement capability to capture complex Packing and Marking instruction</li> <li>- Will add digital signature capability to contractual documents</li> <li>- Will provide capability to automatically create and transmit data for Combined Synopsis</li> <li>- Will develop business rules to improve data compliance by ensuring users comply with existing regulations and Procurement Data Standard (PDS)</li> <li>- Will continue to leverage Agile methods and cadence to resolve existing/new defects and add enhancements in the production environment</li> <li>- Will research, design, and build a secure and continuous process for capability development and delivery</li> <li>- Will develop system updates required to maintain compliance with Federal and Office of the Secretary of Defense (OSD) contract writing mandates. The regulations and laws surrounding contracting can change frequently, Contract Writing Systems must be adaptable to allow updates to maintain currency with all mandated changes</li> <li>- Will continue planning development activities for all remaining Capabilities</li> </ul> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>FY 2024 funding increased to expedite development of Weapon System and Classified capabilities in order to accelerate retirement of legacy systems, while simultaneously continuing development of system updates to remain compliant with contract writing mandates.</p> |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 19.733         | 14.050         | 28.294         |

| <b>D. Other Program Funding Summary (\$ in Millions)</b> |                |                |                               |                              |                                |                |                |                |                |                                   |                   |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| <u>Line Item</u>   | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
| • OPAF 03 834010: General Information Technology         | 0.000          | 0.000          | 0.718                         | -                            | 0.718                          | 1.508          | 2.326          | 2.590          | 0.000          | 0.000                             | 7.142             |

**Remarks**

**E. Acquisition Strategy**

Built upon the Defense Information Systems Agency's Integrated Defense Enterprise Acquisition System contract writing system, CON-IT is based on a Government-off-the-Shelf product running on a Commercial Off-the-Shelf platform. Through an interagency agreement, the DAF partnered with the United States Department of Agriculture's (USDA) Enterprise Application Services (EAS) team to develop, test, validate, deploy, and maintain CON-IT. The USDA Digital Infrastructure Services Center currently provides and maintains hosting for the development and production environments in USDA's Enterprise Data Centers. The program plans for future cloud data hosting on the Procurement Integrated Enterprise Environment (PIEE)) platform providing the Identity, Credential, and Access Management (ICAM) solution. In accordance with DoDI 5000.75, the program management office (PMO) and the functional management office (FMO) are jointly accountable for the successful delivery of business process design through business system deployment and capability support.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

| <b>Appropriation/Budget Activity</b>   | <b>R-1 Program Element (Number/Name)</b>                       |
|--|--|
| 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | PE 0901410F / <i>Contracting Information Technology System</i> |

CON-IT is developed using agile software development principles. Requirements are envisioned at a high level, then decomposed into small pieces of effort to allow for just-in-time development and maximum flexibility to meet emerging needs. A Minimum Viable Product (MVP) is developed and fielded to satisfy bare-minimum user requirements. As development continues, the DAF will deliver iterative releases to mature the MVP. This commonly-used practice in the commercial industry speeds time to market and allows for rapid reprioritization of requirements based on external influences (e.g., warfighter needs, cybersecurity threats).

CON-IT implements the OSD Strategic Plan for Defense-Wide Procurement Capabilities to employ the Procurement Data Standard mandated by Section 862 of the FY13 NDAA.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
|--|---|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0901410F / Contracting Information Technology System | <b>Project (Number/Name)</b><br>643483 / CON-IT |
|--|---|---|

| <b>Product Development (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> |                         |                   |                                 |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| CON-IT: New Software Capability Development | MIPR                              | USDA : Various                            | -                  | 7.658          | Dec 2021          | 4.475          | Dec 2022          | 13.683              | Dec 2023          | -                  |                   | 13.683               | Continuing              | Continuing        | -                               |
| CON-IT: Architecture, SE/PM, and Compliance | MIPR                              | USDA : Various                            | -                  | 4.386          | Dec 2021          | 3.534          | Dec 2022          | 4.630               | Dec 2023          | -                  |                   | 4.630                | Continuing              | Continuing        | -                               |
| CON-IT: Platform DevSecOps                  | MIPR                              | USDA : Various                            | -                  | 2.382          | Dec 2021          | 1.212          | Dec 2022          | 1.478               | Dec 2023          | -                  |                   | 1.478                | Continuing              | Continuing        | -                               |
| CON-IT: Other Direct Costs                  | MIPR                              | USDA : Various                            | -                  | 0.565          | Dec 2021          | 0.418          | Dec 2022          | 0.573               | Dec 2023          | -                  |                   | 0.573                | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>                             |                                   |   | -                  | 14.991         |                   | 9.639          |                   | 20.364              |                   | -                  |                   | 20.364               | Continuing              | Continuing        | N/A                             |

**Remarks**  
 Interagency agreement with USDA (United States Department of Agriculture) Architecture, SE/PM, and Compliance: Enterprise, application and DevOps Architecture; Systems Engineering; Program Management; and Compliance Updates.  
 Other Direct Costs include procurement and support of software licenses for development tools and software developer travel.

| <b>Management Services (\$ in Millions)</b>   |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> |                         |                   |                                 |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| CON-IT: Program Support, Cost Estimating Support, Travel, Supplies, Equipment, Program Office Network | Various                           | PEO Business Sys (AFLCMC) : WPAFB, OH     | -                  | 4.742          | Dec 2021          | 4.411          | Dec 2022          | 7.930               | Dec 2023          | -                  |                   | 7.930                | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>   |                                   |   | -                  | 4.742          |                   | 4.411          |                   | 7.930               |                   | -                  |                   | 7.930                | Continuing              | Continuing        | N/A                             |

**Remarks**  
 A&AS: Advisory & Assistance Services  
 Multiple contract awards  
 AFPEO/Business & Enterprise Systems (AFLCMC/GB) - Wright-Patterson AFB, OH

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
|--|---|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 4 | <b>R-1 Program Element (Number/Name)</b><br>PE 0901410F / Contracting Information Technology System | <b>Project (Number/Name)</b><br>643483 / CON-IT |
|--|---|---|

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | -           | 19.733  | 14.050  | 28.294       | -           | 28.294        | Continuing       | Continuing | N/A                      |

Remarks

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |  | <b>Date:</b> March 2023                                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0901410F / <i>Contracting Information Technology System</i> | <b>Project (Number/Name)</b><br>643483 / <i>CON-IT</i> |

|  | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|  | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |
| <b>CON-IT Capability Development Activities</b>                          |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Capability 3: Develop, Test, and Deploy Weapon System Capability         |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Capability 4: Develop, Test, and Deploy Business Intelligence Capability |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Capability 5: Develop, Test, and Deploy Classified Capability            |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Capability 6: Plan, Develop, Test, and Deploy R&D Capability             |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Capability 7: Plan, Develop, Test, and Deploy E-Filing Capability        |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Capability 8: Plan, Develop, Test, and Deploy Logistics Capability       |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023                                |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0901410F / <i>Contracting Information Technology System</i> | <b>Project (Number/Name)</b><br>643483 / <i>CON-IT</i> |

Schedule Details

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b>CON-IT Capability Development Activities</b>                          |         |      |         |      |
| Capability 3: Develop, Test, and Deploy Weapon System Capability         | 1       | 2022 | 4       | 2024 |
| Capability 4: Develop, Test, and Deploy Business Intelligence Capability | 1       | 2022 | 2       | 2023 |
| Capability 5: Develop, Test, and Deploy Classified Capability            | 1       | 2022 | 4       | 2025 |
| Capability 6: Plan, Develop, Test, and Deploy R&D Capability             | 4       | 2023 | 2       | 2026 |
| Capability 7: Plan, Develop, Test, and Deploy E-Filing Capability        | 1       | 2024 | 1       | 2026 |
| Capability 8: Plan, Develop, Test, and Deploy Logistics Capability       | 3       | 2026 | 2       | 2028 |



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P) | <b>R-1 Program Element (Number/Name)</b><br>PE 1206415F I U.S. Space Command Research and Development Support |
|---|---|

| COST (\$ in Millions)                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                            | -           | 0.000   | 8.350   | 14.892       | 0.000       | 14.892        | 12.698  | 13.013  | 13.262  | 13.927  | Continuing       | Continuing |
| 641234: USSPACECOM Rapid Prototype Demonstration | -           | 0.000   | 8.350   | 14.892       | 0.000       | 14.892        | 12.698  | 13.013  | 13.262  | 13.927  | Continuing       | Continuing |
| Quantity of RDT&E Articles                       | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

U.S. Space Command Research and Development support program integrates existing space-based capabilities from the Services and the Intelligence Community, overlaid with Commercial/Industry innovations, leveraging Joint Space rapid experimentation and demonstrations to build a comprehensive military advantage in Space. Promoting responsible behaviors in space, advocating for greater space capabilities, and collaborating with Industry partners are foundational to achieving National Space objectives. This shall be accomplished by accelerating technology demonstrations and rapid operational prototyping, plus assessing current and future space-based effects via model-based analysis. Such capabilities include but are not limited to; improved space battlespace awareness, to include use of commercial capabilities, joint fires to provide terrestrial near real-time targeting, Joint command and control, responsive launch/responsive space, and improvements of defensive space capabilities against an array of threats, resulting in confidence of assured space-based capabilities for the future fight. Capitalizing on Industry Innovations to develop future technical capabilities is vital to maintaining a competitive Space advantage. Moreover, this program supports the National Space Policy of the United States of America, "... to demonstrate United States leadership in space-related fora and activities to strengthen deterrence and assure allies and partnerships of its commitment to preserving the safety, stability, security, and long-term sustainability of space activities ...".

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

| <b>B. Program Change Summary (\$ in Millions)</b> | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024 Base</u> | <u>FY 2024 OCO</u> | <u>FY 2024 Total</u> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 0.000          | 10.350         | 10.379              | 0.000              | 10.379               |
| Current President's Budget                        | 0.000          | 8.350          | 14.892              | 0.000              | 14.892               |
| Total Adjustments                                 | 0.000          | -2.000         | 4.513               | 0.000              | 4.513                |
| • Congressional General Reductions                | 0.000          | -2.000         |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 4.513               | 0.000              | 4.513                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|  |  |
|--|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 1206415F / <i>U.S. Space Command Research and Development Support</i> |
|--|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
|---|----------------|----------------|----------------|

|   |       |       |        |
|---|-------|-------|--------|
| <p><b>Title:</b> Space Modeling, Simulation, and Analysis</p> <p><b>Description:</b> Program models existing and potentially new space-based capabilities from the Services and the Intelligence Community, overlaid with Commercial/Industry innovations, leveraging Joint Space rapid experimentation and demonstrations to build a comprehensive military advantage in Space.</p> <p><b>FY 2023 Plans:</b></p> <ul style="list-style-type: none"> <li>- Continue development of software and tools to model contested space</li> <li>- Continue updates to software, tools, models, and data at the mission- and campaign-level to inform senior leaders evolving inquiries and decisions on space investments, requirements, acquisition, operational COAs, operational risk, and future planning</li> <li>- Develop and modify user-friendly, front-end campaign-level and mission-level M&amp;S software and tools supporting sufficiently accurate and very timely exploratory analytics to optimize operational planning, wargaming, and concepts</li> <li>- Leverage model-based analysis of current and future space-based effects to effect technology demonstrations and rapid operational prototyping opportunities</li> <li>- Capitalize on Industry Innovations to develop future technical capabilities via Accelerator/Incubator collaboration, derived from risk-reduction modeling of space effects</li> <li>- In coordination with USSF /S9, continue assessing and integrating enterprise-level model data for MW, ISR, and SATCOM capabilities into campaign-level modeling</li> <li>- In coordination with DAF (Air Force Studies, Analysis, and Assessments), develop a schedule to identify requirements toward implementation of instantiation of space effects in a contested space environment</li> <li>- Support cost benefit analyses of Space Control activities with quantifiable impacts to warfighter operations</li> </ul> <p><b>FY 2024 Plans:</b></p> <ul style="list-style-type: none"> <li>- Continue development of software and tools to model contested space</li> <li>- Continue updates to software, tools, models, and data at the mission- and campaign-level to inform senior leaders evolving inquiries and decisions on space investments, requirements, acquisition, operational COAs, operational risk, and future planning</li> <li>- Develop and modify user-friendly, front-end campaign-level and mission-level M&amp;S software and tools supporting sufficiently accurate and very timely exploratory analytics to optimize operational planning, wargaming, and concepts</li> <li>- Leverage model-based analysis of current and future space-based effects to effect technology demonstrations and rapid operational prototyping opportunities</li> <li>- Capitalize on Industry Innovations to develop future technical capabilities via Accelerator/Incubator collaboration, derived from risk-reduction modeling of space effects</li> <li>- In coordination with USSF /S9, continue assessing and integrating enterprise-level model data for MW, ISR, and SATCOM capabilities into campaign-level modeling</li> </ul> | 0.000 | 8.350 | 14.892 |
|---|-------|-------|--------|

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|  |  |
|--|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 1206415F / <i>U.S. Space Command Research and Development Support</i> |
|--|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <ul style="list-style-type: none"> <li>- In coordination with DAF (Air Force Studies, Analysis, and Assessments), develop a schedule to identify requirements toward implementation of instantiation of space effects in a contested space environment</li> <li>- Support cost benefit analyses of Space Control activities with quantifiable impacts to warfighter operations</li> </ul> <p><b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br/>Increased to account for inflation.</p> |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 0.000          | 8.350          | 14.892         |

**D. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**E. Acquisition Strategy**

Any new projects funded in this program will be awarded using competitive procedures to the maximum extent possible.



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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                  | <b>R-1 Program Element (Number/Name)</b><br>PE 1206415F / U.S. Space Command Research and Development Support | <b>Project (Number/Name)</b><br>641234 / USSPACECOM Rapid Prototype Demonstration |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   |  |
|---|--|
| <b>Campaign level modeling</b>  |  |
| Run developed mission threads per CCMD AOR using NDS vignettes for integration into mission and campaign level modeling   | ████████████████████   |
| Start analysis and complete results   | ████████████████████   |
| Update space mission and space campaign level M&S to inform senior leaders evolving inquiries and decisions on innovation, space investments, rapid acquisition, operational COAs, risk, and planning | ████████████████████   |
| Develop additional software and tools to model contested space environment with commercial integration contributions (SDA, SATCOM, ISR) modeled to support terrestrial warfighting                    | ████████████████████   |
| Develop additional software and tools to model contested space environment with commercial integration contributions (SDA, SATCOM, ISR) modeled to support USSC assigned AOR                          | ██ |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 4                   | <b>R-1 Program Element (Number/Name)</b><br>PE 1206415F / <i>U.S. Space Command Research and Development Support</i> | <b>Project (Number/Name)</b><br>641234 / <i>USSPACECOM Rapid Prototype Demonstration</i> |

Schedule Details

| Events by Sub Project   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Campaign level modeling</i></b>   |         |      |         |      |
| Run developed mission threads per CCMD AOR using NDS vignettes for integration into mission and campaign level modeling   | 1       | 2023 | 3       | 2023 |
| Start analysis and complete results   | 2       | 2023 | 4       | 2023 |
| Update space mission and space campaign level M&S to inform senior leaders evolving inquiries and decisions on innovation, space investments, rapid acquisition, operational COAs, risk, and planning | 1       | 2024 | 3       | 2024 |
| Develop additional software and tools to model contested space environment with commercial integration contributions (SDA, SATCOM, ISR) modeled to support terrestrial warfighting                    | 1       | 2024 | 4       | 2024 |
| Develop additional software and tools to model contested space environment with commercial integration contributions (SDA, SATCOM, ISR) modeled to support USSC assigned AOR                          | 1       | 2025 | 2       | 2028 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604200F / <i>Future Advanced Weapon Analysis &amp; Programs</i> |
|---|---|

| COST (\$ in Millions)              | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element              | -           | 18.180  | 9.879   | 9.757        | 0.000       | 9.757         | 9.710   | 36.814  | 252.752 | 261.898 | Continuing       | Continuing |
| 653133: <i>Armament Subsystems</i> | -           | 18.180  | 9.879   | 9.757        | 0.000       | 9.757         | 9.710   | 36.814  | 252.752 | 261.898 | Continuing       | Continuing |
| Quantity of RDT&E Articles         | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

This program enables Air Force level capability planning activities by supporting requirements generation and executing requirements/cost trade space analysis. These classified and unclassified activities provide studies or responsive design and development engineering and acquisition management infrastructure to address emerging gaps and technology insertion/technology needs on legacy systems, and supports analysis to develop new capability systems, or determine feasibility by conducting prototypes with advanced technology. In addition, activities explore new concept development and analysis in response to stakeholder engagements, technology transitions and common enterprise needs, experimentation, fieldable demonstrations, and the delivery of quick reaction solutions. Efforts will identify methods to improve system performance, develop potential future designs, mitigate evolving threats, reduce life cycle costs, develop/expand modeling/simulation and experimental platforms for weapon qualification activities, improve safety, identify technology gaps, and ensure both viability and durability of future tactical weapon acquisition programs. Results enable highly informed decisions on acquisition initiatives to develop, refine, and rapidly integrate emerging technologies into new weapons concepts or existing aircraft munitions which include, but are not limited to, multi-role missile development, advanced long-range weapon capabilities, advanced propulsion systems technologies, non-kinetic and directed energy technologies, warheads, fuzes, tail kits, sensors, networks, collaborative autonomous, and artificial intelligence/machine learning to address warfighter, Air Staff, and OSD initiatives and strategies.

This program transitions innovative ideas and technologies to the warfighter via the execution of experimentation campaigns, flight demonstrations and rapid response technology deliveries. This program implements the Digital Acquisition tenants of Open, Agile, and Digital in support of all Air Force weapons. Conduct high fidelity Modeling, Simulation and Analysis (MS&A) to support the development, testing and evaluating of future concept and legacy weapons. The MS&A work includes physics-level, engineering-level, and engagement/mission-level modeling, simulation and analysis.

This program leverages common component development, in collaboration with other weapon systems, to reduce redundant costs between systems with similar subsystems requirements. Invests in analytical, information management, data management, digital environments, networks, facilities, and security infrastructure upgrades directly supporting development and sustainment of this program's capabilities, while leveraging DoD and DAF enterprise IT solutions.

In order to accomplish the above objectives, this program may accomplish pre-acquisition planning and systems engineering, risk reducing prototype missile design work, aircraft integration, prototype ground & flight tests, pre-planning and execution of Joint Capability Technology Demonstrations (JCTD), development and prototyping of threat emulations, simulations, presentation of evolving threat scenarios, target area environments to prepare for emerging weapons development activities, maintenance of appropriate IT, and security constructs and program management support.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |  |
|--|--|
| <b>Appropriation/Budget Activity</b><br>3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD) | <b>R-1 Program Element (Number/Name)</b><br>PE 0604200F I Future Advanced Weapon Analysis & Programs |
|--|--|

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 \$0M was expended for civilian pay expenses in this program element, and in FY23 \$0M is forecasted for civilian pay expenses in this program element.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 18.499         | 9.879          | 9.735               | 0.000              | 9.735                |
| Current President's Budget                        | 18.180         | 9.879          | 9.757               | 0.000              | 9.757                |
| Total Adjustments                                 | -0.319         | 0.000          | 0.022               | 0.000              | 0.022                |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -0.319         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 0.022               | 0.000              | 0.022                |

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Capability Strategy Development   | 9.156          | 5.913          | 5.631          |
| <b>Description:</b> Plans and executes early Systems Engineering, concept studies, trade space analyses, modeling & simulation (M&S), portfolio acquisition planning, agile acquisition strategies, common enterprise solutions, and risk reduction activities for future advanced weapon systems to defeat evolving threat scenarios and environments. Provides security, workspace/seating, and information technology capabilities to support mission needs. Collaborate with all program stakeholders to develop technical and investment strategies for future weapons. Create and develop a weapons operational reference architecture. Develops and maintains technology and capability roadmaps to inform strategy development. |                |                |                |
| <b>FY 2023 Plans:</b><br>Conduct experiments and demonstrations of kinetic and directed energy weapon concepts to prove feasibility and facilitate transition in air to air, long range strike, maritime strike, and airbase defense mission areas. Evaluate industrial base implementation of agile acquisition initiatives like open systems architecture and digital engineering for future capabilities.  |                |                |                |
| <b>FY 2024 Plans:</b>   |                |                |                |



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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force   |  | <b>Date:</b> March 2023   |                |                |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>  |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604200F / <i>Future Advanced Weapon Analysis &amp; Programs</i> |                |                |
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  |  | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| <p>Conduct experiments and demonstrations of kinetic and directed energy weapon concepts to prove feasibility and facilitate transition in air to air, long range strike, maritime strike, and airbase defense mission areas. Evaluate industrial base implementation of agile acquisition initiatives like open systems architecture and digital engineering for future capabilities.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding decreased due to re-prioritization of program requirements.</p>   |  |   |                |                |
| <p><b>Title:</b> Rapid Prototyping Demonstrations</p> <p><b>Description:</b> Enables the conduct of rapid acquisition/prototyping efforts and MS&amp;A validation through integration of empirical data derived from prototypes and demonstrations, shaped by stakeholder engagements.</p> <p><b>FY 2023 Plans:</b><br/>Prototyping weapon concepts to demonstrate feasibility of key attributes and initiate test planning with key stakeholders. Developing armament concepts that are appropriately played in wargames/flag exercises.</p> <p><b>FY 2024 Plans:</b><br/>Prototyping weapon concepts to demonstrate feasibility of key attributes and initiate test planning with key stakeholders. Developing armament concepts that are appropriately played in wargames/flag exercises.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding increased due to re-prioritization of program requirements.</p>   |  | 4.644   | 2.288          | 2.444          |
| <p><b>Title:</b> Digital Foundation</p> <p><b>Description:</b> Provides model-based systems engineering, M&amp;S, data analysis tool suites, and associated software engineering expertise to support weapons capability strategy development and rapid prototyping. Provides Validation &amp; Verification (V&amp;V) of contractor M&amp;S models and tools. Develops Guidance, Navigation, and Control (GNC) and weapon survivability analysis capabilities. Creates and maintains a searchable electronic weapons database. Develops and evaluates future weapon open system architectures, to include common enterprise solutions, and the employment of digital engineering tools to create future acquisition strategies.</p> <p><b>FY 2023 Plans:</b><br/>Conduct lethality analysis to support the development, testing, and evaluation of legacy and future weapon concepts. Work includes physics, engineering, engagement/mission level MS&amp;A and efforts to characterize complex systems, provide independent analysis in mission areas such as long range strike.</p> <p><b>FY 2024 Plans:</b></p> |  | 2.378   | 0.539          | 0.628          |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force  |  | <b>Date:</b> March 2023   |                |                |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>   |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604200F / <i>Future Advanced Weapon Analysis &amp; Programs</i> |                |                |
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   |  | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| Conduct lethality analysis to support the development, testing, and evaluation of legacy and future weapon concepts. Work includes physics, engineering, engagement/mission level MS&A and efforts to characterize complex systems, provide independent analysis in mission areas such as long range strike.<br><br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funding increased due to re-prioritization of program requirements.   |  |   |                |                |
| <b>Title:</b> Industry Connectivity/Technology Transitions<br><br><b>Description:</b> Enables Air Force outreach to small and large businesses to solicit innovative and relevant common material solutions for future weapon initiatives. This includes planning and execution activities for the development of campaign analysis, rapid innovation events, communicating technology needs at industry conferences (i.e. Weapons Conference, Air Force Association Symposium), and evaluating industry submissions for innovative technologies. Demonstrate potential utility of innovative technologies from Small Business Innovation Research (SBIR) contracts, studies, campaign analyses, experiments, and prototypes. Ensure alignment of S&T activities, acquisition efforts, and warfighter requirements for air-delivered munitions with Air Force, government, and industry stakeholders to enable technology transitions.<br><br><b>FY 2023 Plans:</b><br>Demonstrate utility of innovative technologies for SBIR contracts, studies, campaign analysis and experiments, as well as management of the digital outreach required to meet these objectives. Examine how new digital acquisition programs can meet air to air, long range strike, maritime strike, and airbase defense mission areas to fulfill urgent warfighter requirements focusing on network collaborative autonomous, guidance and control, test and training, and direct attack.<br><br><b>FY 2024 Plans:</b><br>Demonstrate utility of innovative technologies for SBIR contracts, studies, campaign analysis and experiments, as well as management of the digital outreach required to meet these objectives. Examine how new digital acquisition programs can meet air to air, long range strike, maritime strike, and airbase defense mission areas to fulfill urgent warfighter requirements focusing on network collaborative autonomous, guidance and control, test and training, and direct attack.<br><br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funding decreased due to re-prioritization of program requirements. |  | 2.002   | 1.139          | 1.054          |
| <b>Accomplishments/Planned Programs Subtotals</b>   |  | 18.180  | 9.879          | 9.757          |
| <b>D. Other Program Funding Summary (\$ in Millions)</b>  |  |   |                |                |
| N/A   |  |   |                |                |
| <b>Remarks</b>  |  |   |                |                |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

**Appropriation/Budget Activity**  
3600: *Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)*

**R-1 Program Element (Number/Name)**  
PE 0604200F / *Future Advanced Weapon Analysis & Programs*

**E. Acquisition Strategy**

Accomplish studies, analyses, concept development and engineering, as well as test and evaluation; efforts will be conducted using contracting strategies deemed most appropriate, generally using competitive contracts.

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| Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force |                        |                                |             |  |            |         |            |                              |            |             |            | Date: March 2023 |                  |            |                          |  |
|---|------------------------|--------------------------------|-------------|--|------------|---------|------------|------------------------------|------------|-------------|------------|------------------|------------------|------------|--------------------------|--|
| Appropriation/Budget Activity                               |                        |                                |             | R-1 Program Element (Number/Name)                            |            |         |            | Project (Number/Name)        |            |             |            |                  |                  |            |                          |  |
| 3600 / 5  |                        |                                |             | PE 0604200F / Future Advanced Weapon A<br>nalysis & Programs |            |         |            | 653133 / Armament Subsystems |            |             |            |                  |                  |            |                          |  |
| <b>Product Development (\$ in Millions)</b>                 |                        |                                |             | FY 2022  |            | FY 2023 |            | FY 2024 Base                 |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |  |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost   | Award Date | Cost    | Award Date | Cost                         | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |  |
| Affordable Mass & Concept Studies                           | C/Variou               | Various : Various              | -           | 2.819  | May 2022   | 3.966   | Nov 2022   | 5.062                        | Apr 2024   | -           |            | 5.062            | Continuing       | Continuing | -                        |  |
| Future Weapons Open System Architecture                     | Various                | Various : Various              | -           | 6.512  | Mar 2022   | 1.301   | Dec 2022   | 0.112                        | Nov 2023   | -           |            | 0.112            | Continuing       | Continuing | -                        |  |
| <b>Subtotal</b>   |                        |                                | -           | 9.331  |            | 5.267   |            | 5.174                        |            | -           |            | 5.174            | Continuing       | Continuing | N/A                      |  |
| <b>Support (\$ in Millions)</b>                             |                        |                                |             | FY 2022  |            | FY 2023 |            | FY 2024 Base                 |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |  |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost   | Award Date | Cost    | Award Date | Cost                         | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |  |
| Systems Engineering & Studies Support                       | C/Variou               | AFLCMC/EB : Eglin AFB, FL      | -           | 2.802  | Apr 2022   | 0.625   | Dec 2022   | 1.743                        | Apr 2024   | -           |            | 1.743            | Continuing       | Continuing | -                        |  |
| Modeling & Simulation Licenses & Support                    | C/Variou               | AFLCMC/EB : Eglin AFB, FL      | -           | 0.350  | Apr 2022   | 0.178   | Nov 2022   | 0.187                        | May 2024   | -           |            | 0.187            | Continuing       | Continuing | -                        |  |
| <b>Subtotal</b>   |                        |                                | -           | 3.152  |            | 0.803   |            | 1.930                        |            | -           |            | 1.930            | Continuing       | Continuing | N/A                      |  |
| <b>Test and Evaluation (\$ in Millions)</b>                 |                        |                                |             | FY 2022  |            | FY 2023 |            | FY 2024 Base                 |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |  |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost   | Award Date | Cost    | Award Date | Cost                         | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |  |
| Government Test and Evaluation                              | PO                     | Various : Various              | -           | -  |            | -       |            | 0.021                        | Apr 2024   | -           |            | 0.021            | Continuing       | Continuing | -                        |  |
| <b>Subtotal</b>   |                        |                                | -           | -  |            | -       |            | 0.021                        |            | -           |            | 0.021            | Continuing       | Continuing | N/A                      |  |
| <b>Management Services (\$ in Millions)</b>                 |                        |                                |             | FY 2022  |            | FY 2023 |            | FY 2024 Base                 |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |  |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost   | Award Date | Cost    | Award Date | Cost                         | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |  |
| Government Program Management Administration                | Various                | Various : Eglin AFB, FL        | -           | 5.697  | May 2022   | 3.809   | May 2023   | 2.632                        | Oct 2023   | -           |            | 2.632            | Continuing       | Continuing | -                        |  |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604200F / <i>Future Advanced Weapon A<br/>nalysis &amp; Programs</i> | <b>Project (Number/Name)</b><br>653133 / <i>Armament Subsystems</i> |
|--|--|---|

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| <b>Subtotal</b>                             |                        |                                | -           | 5.697   |            | 3.809   |            | 2.632        |            | -           |            | 2.632         | Continuing       | Continuing | N/A                      |

**Remarks**  
Includes A&AS contract, IT requirements, travel, and office supplies.

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | -           | 18.180  | 9.879   | 9.757        | -           | 9.757         | Continuing       | Continuing | N/A                      |

**Remarks**

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604200F / <i>Future Advanced Weapon A<br/>nalysis &amp; Programs</i> | <b>Project (Number/Name)</b><br>653133 / <i>Armament Subsystems</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |  |
|--|--|
| <b>Capability Strategy Development</b>   |  |
| Air Superiority, Global Precision Attack, and Base Defense Requirements Analyses |  |
| Future Weapons Open System Architecture  |  |
| Trade Space Analysis Framework   |  |
| Common Enterprise Solutions  |  |
| Technology and Capability Roadmaps   |  |
| <b>Rapid Prototyping</b>   |  |
| Global Precision Attack Weapon Demos   |  |
| Base Defense Weapon Demos  |  |
| Capability Demonstrations  |  |
| <b>Digital Foundation</b>  |  |
| Lethality, GNC & Survivability Modeling, Simulation and Analysis                 |  |
| Analysis Database Repository   |  |
| Model-Based Systems Engineering Foundation                                       |  |
| Weapon Open System Architecture Built-In   |  |
| <b>Industry Connectivity</b>   |  |
| Futures Workshops, Concepts Studies  |  |
| Threat Day Events, Innovation Days   |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604200F / <i>Future Advanced Weapon A<br/>nalysis &amp; Programs</i> | <b>Project (Number/Name)</b><br>653133 / <i>Armament Subsystems</i> |

Schedule Details

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b>Capability Strategy Development</b>   |         |      |         |      |
| Air Superiority, Global Precision Attack, and Base Defense Requirements Analyses | 2       | 2022 | 4       | 2028 |
| Future Weapons Open System Architecture  | 3       | 2022 | 4       | 2028 |
| Trade Space Analysis Framework   | 2       | 2022 | 4       | 2028 |
| Common Enterprise Solutions  | 2       | 2022 | 4       | 2028 |
| Technology and Capability Roadmaps   | 2       | 2022 | 4       | 2028 |
| <b>Rapid Prototyping</b>   |         |      |         |      |
| Global Precision Attack Weapon Demos   | 2       | 2022 | 4       | 2028 |
| Base Defense Weapon Demos  | 2       | 2022 | 4       | 2028 |
| Capability Demonstrations  | 2       | 2022 | 4       | 2028 |
| <b>Digital Foundation</b>  |         |      |         |      |
| Lethality, GNC & Survivability Modeling, Simulation and Analysis                 | 1       | 2022 | 4       | 2028 |
| Analysis Database Repository   | 2       | 2022 | 3       | 2028 |
| Model-Based Systems Engineering Foundation                                       | 1       | 2022 | 4       | 2028 |
| Weapon Open System Architecture Built-In   | 1       | 2022 | 2       | 2028 |
| <b>Industry Connectivity</b>   |         |      |         |      |
| Futures Workshops, Concepts Studies  | 1       | 2022 | 4       | 2028 |
| Threat Day Events, Innovation Days   | 2       | 2022 | 2       | 2028 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604201F / <i>PNT Resiliency, Mods, and Improvements</i> |
|---|---|

| COST (\$ in Millions)                   | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                   | -           | 158.193 | 176.335 | 163.156      | 0.000       | 163.156       | 217.277 | 126.390 | 85.526  | 88.622  | 0.000            | 1,015.499  |
| 651030: <i>GPS Receiver Development</i> | -           | 158.193 | 176.335 | 163.156      | 0.000       | 163.156       | 217.277 | 126.390 | 85.526  | 88.622  | 0.000            | 1,015.499  |
| Quantity of RDT&E Articles              | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**A. Mission Description and Budget Item Justification**

Positioning, Navigation, and Timing (PNT) solutions are critical to defense operations, enabling delivery of precision fires, safe aerial navigation, and time coordination across multiple platforms and subsystems. PNT must be maintained in the face of emerging and continuously evolving electronic and cyber threats, requiring increased system resiliency and rapid adaptability similar to that historically required of electronic warfare systems. Evolving threats will drive upgrades such as Global Positioning System (GPS) receiver modernization, development of standard navigational system formats/interfaces, increased use of open system architecture design principles, incorporation of alternative navigation sources into navigational solutions, advanced anti-jam antennas, antenna electronics, radio frequency monitoring/locating/reporting capabilities, and precision clock improvements to maintain current and future force capabilities.

Project 651030 includes Embedded GPS/Inertial Navigation System (INS) Modernized (EGI-M), Miniaturized Airborne GPS Receiver 2000 Modernization (MAGR-2K-M), Resilient GPS (R-EGI) development, anti-jam antenna/antenna electronics development, situational awareness devices, and other advanced/non-GPS PNT solutions. Activities also include, but are not limited to, current program planning, rapid prototyping/concept development, execution, and future program planning and support to other GPS enabled systems as required. The PNT Resiliency, Mods, and Improvements (RMI) effort provides rapidly re-programmable application space for Alternate Satellite Navigation Systems User Equipment (UE), enabling agile and resilient response to GPS threat environments. Funds may be used to address emerging and short-notice Diminishing Manufacturing and Material Shortage (DMSMS) issues.

This requirement supports performance of a full financial audit as required by title 10 U.S.C. Chapter 9A, Sec 240-D.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 \$1.609M was expended for civilian pay expenses in this program element, and in FY23 \$2.731M is forecasted for civilian pay expenses in this program element.

The total cost of the R-EGI Middle Tier of Acquisition effort is \$167.7M, including RDT&E and procurement of prototype units. The R-EGI is fully funded across the Future Years Defense Program.

The FY2024 funding request was reduced by \$16.097M to account for the availability of prior year execution balances.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604201F / <i>PNT Resiliency, Mods, and Improvements</i> |
|---|---|

Project Positioning Navigation Timing Software Defined User Equipment (PNT SDUE), changed from Navigation, Timing, Satellite 3 (NTS-3) Software Defined User Equipment (SDUE)/Soteria.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

| <b>B. Program Change Summary (\$ in Millions)</b> | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024 Base</u> | <u>FY 2024 OCO</u> | <u>FY 2024 Total</u> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 163.520        | 176.824        | 182.497             | 0.000              | 182.497              |
| Current President's Budget                        | 158.193        | 176.335        | 163.156             | 0.000              | 163.156              |
| Total Adjustments                                 | -5.327         | -0.489         | -19.341             | 0.000              | -19.341              |
| • Congressional General Reductions                | 0.000          | -0.489         |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -5.327         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | -19.341             | 0.000              | -19.341              |

**Change Summary Explanation**

FY22 decreased by \$5.327M due to SBIR. FY23 \$0.489 reduction due to Federally Funded Research and Development Center mark. FY24 funding decrease is due to \$3.650M transfer to fund AFWERX, \$16.097M for under-execution, and \$0.478 for higher AF priorities.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u> |
|--|----------------|----------------|----------------|
| <b>Title:</b> Embedded GPS/INS - Modernized (EGI-M)  | 88.836         | 59.324         | 17.947         |
| <b>Description:</b> EGI-M is a combined INS/GPS aircraft position, navigation, and timing system. Program upgrades EGI design to enhance resiliency against existing and emerging navigational warfare threats, incorporating design features (such as interface standardization and software modularity) to incorporate alternative navigation and timing sources, where cost effective, to reduce DoD cost and time lines to respond to newly identified threats and maintain current force capabilities. Incorporates M-Code and Automatic Dependent Surveillance-Broadcast (ADS-B) Out compliance capability into EGI receivers while addressing parts obsolescence, reducing configuration count from 260+ to a desired end-state of 16, and decreasing production and sustainment costs. |                |                |                |
| EGI-M has two prime contractors: Northrop Grumman and Honeywell.   |                |                |                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force   |  | <b>Date:</b> March 2023   |                |                |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>  |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604201F / <i>PNT Resiliency, Mods, and Improvements</i> |                |                |
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  |  | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| <p><b>FY 2023 Plans:</b><br/>Continue development and testing of Engineering Development Models (EDMs), from both suppliers, for use in lead platform labs to streamline integration efforts.</p> <p><b>FY 2024 Plans:</b><br/>Continue development and testing of EDMs. Contractors will also begin building Production Representative Units (PRUs), from both suppliers, for delivery to lead aircraft platforms in support of aircraft operational test.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding decreased due to anticipation of EMD completion. Follow-on efforts will be completed on the IDIQ contract.</p>   |  |   |                |                |
| <p><b>Title:</b> Miniaturized Airborne GPS Receiver 2000 - Modernization (MAGR-2K-M)</p> <p><b>Description:</b> MAGR-2K-M is an aircraft GPS receiver. Program increases MAGR-2K-Legacy resiliency against existing and emerging navigational warfare threats while reducing cost and timelines to incorporate agile capabilities to respond to newly identified threats. Incorporates M-Code capability into MAGR-2K-Legacy receivers while addressing parts obsolescence and providing a pathway to ADS-B Out implementation. Performs appropriate trade studies and incorporates additional resiliency features, such as alternate navigation inputs, where cost effective.</p> <p><b>FY 2023 Plans:</b><br/>Continue with the integration of unscheduled MGUE SW builds 6.3 and 6.3.1. Conduct testing and problem resolution of any issues that may arise from Lead Platform testing. Deliver upgraded PRUs to AF and Navy for platform integration efforts. Initiate performance qualification testing and development of artifacts to acquire Program Executive Officer (PEO) certification (Milestone C), which enables platforms to procure MAGR-2K-M units for fielding.</p> <p><b>FY 2024 Plans:</b><br/>Continue testing and problem resolution of any issues that may arise from Lead Platform and box level qualification testing (Performance, Cyber, Military Standard Order and Development Test). Prepare artifacts to acquire Program Executive Office (PEO) certification (Milestone C), which enables platforms to procure MAGR 2K-M units for fielding.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding decreased due to baseline development effort completion. The remaining FY24 funds will be used for firmware updates, bug fixes, and testing efforts.</p> |  | 14.664  | 15.500         | 7.000          |
| <b>Title:</b> PNT Resiliency, Mods, and Improvements (RMI)   |  | 5.965   | 2.000          | 2.000          |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604201F / <i>PNT Resiliency, Mods, and Improvements</i> |
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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
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| <p><b>Description:</b> Conduct studies and analysis of PNT systems and requirements, develop and evaluate alternative courses of action, identify, plan and conduct PNT technology transition projects, conduct prototype and acquisition program planning, and provide recommended solutions to DoD and Air Force decision makers relative to navigation warfare threat evolution and technology emergence. This includes work for more flexible Secure Software Defined Receiver User Equipment (to include, but not limited to, developing an associated antenna electronics capability) to capture other than GPS signals like Multi-Global Navigation Satellite Systems to include Navigation Technology Satellite-III.</p> |  |  |  |
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| <p><b>FY 2023 Plans:</b><br/>Conduct studies and analysis of PNT systems and requirements. Supports risk reduction efforts to transition Alternative Navigation technologies into DoD PNT systems. Accommodates evaluation of existing systems. Development / documentation of external and internal interface design requirements.</p> |  |  |  |
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| <p><b>FY 2024 Plans:</b><br/>Continue conducting studies and analysis of PNT systems and requirements. Supports risk reduction efforts to transition Alternative Navigation technologies into DoD PNT systems. Accommodates evaluation of existing systems. Development / documentation of external and internal interface design requirements.</p> |  |  |  |
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| <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>N/A</p> |  |  |  |
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| <p><b>Title:</b> Resilient EGI (R-EGI)</p> | 48.728 | 50.511 | 84.209 |
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| <p><b>Description:</b> Establishes a Government Reference Architecture (GRA) embodying open systems architecture concepts, enabling and accelerating the transition of future resilient PNT DoD systems. Enables design and development of various aircraft PNT Line Replaceable Units (LRUs) that are rapidly upgradeable to counter evolving threats. Demonstrates the GRA through prototyping of an open R-EGI LRU. Program matures, prototypes, and tests promising PNT technologies/systems and develops transition paths to flow new technologies into new and/or existing PNT systems. Provides improved PNT resiliency to counter navigational warfare threats through the design, development, test, and transition of science and technology efforts to PNT systems.</p> |  |  |  |
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| <p><b>FY 2023 Plans:</b><br/>Developmental Testing on the Detailed Design Prototypes and early risk reduction towards lead platform integration. Conduct Final Design Review for Production Representative Prototypes (PRP) on lead platform and initiate manufacture of PRPs. Establish development of additional R-EGI form factor and start of early platform integration/requirement alignment of Mission Design Series (MDS) to accept new form factor based on the expected completion of the Final Design Review.</p> |  |  |  |
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| <p><b>FY 2024 Plans:</b></p> |  |  |  |
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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force  |  | <b>Date:</b> March 2023   |                |                |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>   |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604201F / <i>PNT Resiliency, Mods, and Improvements</i> |                |                |
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   |  | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| Complete deliveries of the Production Representative Prototypes (PRP), Test Readiness Review, Cyber Testing, Developmental Testing, and PRP integration into lead platform. The FY24 milestones and efforts will serve as verification of the R-EGI Line Replaceable Unit (LRU) in preparation of Qualification Testing on Lead Platform test assets, which is also planned to finalize in FY25.  |  |   |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funding increased due to development work shifting in FY24 to accommodate program impacts and R-EGI form factor.  |  |   |                |                |
| <b>Title:</b> Positioning Navigation Timing Software Defined User Equipment (PNT SDUE)  |  | 0.000   | 49.000         | 52.000         |
| <b>Description:</b> PNT SDUE will develop a Software Defined Receiver (SDR) hosted on a Commercial Off-the-Shelf (COTS) Field Programmable Gate Array (FPGA) delivering an M-Code GNSS receiver prototype with agile reprogramming capability to provide robust, resilient PNT against navigational warfare (NAVWAR) and cyber threats with a government owned technical baseline. The program will also develop Software Defined Antenna Electronics (SDAE), an associated antenna electronics capability utilizing COTS FPGA equipment to support the ingest of new satellite signals/capabilities and assist in handling these signals in a software reprogrammable environment. The Global Navigation Satellite System (GNSS) receiver and antenna electronics will interface directly with R-EGI via open standards. This program will transition and field advanced User Equipment capabilities from the Navigation Technology Satellite (NTS)-3 Air Force Vanguard effort. |  |   |                |                |
| <b>FY 2023 Plans:</b><br>Establish a Program Office and begin acquiring requisite manpower. Initiate a Major Capability Acquisition program utilizing an Other Transaction Authority (OTA) and select a Design Agent. Have the Design Agent begin work on a preliminary design with the intent of holding an Initial Design Review (IDR) 6-9-months after contract award (i.e., early FY24). Begin development of Digital Engineering (DE) artifacts and data gathering to support IDR decision making.   |  |   |                |                |
| <b>FY 2024 Plans:</b><br>Hold the IDR and validate Design Agent initial direction. Begin preparation for the Detailed Design Review (DDR) 18-months after contract award (i.e., early FY25) using requisite design products. DDR will review all developed DE artifacts, and have the ability to meet system size, weight, and power (SWaP) requirements based on DE modeling, system architecture documentation (focus on an open system approach with government owned baseline), and initial design specifications.  |  |   |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funding increased due to ramp up of PNT SDUE developmental efforts.   |  |   |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>   |  | 158.193   | 176.335        | 163.156        |

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force Date: March 2023

**Appropriation/Budget Activity**  
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)

**R-1 Program Element (Number/Name)**  
PE 0604201F I PNT Resiliency, Mods, and Improvements

**D. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

Navigation, Timing, Satellite 3 (NTS-3) Software Defined User Equipment (SDUE)/Soteria has been renamed to Positioning Navigation Timing Software Defined User Equipment (PNT SDUE) beginning FY23 per signed Acquisition Decision Memorandum.

**E. Acquisition Strategy**

Modify and modernize existing legacy PNT systems to incorporate major enhancements such as GPS M-Code, ADS-B Out, and alternative PNT solutions to GPS while reducing lifecycle costs through common sustainment practices and economies of scale. Design, development, and testing efforts, to include the development of government owned reference architectures for rapid capability insertion, share a common PE to allow flexibility in funding and planning. Integration and operational testing of completed PNT solutions are accomplished by individual platforms and weapons systems. This approach uses a combination of cost-plus and fixed-price contract types based on acquisition phase and risk with a mix between competition and sole-source strategies. Modifications to legacy receivers are acquired via Engineering Change Proposals (ECP)/Task Orders on existing contracts. Other Transaction Authorities (OTA) and industry consortiums are used to support prototyping and open standards development for new PNT solutions.

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| Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force |                        |                                       |             |  |            |         |            |                                   |            |             |            | Date: March 2023 |                  |            |                          |
|---|------------------------|---------------------------------------|-------------|--|------------|---------|------------|-----------------------------------|------------|-------------|------------|------------------|------------------|------------|--------------------------|
| Appropriation/Budget Activity                               |                        |                                       |             | R-1 Program Element (Number/Name)                    |            |         |            | Project (Number/Name)             |            |             |            |                  |                  |            |                          |
| 3600 / 5  |                        |                                       |             | PE 0604201F / PNT Resiliency, Mods, and Improvements |            |         |            | 651030 / GPS Receiver Development |            |             |            |                  |                  |            |                          |
| Product Development (\$ in Millions)                        |                        |                                       |             | FY 2022  |            | FY 2023 |            | FY 2024 Base                      |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location        | Prior Years | Cost   | Award Date | Cost    | Award Date | Cost                              | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |
| EGI-M #1 EMD  | C/CPFF                 | Honeywell : Clearwater, FL            | -           | 37.809   | Apr 2022   | 18.938  | Nov 2022   | 3.390                             | Nov 2023   | -           |            | 3.390            | Continuing       | Continuing | -                        |
| EGI-M #2 EMD  | SS/CPFF                | Northrop Grumman : Woodland Hills, CA | -           | 46.417   | Apr 2022   | 32.719  | Nov 2022   | 4.898                             | Nov 2023   | -           |            | 4.898            | Continuing       | Continuing | -                        |
| MAGR-2K-M   | SS/CPFF                | Raytheon : El Segundo, CA             | -           | 11.214   | Apr 2022   | 12.600  | Oct 2022   | 7.000                             | Dec 2023   | -           |            | 7.000            | Continuing       | Continuing | -                        |
| PNT RMI   | SS/CPFF                | Collins Aerospace : Des Moines, IA    | -           | 1.200  | May 2022   | 4.800   | Mar 2023   | 2.000                             | Mar 2024   | -           |            | 2.000            | Continuing       | Continuing | -                        |
| R-EGI   | C/CPFF                 | IS4S : Huntsville, AL                 | -           | 42.463   | Apr 2022   | 3.750   | Jan 2023   | -                                 |            | -           |            | -                | Continuing       | Continuing | -                        |
| R-EGI Modernization & Additional Platforms                  | C/CPFF                 | TBD : TBD                             | -           | -  |            | 37.900  | Mar 2023   | 75.419                            | Jan 2024   | -           |            | 75.419           | Continuing       | Continuing | -                        |
| PNT SDUE  | TBD                    | Not specified. : TBD                  | -           | 2.000  | Jun 2022   | 35.890  | May 2023   | 50.000                            | Nov 2023   | -           |            | 50.000           | Continuing       | Continuing | -                        |
| <b>Subtotal</b>   |                        |                                       | -           | 141.103  |            | 146.597 |            | 142.707                           |            | -           |            | 142.707          | Continuing       | Continuing | N/A                      |
| Support (\$ in Millions)                                    |                        |                                       |             | FY 2022  |            | FY 2023 |            | FY 2024 Base                      |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location        | Prior Years | Cost   | Award Date | Cost    | Award Date | Cost                              | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |
| EGI-M FFRDC   | Various                | MITRE Corp. : Bedford, MA             | -           | 1.300  | Nov 2021   | 0.263   | Nov 2022   | 0.263                             | Dec 2023   | -           |            | 0.263            | Continuing       | Continuing | -                        |
| R-EGI FFRDC   | Various                | MITRE Corp. : Bedford, MA             | -           | 0.624  | Nov 2021   | 1.261   | Nov 2022   | 4.000                             | Dec 2023   | -           |            | 4.000            | Continuing       | Continuing | -                        |
| PNT SDUE FFRDC  | Various                | MITRE Corp : Bedford, MA              | -           | -  |            | 6.150   | May 2023   | 2.000                             | Dec 2023   | -           |            | 2.000            | Continuing       | Continuing | -                        |
| DCA Civ Pay   | Allot                  | Allotment : Robins AFB, GA            | -           | 1.631  | Apr 2022   | 2.731   | Jan 2023   | 2.847                             | Jan 2024   | -           |            | 2.847            | Continuing       | Continuing | -                        |
| <b>Subtotal</b>   |                        |                                       | -           | 3.555  |            | 10.405  |            | 9.110                             |            | -           |            | 9.110            | Continuing       | Continuing | N/A                      |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604201F / PNT Resiliency, Mods, and Improvements | <b>Project (Number/Name)</b><br>651030 / GPS Receiver Development |
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| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| EGI-M                                       | PO                     | Various : TBD                  | -           | 0.500   | Apr 2022   | 0.500   | Nov 2022   | 0.300        | Nov 2023   | -           |            | 0.300         | Continuing       | Continuing | -                        |
| MAGR-2K-M                                   | PO                     | Various : TBD                  | -           | 1.250   | Jun 2022   | 0.900   | Jun 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| R-EGI                                       | PO                     | Various : TBD                  | -           | 0.750   | Apr 2022   | 1.000   | Dec 2022   | 0.750        | Dec 2023   | -           |            | 0.750         | Continuing       | Continuing | -                        |
| R-EGI Modernization & Additional Platforms  | Various                | Various : TBD                  | -           | -       |            | 1.000   | Mar 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| PNT SDUE                                    | TBD                    | Not specified. : TBD           | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 2.500   |            | 3.400   |            | 1.050        |            | -           |            | 1.050         | Continuing       | Continuing | N/A                      |

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Strategic Planning/PMA                      | C/Various              | SERCO : Robins AFB, GA         | -           | 11.035  | Oct 2021   | 15.933  | Oct 2022   | 10.289       | Oct 2023   | -           |            | 10.289        | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 11.035  |            | 15.933  |            | 10.289       |            | -           |            | 10.289        | Continuing       | Continuing | N/A                      |

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |     |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|-----|
| <b>Project Cost Totals</b> |             | -       | 158.193 | 176.335      | 163.156     | -             | 163.156          | Continuing | Continuing               | N/A |

**Remarks**

EGI-M funding for EMD #1 and EMD #2 decreased significantly from FY 23 to FY 24 due to expected EMD completion/Engineering Development Model (EDM) delivery in 2nd Quarter (#2) and 3rd Quarter (#1) FY 24. Follow-on efforts will be accomplished on the production & sustainment IDIQ contract.

R-EGI Modernization & Additional Platforms increase is due to the approval of development of additional R-EGI Form Factor 3.



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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604201F / PNT Resiliency, Mods, and Improvements | <b>Project (Number/Name)</b><br>651030 / GPS Receiver Development |

|   | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|   | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |
| <b>PNT</b>                                    |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| EGI-M #1 EMD (Honeywell)                      |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| EGI-M #1 Modernization & Additional Platforms |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| EGI-M #2 EMD (NGC)                            |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| EGI-M #2 Modernization & Additional Platforms |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| MAGR-2K-M EMD                                 |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| MAGR-2K-M Testing                             |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| R-EGI Prototyping                             |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| R-EGI Modernization & Additional Platforms    |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| PNT SDUE                                      |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604201F / <i>PNT Resiliency, Mods, and Improvements</i> | <b>Project (Number/Name)</b><br>651030 / <i>GPS Receiver Development</i> |

Schedule Details

| Events by Sub Project                         | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>PNT</i></b>                             |         |      |         |      |
| EGI-M #1 EMD (Honeywell)                      | 1       | 2022 | 3       | 2026 |
| EGI-M #1 Modernization & Additional Platforms | 2       | 2024 | 4       | 2028 |
| EGI-M #2 EMD (NGC)                            | 1       | 2022 | 3       | 2026 |
| EGI-M #2 Modernization & Additional Platforms | 2       | 2024 | 4       | 2028 |
| MAGR-2K-M EMD                                 | 1       | 2022 | 4       | 2024 |
| MAGR-2K-M Testing                             | 3       | 2022 | 4       | 2026 |
| R-EGI Prototyping                             | 4       | 2022 | 4       | 2024 |
| R-EGI Modernization & Additional Platforms    | 2       | 2023 | 4       | 2028 |
| PNT SDUE                                      | 3       | 2023 | 3       | 2028 |

**Note**

Position Navigation and Timing (PNT) schedules updated to reflect current developmental timelines and reflect development for additional aircraft which will be utilizing modernized PNT receiver technology.

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604222F / <i>Nuclear Weapons Support</i> |
|---|--|

| COST (\$ in Millions)   | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element   | -           | 29.215  | 63.906  | 45.884       | 0.000       | 45.884        | 40.775  | 43.560  | 46.178  | 47.828  | Continuing       | Continuing |
| 654236: <i>Engineering Analysis</i>                             | -           | 4.405   | 0.994   | 4.519        | 0.000       | 4.519         | 2.651   | 2.719   | 2.774   | 2.874   | Continuing       | Continuing |
| 654807: <i>Nuclear Weapon System Technology and Integration</i> | -           | 18.933  | 61.411  | 39.298       | 0.000       | 39.298        | 36.012  | 38.676  | 41.195  | 42.664  | Continuing       | Continuing |
| 655708: <i>Nuclear Weapons Support</i>                          | -           | 5.877   | 1.501   | 2.067        | 0.000       | 2.067         | 2.112   | 2.165   | 2.209   | 2.290   | Continuing       | Continuing |

**A. Mission Description and Budget Item Justification**

The Air Force Nuclear Weapons Center (AFNWC), Kirtland AFB, NM, is the primary executing agency for this program. The AFNWC is tasked with maintaining and providing technical expertise on all Air Force (AF) nuclear weapons and weapon systems. This program provides resources for technical and programmatic activities, which includes research, development, test, and evaluation of all nuclear-certified equipment/systems, as well as performing independent capability analyses on all AF nuclear weapon systems activities, including weapons development and sustainment; interoperability; compatibility; safety, security, and reliability; and nuclear stockpile certification management for legacy and modernized AF nuclear weapon systems.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 \$0M was expended for civilian pay expenses in this program element, and in FY23 \$0M is forecasted for civilian pay expenses in this program element.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|   |  |
|---|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604222F / <i>Nuclear Weapons Support</i> |
|---|--|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 30.050         | 64.425         | 39.967              | 0.000              | 39.967               |
| Current President's Budget                        | 29.215         | 63.906         | 45.884              | 0.000              | 45.884               |
| Total Adjustments                                 | -0.835         | -0.519         | 5.917               | 0.000              | 5.917                |
| • Congressional General Reductions                | 0.000          | -0.519         |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -0.835         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 5.917               | 0.000              | 5.917                |

**Change Summary Explanation**

FY24 funding increase of \$5.842M is for nuclear certification management (project 654807).

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |   |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0604222F / Nuclear Weapons Support |                      |                |                | <b>Project (Number/Name)</b><br>654236 / Engineering Analysis |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>  | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 654236: <i>Engineering Analysis</i>                                     | -                  | 4.405          | 0.994          | 4.519               | 0.000   | 4.519                | 2.651          | 2.719          | 2.774   | 2.874                   | Continuing              | Continuing        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -   | -                    | -              | -              | -   | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

The AFNWC is the executing agency for the Engineering Analysis program that provides and maintains technical expertise on all AF nuclear weapons and weapon systems and conducts mission-level cyber risk analysis, integrates cybersecurity into systems engineering processes, enhances adaptability and agility via application of modular designs and approaches, develops cyber-savvy workforce, increases assurance in fielded systems in a cost effective and efficient manner, increases the integration of cyber intelligence and enables cyber operation flights and cyber protection teams. This program provides resources for technical and programmatic activities which include performing independent analyses on all AF nuclear weapons systems activities including weapons development and sustainment; interoperability; compatibility; training; safety, security, and reliability; and Air Force legacy nuclear stockpile management/retirement. The AFNWC will partner with external agencies to achieve cross cutting solutions to mitigate cyber vulnerabilities. The implementation of Digital Engineering and development of Model Based System Engineering will facilitate the testing, analysis and timely delivery of nuclear weapons systems.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 \$0M was expended for civilian pay expenses in this program element, and in FY23 \$0M is forecasted for civilian pay expenses in this program element.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| <b>Title:</b> Engineering Analysis   | 4.405          | 0.994          | 4.519               | -                  | 4.519                |
| <b>Description:</b> Provide the technical oversight of all AF nuclear weapons, delivery systems, and support systems. Provide the engineering and technical management expertise required in critical areas of nuclear weapons safety, security, reliability, operations, modernization, testing, and counterproliferation.  |                |                |                     |                    |                      |
| <b>FY 2023 Plans:</b><br>Analyze and document nuclear weapons issues related to risk assessment, data collection, model development, model validation and verification, weapon effectiveness, and nuclear stockpile planning and requirements assessment. Includes nuclear command, control, and communications (NC3) systems in this effort, as well as adding digital materiel management initiatives. |                |                |                     |                    |                      |
| <b>FY 2024 Base Plans:</b>   |                |                |                     |                    |                      |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|--|--|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604222F / <i>Nuclear Weapons Support</i> | <b>Project (Number/Name)</b><br>654236 / <i>Engineering Analysis</i> |
|--|--|--|

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|--|---------|---------|--------------|-------------|---------------|
| Continue to conduct technical risk assessments for nuclear weapons programs including NC3 systems. Continue to implement digital data management strategies. Develop Model-based Systems Engineering tools and processes. Expand and automate cyber risk management processes. |         |         |              |             |               |
| <b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br>Funding increased to conduct technical risk assessments and support digital engineering efforts.  |         |         |              |             |               |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 4.405   | 0.994   | 4.519        | -           | 4.519         |

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

Cost Plus Award Fee (CPAF) and Military Interdepartmental Purchase Request (MIPR) will be used to obtain technical analyses and technical support for safety, operations, and counter proliferation assessments. Supporting activities are contracted separately using contract strategies deemed most appropriate to the effort. All contracts will be openly competed.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604222F / Nuclear Weapons Support | <b>Project (Number/Name)</b><br>654236 / Engineering Analysis |
|--|---|---|

| <b>Product Development (\$ in Millions)</b>   |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Federally Funded Research and Development Center (FFRDC) Cybersecurity Vulnerability Analysis | MIPR                   | AEROSPACE : Kirtland AFB, NM   | -           | 0.610   | Nov 2021   | 0.020   | Nov 2022   | 0.655        | Nov 2023   | -           |            | 0.655         | Continuing       | Continuing | -                        |
| FFRDC Emulation of the Strategic Missile Integration Complex (SMIC)                           | MIPR                   | AEROSPACE : Kirtland AFB, NM   | -           | 1.250   | Apr 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 1.250      | -                        |
| <b>Subtotal</b>   |                        |                                | -           | 1.860   |            | 0.020   |            | 0.655        |            | -           |            | 0.655         | Continuing       | Continuing | N/A                      |

| <b>Support (\$ in Millions)</b>        |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                     | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Secure Cyber Facility Support          | MIPR                   | Various : Kirtland AFB, NM     | -           | 0.513   | Apr 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 0.513      | -                        |
| Mission Support                        | MIPR                   | AEROSPACE : Kirtland AFB, NM   | -           | 0.774   | Apr 2022   | 0.114   | Apr 2023   | 1.068        | Apr 2024   | -           |            | 1.068         | Continuing       | Continuing | -                        |
| Model Based Systems Engineering (MBSE) | MIPR                   | AEROSPACE : Kirtland AFB, NM   | -           | 0.458   | Apr 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 0.458      | -                        |
| Digital Systems Engineering            | MIPR                   | Various : Kirtland AFB, NM     | -           | -       |            | 0.860   | Jun 2023   | -            |            | -           |            | -             | 0.000            | 0.860      | -                        |
| Digital Engineering Orchestration      | MIPR                   | Various : Kirtland AFB, NM     | -           | -       |            | -       |            | 0.600        | Apr 2024   | -           |            | 0.600         | Continuing       | Continuing | -                        |
| Digital Engineering Pilot Project      | MIPR                   | Various : Kirtland AFB, NM     | -           | -       |            | -       |            | 0.500        | Apr 2024   | -           |            | 0.500         | Continuing       | Continuing | -                        |
| Zero Trust Implementation              | MIPR                   | Various : Kirtland AFB, NM     | -           | -       |            | -       |            | 0.500        | Apr 2024   | -           |            | 0.500         | Continuing       | Continuing | -                        |
| Cloud Implementation Sustainment       | MIPR                   | Various : Kirtland AFB, NM     | -           | -       |            | -       |            | 0.571        | Apr 2024   | -           |            | 0.571         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                        |                        |                                | -           | 1.745   |            | 0.974   |            | 3.239        |            | -           |            | 3.239         | Continuing       | Continuing | N/A                      |





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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |  |  |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604222F / <i>Nuclear Weapons Support</i> | <b>Project (Number/Name)</b><br>654236 / <i>Engineering Analysis</i> |
|--|--|--|

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   | FY 2022 |  |  |  | FY 2023 |  |  |  | FY 2024 |  |  |  | FY 2025 |  |  |  | FY 2026 |  |  |  | FY 2027 |  |  |  | FY 2028 |  |  |  |
|---|---------|--|--|--|---------|--|--|--|---------|--|--|--|---------|--|--|--|---------|--|--|--|---------|--|--|--|---------|--|--|--|
| <b>Engineering &amp; Cyber Security Analysis</b>    |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |
| Emulation of the SMIC                               |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |
| Cyber Security Vulnerability Assessments & Analysis |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |
| Secure Cyber Facility Support                       |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |
| MBSE  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |
| Digital Engineering Orchestration & Pilot Project   |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |
| Zero Trust Implementation                           |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |
| Cloud Implementation Sustainment                    |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604222F / <i>Nuclear Weapons Support</i> | <b>Project (Number/Name)</b><br>654236 / <i>Engineering Analysis</i> |
|--|--|--|

Schedule Details

| Events by Sub Project                                   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Engineering &amp; Cyber Security Analysis</i></b> |         |      |         |      |
| Emulation of the SMIC                                   | 1       | 2022 | 4       | 2023 |
| Cyber Security Vulnerability Assessments & Analysis     | 1       | 2022 | 4       | 2027 |
| Secure Cyber Facility Support                           | 1       | 2022 | 4       | 2023 |
| MBSE  | 1       | 2022 | 2       | 2024 |
| Digital Engineering Orchestration & Pilot Project       | 3       | 2024 | 4       | 2027 |
| Zero Trust Implementation                               | 3       | 2024 | 4       | 2027 |
| Cloud Implementation Sustainment                        | 3       | 2024 | 4       | 2027 |

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |   |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0604222F / Nuclear Weapons Support |                      |                |                | <b>Project (Number/Name)</b><br>654807 / Nuclear Weapon System Technology and Integration |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>  | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 654807: Nuclear Weapon System Technology and Integration                | -                  | 18.933         | 61.411         | 39.298              | 0.000   | 39.298               | 36.012         | 38.676         | 41.195  | 42.664                  | Continuing              | Continuing        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -   | -                    | -              | -              | -   | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

The AFNWC is the executing agency for the Nuclear Weapon System Technology and Integration (NWST&I) program that ensures the safety, survivability, security, and reliability of AF nuclear weapon systems in direct support to the military warfighters and force providers. Emphasis is placed on independent technical assessments in support of nuclear compatibility, nuclear safety design, technical orders, and weapon system safety rules. Also provides assurance of survivability and mitigation of vulnerabilities to these unique systems. These requirements are met through studies and analyses, demonstration, modeling and simulation (M&S), test and evaluation (T&E), trade studies, requirements analysis, and recommendations to planning, policy, and doctrine. This program also conducts DoD-required certification for legacy, modernized, and new nuclear weapon systems. Starting in FY23, this program provides funding for DoD-required certification for legacy, modernized, and new nuclear weapon systems (previously conducted in this program element, project 654236).

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program's funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 0M was expended for civilian pay expenses in this program element, and in FY23 0M is forecasted for civilian pay expenses in this program element.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| <b>Title:</b> Weapons Effects  | 6.002          | 6.827          | 6.638               | 0.000              | 6.638                |
| <b>Description:</b> Ensures survivable and effective AF systems through evaluation, test, and analyses of nuclear environments and their impact to AF platforms. Develops and maintains the sole AF analytical capability to assess nuclear effects on weapon systems, their inherent hardness and mission degradation within a nuclear environment. These efforts shape and support requirements for new acquisitions, fielded systems, as well as providing critical expertise for exercises and operational planning. |                |                |                     |                    |                      |
| <b>FY 2023 Plans:</b><br>Increase development, modernization, verification and validation of M&S tools and testing methods. Develop rigorous methods and tools for testing and predictive response to nuclear effects. Conduct analysis to establish hardness requirements within the weapon system specification for current and future delivery aircraft, support aircraft, weapon systems, Intercontinental Ballistic Missiles (ICBM), and Nuclear Command,   |                |                |                     |                    |                      |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604222F / <i>Nuclear Weapons Support</i> | <b>Project (Number/Name)</b><br>654807 / <i>Nuclear Weapon System Technology and Integration</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| <p>Control, Communications (NC3) assets. Expand development of methods and tools used to assure weapon effectiveness in operationally relevant environments. Support AFGSC through oversight and report standardization of AF aircraft Electromagnetic Pulse (EMP) threat-level test execution.</p> <p><b>FY 2024 Base Plans:</b><br/>Continue to increase development, modernization, verification and validation of M&amp;S tools and testing methods. Continue to develop rigorous methods and tools for testing and predictive response to nuclear effects. Continue to increase analysis to establish hardness requirements within the weapon system specification for current and future delivery aircraft, support aircraft, weapon systems, ICBMs, and NC3 assets. Continue to expand development of methods and tools used to assure weapon effectiveness in operationally relevant environments. Continue to support AFGSC through oversight and report standardization of AF aircraft EMP threat-level test execution.</p> <p><b>FY 2024 OCO Plans:</b><br/>N/A</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding decreased slightly due to scope of FY24 activities.</p>   |                |                |                     |                    |                      |
| <p><b>Title:</b> Air Force Nuclear Red Team (AFNRT)</p> <p><b>Description:</b> The AFNRT independently evaluates vulnerabilities of current and future strategic systems across their lifecycle vs near term and emerging threats. These strategic systems capability assessments include nuclear weapon system fragility analysis, vulnerability modes &amp; effects analysis, M&amp;S, and effects testing. As part of the effort to assess the vulnerabilities, data is used from various tests and M&amp;S tools to develop mitigation strategies for consideration by program offices. This analysis of various threats to AF nuclear weapon systems is used to inform the warfighter's concept of operations (CONOPS), modernization activities, and new acquisitions.</p> <p><b>FY 2023 Plans:</b><br/>Expand assessments of strategic system capabilities/vulnerabilities relative to air delivered (AD) nuclear weapon systems, ICBMs, and human factors related to strategic systems. Conduct threat evaluations and analyses to address current and future threats that include, but are not limited to, kinetic, electronic warfare, cyber, supply chain, maintenance/logistics, and human factor (HF) vulnerabilities. Assessments will include nuclear weapon system fragility analysis, vulnerability modes and effects analysis, M&amp;S and combined environment testing. Assessments will be evaluated using existing weapon/platform paired with current and emerging threat vectors,</p> | 12.931         | 14.710         | 14.323              | 0.000              | 14.323               |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604222F / <i>Nuclear Weapons Support</i> | <b>Project (Number/Name)</b><br>654807 / <i>Nuclear Weapon System Technology and Integration</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| <p>as well as proposed modernization requirements. AD, ICBM, NC3, and HF assessments will be used in the development of requirements, CONOPS, and TTPs for modernization activities, and new acquisitions. Provide Conventional-Nuclear Integration (CNI) analysis to support the CSAF CNI Capstone Roadmap development and path forward.</p> <p><b>FY 2024 Base Plans:</b><br/>Continue to expand assessments of strategic system capabilities/vulnerabilities relative to AD nuclear weapon systems, ICBMs, and HFs related to strategic systems. Continue threat evaluations and analyses to address current and future threats that include, but are not limited to, kinetic, electronic warfare, cyber, supply chain, maintenance/logistics, and HF vulnerabilities. Assessments will include nuclear weapon system fragility analysis, vulnerability modes and effects analysis, M&amp;S and combined environment testing. Assessments will be evaluated using existing weapon/platform paired with current and emerging threat vectors, as well as proposed modernization requirements. AD, ICBM, NC3, and HF assessments will be used in the development of requirements, CONOPS, and TTPs for modernization activities, and new acquisitions. Provide CNI analysis to support the CSAF CNI Capstone Roadmap development and path forward.</p> <p><b>FY 2024 OCO Plans:</b><br/>N/A</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding decreased slightly due to scope of FY24 activities.</p> |                |                |                     |                    |                      |
| <p><b>Title:</b> Nuclear Certification Management</p> <p><b>Description:</b> This effort continues nuclear certification activities and development of nuclear certification tools that were previously contained in this program element, under project 654236, Engineering Analysis, prior to FY23. This funding is for statutory and regulatory (DoD and AF) nuclear enterprise-wide nuclear certification activities by AFNWC. It is distinct from, but complemented by, the funding identified by specific nuclear weapons programs (e.g., B-21, LGM-35A Sentinel, F-35A, F-15E, etc.) for their roles, responsibilities and authorities in nuclear certification, as segregated and directed by the same regulations (DODM 5210.41M and AFI 63-125). By DoD mandate, AFNWC provides an external (independent of program office) review of a weapon system's nuclear safety and surety features, eventually certifying the weapon system and its operational employment procedures. Nuclear certification activities include independent AF technical reviews, evaluations, and analyses for nuclear safety themes, employment procedures, delivery systems (warhead and/or carrier platforms, subsystems, or components), support equipment, software, and facilities that handle, maintain, or operate nuclear weapons or nuclear weapon systems to ensure compliance with national, DoD, and AF</p>   | 0.000          | 39.874         | 18.337              | 0.000              | 18.337               |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604222F / <i>Nuclear Weapons Support</i> | <b>Project (Number/Name)</b><br>654807 / <i>Nuclear Weapon System Technology and Integration</i> |

**B. Accomplishments/Planned Programs (\$ in Millions)**

guidance. AFNWC's scope includes overall management of the entire nuclear certification process for the AF, as well as the execution of compatibility certification, nuclear safety design, weapon system safety rules, and technical orders, and functions (e.g., security) involving personnel and organizations assigned to perform nuclear missions. The objective of this project is focused on new nuclear weapon system acquisition programs, as well as fielded system sustainment, modifications, and upgrades. This project will manage the flow of nuclear certification activities and provide certification data to all stakeholders via the Nuclear Certification Analysis Tool (NCAT). Examples include certification requirements plans, Aircraft Monitor and Control (AMAC) certification, surveillance testing, consequence analyses, qualitative and quantitative hazard evaluations, and myriad other activities.

***FY 2023 Plans:***

Invest in the modernization of the Family of Testers (FoT) while maintaining the Special Weapons Interface Tester (SWIFT) via design and development of improved, reliable test equipment adapted to modernized digital-enabled vehicles and weapons. Invest in and improve nuclear certification-specific data analysis capabilities (tools) to match growing weapon system complexity. Improve baseline and surge capability for AMAC testing, compatibility analyses and certification. Posture FoTs, NCAT, analyses, and processes to execute time-certain Full Weapon System Demonstrations (FWSDs) and other certification-required activities for F-35A, B-21, Long Range Standoff (LRSO) missile, Sentinel, B-52H, modernized ICBM Fuze, and seven Weapon Generation Facilities. Support DoD-requested capability growth for the NCAT analysis tool to optimize resource loading and program deconfliction.

***FY 2024 Base Plans:***

Develop capabilities to optimize nuclear certification activities within the digital environment. This includes the use of artificial intelligence, and automated toolsets/algorithms to assist certifiers in assessing nuclear weapon system compliance with the four DoD safety standards. Continue to invest in capabilities to test and assess nuclear weapon compatibility with their associated delivery platforms. Continue to invest in and improve nuclear certification-specific data analysis capabilities (tools) to match growing weapon system complexity. Continue to conduct independent technical analyses to execute time-certain FWSDs and other certification-required activities for F-35A, B-21, LRSO missile, Sentinel, B-52H, modernized ICBM Fuze, and seven Weapon Generation Facilities. Continue to support DoD-requested capability growth for the NCAT analysis tool to optimize resource loading and program deconfliction.

***FY 2024 OCO Plans:***

| <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604222F / <i>Nuclear Weapons Support</i> | <b>Project (Number/Name)</b><br>654807 / <i>Nuclear Weapon System Technology and Integration</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| N/A  |                |                |                     |                    |                      |
| <b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br>Funding decrease is due to continued efforts to source scheduled nuclear certification activities |                |                |                     |                    |                      |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 18.933         | 61.411         | 39.298              | 0.000              | 39.298               |

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

All sub-projects are continuous support/testing to all nuclear weapon systems.  
Follow-on contracts are for Modeling and Simulation and engineering, program and testing support efforts.

**D. Acquisition Strategy**

The objective of the NWST&I program strategy is to provide independent technical engineering, and scientific analyses, assessments and information in support of AF nuclear weapons systems while developing, and mentoring and shaping the next generation of AF resources. Multiple Cost Plus Fixed Fee (CPFF) and/or Time and Material (T&M) and Military Interdepartmental Purchase Requests (MIPR) are/will be used to execute testing and evaluations, technical analyses and/or provide focused support unique to the nuclear enterprise, for the technology and integration processes. All contracts will be openly competed.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604222F / Nuclear Weapons Support | <b>Project (Number/Name)</b><br>654807 / Nuclear Weapon System Technology and Integration |
|--|---|---|

| <b>Product Development (\$ in Millions)</b>   |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                     | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| Family of Testers Engineering and Development | C/CPFF                            | Booz Allen Hamilton : Kirtland AFB, NM    | -                  | 0.000          |                   | 6.866          | Dec 2022          | 4.113               | Dec 2023          | 0.000              |                   | 4.113                | 0.000                   | 10.979            | -                               |
| <b>Subtotal</b>                               |                                   |   | -                  | 0.000          |                   | 6.866          |                   | 4.113               |                   | 0.000              |                   | 4.113                | 0.000                   | 10.979            | N/A                             |

**Remarks**  
Nuclear Certification Support requirements - testers

| <b>Support (\$ in Millions)</b>                   |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                         | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b>       | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| NWST&I - Modeling & Simulation                    | C/CPFF                            | Peerless Technology Corp : Kirtland AFB, NM, NM | -                  | 2.177          | Nov 2021          | 2.000          | Feb 2023          | 4.000               | Nov 2023          | -                  |                   | 4.000                | Continuing              | Continuing        | -                               |
| NWST&I - FFRDC Engineering & Technical Support    | MIPR                              | Aerospace Corp(SMC) : El Segundo, CA            | -                  | 1.824          | Nov 2021          | 5.292          | Dec 2022          | 2.977               | Nov 2023          | -                  |                   | 2.977                | Continuing              | Continuing        | -                               |
| NWST&I - Security Support                         | MIPR                              | Other : Kirtland AFB, NM                        | -                  | 0.745          | Dec 2022          | 0.288          | Nov 2022          | 1.219               | Jan 2024          | -                  |                   | 1.219                | Continuing              | Continuing        | -                               |
| NWST&I - Program Support                          | C/CPFF                            | Booz Allen Hamilton : Kirtland AFB, NM          | -                  | 3.560          | Dec 2021          | 3.456          | Nov 2022          | 4.290               | Nov 2023          | -                  |                   | 4.290                | Continuing              | Continuing        | -                               |
| NWS&I - Nuclear Certification Engineering Support | C/CPFF                            | Booz Allen Hamilton : Kirtland AFB, NM          | -                  | 1.616          | Nov 2022          | 22.250         | Dec 2022          | 10.890              | Mar 2024          | -                  |                   | 10.890               | Continuing              | Continuing        | -                               |
| NWS&I - Equipment                                 | Various                           | Various : Kirtland AFB, NM                      | -                  | 0.374          | Mar 2022          | 0.208          | Feb 2023          | 0.087               | Feb 2024          | -                  |                   | 0.087                | Continuing              | Continuing        | -                               |
| NWST&I  | MIPR                              | MSIC : TBD                                      | -                  | 0.000          |                   | 0.500          | Jan 2023          | 0.000               |                   | -                  |                   | 0.000                | 0.000                   | 0.500             | -                               |
| <b>Subtotal</b>                                   |                                   |   | -                  | 10.296         |                   | 33.994         |                   | 23.463              |                   | -                  |                   | 23.463               | Continuing              | Continuing        | N/A                             |

**Remarks**  
Added line for equipment. Nuclear Certification Support requirements - Eng services



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|--|--|--|--|--|--|---|--|--|--|--|---|--|--|--|--|
| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2024 Air Force</b> |  |  |  |  |  |   |  |  |  |  | <b>Date:</b> March 2023   |  |  |  |  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                       |  |  |  |  |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604222F / Nuclear Weapons Support |  |  |  |  | <b>Project (Number/Name)</b><br>654807 / Nuclear Weapon System Technology and Integration |  |  |  |  |

| <b>Test and Evaluation (\$ in Millions)</b>  |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> |                         |                   |                                 |
|--|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                    | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| NWST&I - Evaluation                          | C/CPAF                            | John Hopkins : TBD                        | -                  | 0.404          | Aug 2022          | 0.000          |                   | 0.000               |                   | -                  |                   | 0.000                | Continuing              | Continuing        | -                               |
| NWST&I - Weapons Effects Uncertainty Testing | MIPR                              | National Labs : Various, NM               | -                  | 1.000          | Jan 2022          | 0.800          | Feb 2023          | 1.000               | Dec 2023          | -                  |                   | 1.000                | Continuing              | Continuing        | -                               |
| NWST&I - AFNRT Assessments 1                 | MIPR                              | National Labs : Various                   | -                  | 5.329          | Jul 2022          | 9.361          | Nov 2022          | 5.338               | Dec 2023          | -                  |                   | 5.338                | Continuing              | Continuing        | -                               |
| NWST&I - AFNRT Assessments 2                 | C/CPFF                            | Booz Allen Hamilton : Kirtland AFB, NM    | -                  | 0.804          | May 2022          | 1.000          | Feb 2023          | 1.456               | Feb 2024          | -                  |                   | 1.456                | Continuing              | Continuing        | -                               |
| NWST&I - Capability Assessments              | C/FP                              | CMU-SEI : TBD                             | -                  | 0.000          |                   | 0.650          | Jan 2023          | 0.000               |                   | -                  |                   | 0.000                | Continuing              | Continuing        | -                               |
| NWST&I - AMAC Testing                        | C/CPAF                            | Booz Allen Hamilton : Kirtland AFB, NM    | -                  | 0.000          |                   | 6.550          | Dec 2022          | 2.964               | Mar 2024          | -                  |                   | 2.964                | Continuing              | Continuing        | -                               |
| NWST&I - Testing                             | MIPR                              | WSMR : NM                                 | -                  | 0.000          |                   | 0.500          | Feb 2023          | 0.000               |                   | -                  |                   | 0.000                | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>                              |                                   |   | -                  | 7.537          |                   | 18.861         |                   | 10.758              |                   | -                  |                   | 10.758               | Continuing              | Continuing        | N/A                             |

**Remarks**  
Added assessment line. Nuclear Certification Support requirements - testing

| <b>Management Services (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> |                         |                   |                                 |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| NWST&I Program Support Cost (PSC)           | Various                           | Various : Kirtland AFB, NM                | -                  | 1.100          | Nov 2021          | 1.690          | Nov 2022          | 0.964               | Nov 2023          | 0.000              |                   | 0.964                | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>                             |                                   |   | -                  | 1.100          |                   | 1.690          |                   | 0.964               |                   | 0.000              |                   | 0.964                | Continuing              | Continuing        | N/A                             |

**Remarks**  
PSC includes travel, training, supply/equipment, freight, JWICS contractor support, and communications support (ARC & JWICS Phones). Addition of Nuclear Certification Support requirements.  
FY22 includes asset freight, JWICS refresh, and VTCs. FY23 Includes SCIF requirements (NFD).

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|--|--------------------|----------------|--|--|--|---------------------|--|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2024 Air Force |                    |                |  |  |  |                     | <b>Date:</b> March 2023  |                      |                         |                   |                                 |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                       |                    |                |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604222F / <i>Nuclear Weapons Support</i> |  |                     | <b>Project (Number/Name)</b><br>654807 / <i>Nuclear Weapon System Technology and Integration</i> |                      |                         |                   |                                 |
|  | <b>Prior Years</b> | <b>FY 2022</b> |  | <b>FY 2023</b>   |  | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| <b>Project Cost Totals</b>   | -                  | 18.933         |  | 61.411   |  | 39.298              | 0.000  | 39.298               | Continuing              | Continuing        | N/A                             |

**Remarks**  
 All sub-projects are continuous support/testing to all nuclear weapon systems.  
 Follow-on contracts for Modeling and Simulation and engineering, program and testing support efforts.

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604222F / <i>Nuclear Weapons Support</i> | <b>Project (Number/Name)</b><br>654807 / <i>Nuclear Weapon System Technology and Integration</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|                            |  |
|----------------------------|--|
| <b>AF Nuclear Red Team</b> |  |
| Assessments 1              |  |
| Assessments 2              |  |
| <b>Weapons Effects</b>     |  |
| Weapons Uncertainty        |  |
| Modeling & Simulation      |  |
| <b>Nuclear Management</b>  |  |
| Engineering Support        |  |
| <b>Nuclear Assessment</b>  |  |
| AMAC Testing               |  |
| <b>Nuclear Development</b> |  |
| Family of Testers          |  |
| <b>Program Support</b>     |  |
| Engineering                |  |
| Security                   |  |
| Program Analysis           |  |
| Program Support Cost (PSC) |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604222F / <i>Nuclear Weapons Support</i> | <b>Project (Number/Name)</b><br>654807 / <i>Nuclear Weapon System Technology and Integration</i> |

Schedule Details

| Events by Sub Project             | Start   |      | End     |      |
|-----------------------------------|---------|------|---------|------|
|                                   | Quarter | Year | Quarter | Year |
| <b><i>AF Nuclear Red Team</i></b> |         |      |         |      |
| Assessments 1                     | 1       | 2022 | 4       | 2028 |
| Assessments 2                     | 1       | 2022 | 2       | 2026 |
| <b><i>Weapons Effects</i></b>     |         |      |         |      |
| Weapons Uncertainty               | 1       | 2022 | 4       | 2028 |
| Modeling & Simulation             | 1       | 2022 | 4       | 2028 |
| <b><i>Nuclear Management</i></b>  |         |      |         |      |
| Engineering Support               | 2       | 2022 | 4       | 2028 |
| <b><i>Nuclear Assessment</i></b>  |         |      |         |      |
| AMAC Testing                      | 1       | 2023 | 4       | 2027 |
| <b><i>Nuclear Development</i></b> |         |      |         |      |
| Family of Testers                 | 1       | 2023 | 4       | 2025 |
| <b><i>Program Support</i></b>     |         |      |         |      |
| Engineering                       | 1       | 2022 | 4       | 2028 |
| Security                          | 1       | 2022 | 4       | 2028 |
| Program Analysis                  | 1       | 2022 | 4       | 2025 |
| Program Support Cost (PSC)        | 1       | 2022 | 4       | 2028 |

**Note**

All sub-projects are continuous support/testing to all nuclear weapon systems.  
Follow-on contracts for Modeling and Simulation and engineering, program and testing support efforts.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

|  |   |  |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604222F / Nuclear Weapons Support | <b>Project (Number/Name)</b><br>655708 / Nuclear Weapons Support |
|--|---|--|

| COST (\$ in Millions)           | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 655708: Nuclear Weapons Support | -           | 5.877   | 1.501   | 2.067        | 0.000       | 2.067         | 2.112   | 2.165   | 2.209   | 2.290   | Continuing       | Continuing |
| Quantity of RDT&E Articles      | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

The modernization of legacy nuclear systems, development of new nuclear-capable aircraft and munitions and the creation of the new Weapon Generation Facilities (WGF) within Air Force Global Strike Command (AFGSC) may require new support equipment capabilities to meet system and mission requirements. Additionally, the WGF introduces a new concept of operations by integrating maintenance and storage mission sets into one facility. To support mission generation requirements, support equipment and capabilities related to the nuclear enterprise must be studied, reviewed, modified, or in extreme cases, re-developed in order to maintain operational readiness. Examples of equipment under review include, but are not limited to, power generation, heating, ventilation, and air conditioning (HVAC), munition trailers/accessories, munition lifts/accessories, tow vehicles, and munition test/maintenance stands. Any identified capability gaps may result in the design of new systems. The review, analysis and potential modification of existing equipment ensures mission generation remains executable.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY23 0M was expended for civilian pay expenses in this program element, and in FY24 0M is forecasted for civilian pay expenses in this program element.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|---|---------|---------|--------------|-------------|---------------|
| <b>Title:</b> Nuclear Enterprise Support Equipment  | 5.877   | 1.501   | 2.067        | -           | 2.067         |
| <b>Description:</b> Nuclear Enterprise Support Equipment Review and Design  |         |         |              |             |               |
| <b>FY 2023 Plans:</b><br>Studies and analyses from previous efforts in this program are being leveraged to develop the next generation of munitions handling equipment, stabilized power, HVAC, munitions stands and trailers, and aerospace ground equipment used to support the nuclear enterprise. Funding supports engineering associated with requirements definition, technology maturation, and risk reduction needed to develop solutions to deliver prototypes which meet the evolving requirements of AFGSC for next-generation Common Aviation Support Equipment (CAvSE). Some examples include, but are not limited to the Small Agile Lift Truck (SALT), Electric Manually Operated Lift Truck (EMOLT), Large Nuclear Munitions Trailer (MHU-TSX/M), Multi-Capable Trailer (MCT), WGF Jammer (MHU-174X), Electric Ground Power Unit (EPUG), and Next Generation Air Pallet (NGAP). |         |         |              |             |               |
| <b>FY 2024 Base Plans:</b>  |         |         |              |             |               |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604222F / <i>Nuclear Weapons Support</i> | <b>Project (Number/Name)</b><br>655708 / <i>Nuclear Weapons Support</i> |
|--|--|---|

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|---|---------|---------|--------------|-------------|---------------|
| Continue to utilize studies and analyses from previous efforts to develop the next generation of munitions handling equipment, stabilized power, HVAC, munitions stands and trailers, and aerospace ground equipment used to support the nuclear enterprise. Continue engineering associated with requirements definition, technology maturation, and risk reduction needed to develop solutions to deliver prototypes which meet the evolving requirements of AFGSC for next-generation CAVSE. Some examples include, but are not limited to the SALT, EMOLT, Munitions Capable Trailer (MCT). |         |         |              |             |               |
| <b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br>Increase due to purchase of a small quantity of proven prototypes, prior to full-scale procurement.  |         |         |              |             |               |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 5.877   | 1.501   | 2.067        | -           | 2.067         |

**C. Other Program Funding Summary (\$ in Millions)**  
N/A

**Remarks**

- D. Acquisition Strategy**
1. The acquisition strategy for the SALT is for MilTech, via a Partnership Intermediary Agreement (PIA), to continue to engage and support industry partners, Manufacturing Extension Partnerships (MEP), and Subject Matter Experts (SMEs) on the development and delivery of two SALT demonstration prototypes.
  2. The acquisition strategy for the EMOLT is for MilTech, via a PIA, to continue to engage and support industry partners, MEP, and SMEs on the development and delivery of six EMOLT demonstration prototypes.
  3. The acquisition strategy for the MHU-TSX/M is for AFGSC to continue working with Square One Corporation to design, fabricate, and test an advanced robotic munitions loader for large aircraft.
  4. The acquisition strategy for the MCT is for the Air Force Research Laboratory to work with industry partners to design, fabricate, and test a prototype. The MCT is a power-assisted and manually capable approach to handling munitions and stores on combat aircraft and munition handling equipment. Next generation equipment is planned to replace MHU-226, MHU-110, and MHU-141 trailers.



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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604222F / <i>Nuclear Weapons Support</i> | <b>Project (Number/Name)</b><br>655708 / <i>Nuclear Weapons Support</i> |
|--|--|---|

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |  |
|--|--|
| <b><i>Nuclear Enterprise Support Equipment</i></b> |  |
| Small Agile Lift Truck (SALT)                      |  |
| Electric Manually Operated Lift Truck (EMOLT)      |  |
| Large Nuclear Munitions Truck (LNMT) TSX           |  |
| Multi-capable Trailer (MCT)                        |  |



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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604222F / <i>Nuclear Weapons Support</i> | <b>Project (Number/Name)</b><br>655708 / <i>Nuclear Weapons Support</i> |

Schedule Details

| Events by Sub Project                              | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Nuclear Enterprise Support Equipment</i></b> |         |      |         |      |
| Small Agile Lift Truck (SALT)                      | 3       | 2022 | 3       | 2025 |
| Electric Manually Operated Lift Truck (EMOLT)      | 3       | 2022 | 4       | 2025 |
| Large Nuclear Munitions Truck (LNMT) TSX           | 2       | 2022 | 3       | 2023 |
| Multi-capable Trailer (MCT)                        | 2       | 2024 | 2       | 2025 |

**Note**

The projects within the Weapons Generation Facility program target workflow and operation of current and future nuclear-certified systems.

The following programs were in the FY23 budget, but not in the FY24 budget:

1. Electric Tug (eTUG) program was put on hold due to no validated requirement and nuclear cert challenges with battery technology.
2. MHU-174X is currently no longer in this program due to fund constraints. The program is being continued through modernization efforts within SE&V division.
3. Next Generation Air Pallet (NGAP) was a cost share effort. The program has sufficient aviation support equipment funding and does not need additional funding at this time.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604270F / <i>Electronic Warfare Development</i> |
|---|---|

| COST (\$ in Millions)                               | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                               | -           | 6.849   | 7.222   | 13.804       | 0.000       | 13.804        | 18.230  | 18.687  | 19.069  | 60.125  | Continuing       | Continuing |
| 653891: <i>Adv Infrared Counter Measures(Aircm)</i> | -           | 6.849   | 7.222   | 13.804       | 0.000       | 13.804        | 18.230  | 18.687  | 19.069  | 60.125  | Continuing       | Continuing |

**Note**

This program, BA 5, PE 0604270F, project 653891, Cognitive Electromagnetic Warfare (EW), is a new start.  
 This program, BA 5, PE 0604270F, project 653891, Threat Acquisition & Exploitation, is a new start.  
 This program, BA 5, PE 0604270F, project 653891, Electromagnetic Battle Management (EMBM), is a new start.

**A. Mission Description and Budget Item Justification**

653891: The Advanced Infrared Countermeasure (AIRCМ) project contains related aircraft self-protection efforts aimed at increasing aircraft survivability against the increasing threat of sophisticated surface-to-air and air-to-air missiles. These missiles may employ sophisticated next-generation Electro-Optics (EO), Infrared (IR), Radio Frequency (RF), dual-mode (i.e. IR and RF), or multi-mode seekers. AIRCM will provide advanced expendable countermeasures and/or techniques that will be functionally compatible with existing dispenser systems and employed across multiple USAF weapons systems. This also includes any and all flare, chaff, decoy, and associated component development and testing that may be demanded or needed in current and future operations regardless of aircraft platform. Similar activities that are supplementary to this effort may be accomplished ad hoc using platform specific funding or through other activities such as joint services or NATO test groups.

Funding increased in FY24 due to change in focus from defeating Counter Violent Extremist Organization relevant threats to closing capability gaps to defeat latest National Defense Strategy top priority threat systems.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831 F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22, 0.00 was expended for civilian pay expenses in this program element, and in FY23 0.00 is forecasted for civilian pay expenses in this program element.

This program leverages Digital acquisition tenets of open, agile, and digital. Common component development, in collaboration with other weapon systems, to reduce redundant costs between systems with similar subsystems requirements. Invests in analytical, information management, data management, digital environments, networks, facilities, and security infrastructure upgrades directly supporting development and sustainment of this program's capabilities, while leveraging DoD and DAF enterprise IT solutions.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604270F / <i>Electronic Warfare Development</i> |
|---|---|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 7.110          | 2.222          | 13.773              | 0.000              | 13.773               |
| Current President's Budget                        | 6.849          | 7.222          | 13.804              | 0.000              | 13.804               |
| Total Adjustments                                 | -0.261         | 5.000          | 0.031               | 0.000              | 0.031                |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 5.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -0.261         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 0.031               | 0.000              | 0.031                |

**Change Summary Explanation**

FY23 Congressional increase for Next generation ultra wideband receiver for radar jammer

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|   |                    |                |                |                     |   |                      |                |                |  |                         |                         |                   |
|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|--|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |   |                      |                |                |  | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0604270F / <i>Electronic Warfare Development</i> |                      |                |                | <b>Project (Number/Name)</b><br>653891 / <i>Adv Infrared Counter Measures(Aircm)</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>  | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>   | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 653891: <i>Adv Infrared Counter Measures(Aircm)</i>                     | -                  | 6.849          | 7.222          | 13.804              | 0.000   | 13.804               | 18.230         | 18.687         | 19.069   | 60.125                  | Continuing              | Continuing        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -   | -                    | -              | -              | -  | -                       |                         |                   |

**Note**

This program, BA 5, PE 0604270F, project 653891, Cognitive Electromagnetic Warfare (EW), is a new start.  
 This program, BA 5, PE 0604270F, project 653891, Threat Acquisition & Exploitation, is a new start.  
 This program, BA 5, PE 0604270F, project 653891, Electromagnetic Battle Management (EMBM), is a new start.

**A. Mission Description and Budget Item Justification**

The Advanced Infrared Countermeasure (AIRCMM) project improves aircraft self-protection against the increasing threat of sophisticated surface-to-air and air-to-air missiles. Countermeasure improvements are the result of multiple related activities. First, enhanced understanding of advanced threats derived from intelligence and Threat Acquisition and Exploitation. Countermeasure Modeling and Simulation creates updated threat models, countermeasure models, and aircraft models. Modeling and Simulation is then used to digitally evaluate new techniques and products for improved effectiveness against current and emerging threat systems. Countermeasure Development yields new devices and capabilities aimed to defeat advanced threats. Countermeasure Testing collects data for updated digital models as well as tests devices and techniques to determine effectiveness. The project also provides for modernization and enhancement of tools and capabilities needed to perform Threat Acquisition and Exploitation, Countermeasure Modeling and Simulation, Countermeasure Development, and Countermeasure Testing. The project also evaluates novel countermeasure devices and techniques for potential significant capability gains against threats.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| <b>Title:</b> Countermeasure Development and Testing   | 2.032          | 2.222          | 3.304               | 0.000              | 3.304                |
| <b>Description:</b> Development, testing and qualification of EO, IR, and RF countermeasures on aircraft   |                |                |                     |                    |                      |
| <b>FY 2023 Plans:</b><br>Activities include development, testing and qualification of expendable countermeasures or cocktails on various aircraft.   |                |                |                     |                    |                      |
| <b>FY 2024 Base Plans:</b><br>Invest in threat exploitation activities through Air Force Research Laboratory. Fund Army DEVCOM to continue product development for an alternative to a currently sole source countermeasure type. Sustain current levels of effort for countermeasure modeling and simulation. Fund test activities leading to fielding recommendations. |                |                |                     |                    |                      |
| <b>FY 2024 OCO Plans:</b>  |                |                |                     |                    |                      |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force  |   |  | <b>Date:</b> March 2023 |                    |                      |
| <b>Appropriation/Budget Activity</b><br>3600 / 5   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604270F / <i>Electronic Warfare Development</i> | <b>Project (Number/Name)</b><br>653891 / <i>Adv Infrared Counter Measures(Aircm)</i> |                         |                    |                      |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b>  | <b>FY 2023</b>   | <b>FY 2024 Base</b>     | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
| N/A  |   |  |                         |                    |                      |
| <b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br>Funding increase due to restructure of project thrust area to better reflect increased AF emphasis on Flares/ Expendable Countermeasures (XCM); this is the first of a planned multi-year ramp up of investment to keep pace with the proliferation of advanced threat systems.   |   |  |                         |                    |                      |
| <b><i>Title:</i></b> Ultra-Wideband Receiver (UWR) for Radar Jammer  |   |  |                         |                    |                      |
| <b><i>Description:</i></b> Develop advanced algorithms and use open architecture hardware to significantly increase Electronic Warfare (EW) capability through higher Probability of Intercept to near instantaneous detection of enemy radar pulses. Support open architecture standards to enable rapid mission-ware reprogramming to leverage the improved radar detections. Capability provides a stare versus scan of the Electromagnetic Spectrum (EMS) allowing US forces to rapidly detect enemy radar pulses and improve situational awareness. |   |  |                         |                    |                      |
| <b><i>FY 2023 Plans:</i></b><br>Develop a direction-finding enhancement for the ultra-wideband receiver (UWR). The enhanced UWR system will perform real-time streaming containing UWR detection details, to include frequency, coarse pulse train and scan pattern details, and direction. Deliverables will include appropriate requirements, design, test specifications and product drawings.  |   |  |                         |                    |                      |
| <b><i>FY 2024 Base Plans:</i></b><br>N/A   |   |  |                         |                    |                      |
| <b><i>FY 2024 OCO Plans:</i></b><br>N/A  |   |  |                         |                    |                      |
| <b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br>FY23 Funds are a Congressional Add.   |   |  |                         |                    |                      |
| <b><i>Title:</i></b> Cognitive Electromagnetic Warfare (EW)  |   |  |                         |                    |                      |
| <b><i>Description:</i></b> Perform assessments and analyses for an Air Force capability to analyze adversaries' use of the electromagnetic spectrum, make real-time decisions assisted by machine learning/artificial intelligence, perform effective electromagnetic attack (EA) and share EA techniques and identification/targeting criteria to the warfighting force.  |   |  |                         |                    |                      |
| <b><i>FY 2023 Plans:</i></b>   |   |  |                         |                    |                      |
|  | 4.817   | 5.000  | 0.000                   | 0.000              | 0.000                |
|  | 0.000   | 0.000  | 5.000                   | 0.000              | 5.000                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604270F / <i>Electronic Warfare Development</i> | <b>Project (Number/Name)</b><br>653891 / <i>Adv Infrared Counter Measures(Aircm)</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| N/A   |                |                |                     |                    |                      |
| <p><b>FY 2024 Base Plans:</b><br/>Perform a Capabilities Based Assessment.</p> <p><b>FY 2024 OCO Plans:</b><br/>N/A</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>New Start.</p>  |                |                |                     |                    |                      |
| <p><b>Title:</b> Threat Acquisition &amp; Exploitation</p> <p><b>Description:</b> Threat Acquisition &amp; Exploitation will be a continuing project including intelligence monitoring of threat developments, acquisition of foreign threat systems, development of threat system surrogates, exploitation of threat systems and support to digital threat model development. Threat systems are also used in testing. Many existing threats are facing maintenance issues due to use far beyond designed lifespan and are in need of replacement. This project will also fund replacement of older test assets. Investment will grow capacity to acquire and exploit multiple systems simultaneously reducing time to deliver countermeasure capabilities.</p> <p><b>FY 2023 Plans:</b><br/>N/A</p> <p><b>FY 2024 Base Plans:</b><br/>Invest in surrogate threat system development, begin investment in threat acquisition and exploitation activities through National Air &amp; Space Intelligence Center, Missile &amp; Space Intelligence Center and in conjunction with US Navy countermeasures program office.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding increased due to restructure of project thrust areas to better reflect increased AF emphasis on Flares/XCM.</p> | -              | 0.000          | 0.500               | -                  | 0.500                |
| <p><b>Title:</b> Electromagnetic Battle Management (EMBM)</p> <p><b>Description:</b> Perform assessments and analyses for an Air Force capability to provide electromagnetic spectrum situational awareness, decision support, and command and control - linked by common architectures, standards, and data - to enable planning, coordination, and synchronization of electromagnetic spectrum operations (EMSO) across the range of military operations.</p>   | 0.000          | 0.000          | 5.000               | 0.000              | 5.000                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604270F / <i>Electronic Warfare Development</i> | <b>Project (Number/Name)</b><br>653891 / <i>Adv Infrared Counter Measures(Aircm)</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>          | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024<br/>Base</b> | <b>FY 2024<br/>OCO</b> | <b>FY 2024<br/>Total</b> |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|
| <b>FY 2023 Plans:</b><br>N/A   |                |                |                         |                        |                          |
| <b>FY 2024 Base Plans:</b><br>Perform an Analysis of Alternatives.   |                |                |                         |                        |                          |
| <b>FY 2024 OCO Plans:</b><br>N/A                                     |                |                |                         |                        |                          |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>New Start. |                |                |                         |                        |                          |
| <b>Accomplishments/Planned Programs Subtotals</b>                    | 6.849          | 7.222          | 13.804                  | 0.000                  | 13.804                   |

| <b>C. Other Program Funding Summary (\$ in Millions)</b> |                |                |                         |                        |                          |                |                |                |                |                             |                   |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| <u>Line Item</u>   | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024<br/>Base</u> | <u>FY 2024<br/>OCO</u> | <u>FY 2024<br/>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To<br/>Complete</u> | <u>Total Cost</u> |
| • PAAF 01 352010: <i>Cartridges</i>                      | 26.483         | -              | -                       | -                      | -                        | -              | -              | -              | -              | 0.000                       | 26.483            |
| • PAAF 01 356010: <i>Flares</i>                          | 85.934         | 120.548        | 79.250                  | -                      | 79.250                   | 95.797         | 97.203         | 98.664         | 85.337         | Continuing                  | Continuing        |

**Remarks**  
Qualified flares, if not in AF inventory, will be procured under program 0208030F War Reserve Munitions, Flares.

**D. Acquisition Strategy**  
Various acquisition approaches will be used. Government organic capabilities will be utilized to the greatest practicable extent to include threat acquisition and exploitation, modeling and simulation, testing, and development work. Portions of the program will be executed via Other Transactional Authorities which facilitate collaborative Government, Industry, and Academic ordnance technology development and prototyping initiatives. Other portions may be contracted via the Eglin Wide Agile Acquisition Contract, a multi-year indefinite delivery, indefinite quantity contract supporting munitions research, development, prototyping, and production.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |  |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604270F / <i>Electronic Warfare Development</i> | <b>Project (Number/Name)</b><br>653891 / <i>Adv Infrared Counter Measures(Aircm)</i> |
|--|---|--|

| <b>Product Development (\$ in Millions)</b>       |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                         | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| IR/UV: Black Body Thrusted Flare                  | C/CPPF                            | Cornerstone OTA : TBD, TN                 | -                  | 1.032          | Jun 2022          | 1.222          | Jan 2023          | -                   |                   | -                  |                   | -                    | Continuing              | Continuing        | -                               |
| Next Generation Ultra-Wide Band Receiver (UWR)    | TBD                               | TBD : Warner Robins AFB, GA               | -                  | 4.724          | Nov 2022          | 4.898          | Apr 2023          | -                   |                   | -                  |                   | -                    | Continuing              | Continuing        | -                               |
| Pyrophoric Alternative Material                   | MIPR                              | DEVCOM AC : Picatinny Arsenal, NJ         | -                  | -              |                   | -              |                   | 0.500               | Jan 2024          | -                  |                   | 0.500                | Continuing              | Continuing        | -                               |
| High Frequency Chaff                              | TBD                               | TBD : TBD                                 | -                  | -              |                   | -              |                   | 0.350               | Mar 2024          | -                  |                   | 0.350                | Continuing              | Continuing        | -                               |
| IR Advanced Countermeasure Prototyping and Design | Various                           | Various : TBD                             | -                  | -              |                   | -              |                   | 0.500               | May 2024          | -                  |                   | 0.500                | Continuing              | Continuing        | -                               |
| Cognitive Electromagnetic Warfare (EW)            | Various                           | Air Combat Command : Langley AFB, VA      | -                  | -              |                   | -              |                   | 5.000               | Oct 2023          | -                  |                   | 5.000                | Continuing              | Continuing        | -                               |
| Electromagnetic Battle Management (EMBM)          | Various                           | Air Combat Command : Langley AFB, VA      | -                  | -              |                   | -              |                   | 5.000               | Oct 2023          | -                  |                   | 5.000                | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>                                   |                                   |   | -                  | 5.756          |                   | 6.120          |                   | 11.350              |                   | -                  |                   | 11.350               | Continuing              | Continuing        | N/A                             |

**Remarks**  
 Develop Advanced Expendable Countermeasures to defeat currently fielded threats from which aircraft are not sufficiently protected.  
 Perform assessments and analyses of proposed electromagnetic warfare (EW) capabilities.

| <b>Support (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---------------------------------|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>       | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| A&AS Support                    | C/FFP                             | EPASS: Hill AFB : UT                      | -                  | -              |                   | -              |                   | 0.200               | Feb 2024          | -                  |                   | 0.200                | Continuing              | Continuing        | -                               |
| Travel                          | Various                           | Not specified. : TBD                      | -                  | -              |                   | -              |                   | 0.025               |                   | -                  |                   | 0.025                | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>                 |                                   |   | -                  | -              |                   | -              |                   | 0.225               |                   | -                  |                   | 0.225                | Continuing              | Continuing        | N/A                             |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |  |
|--|---|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604270F / <i>Electronic Warfare Development</i> | <b>Project (Number/Name)</b><br>653891 / <i>Adv Infrared Counter Measures(Aircm)</i> |
|--|---|--|

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                    |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|------------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location     | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Modeling and Simulation                     | MIPR                   | Air Force Research Lab : WPAFB, OH | -           | 1.000   | Jun 2022   | 1.000   | Jan 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Threat and Acquisition Exploitation         | MIPR                   | Multiple : TBD                     | -           | -       |            | -       |            | 0.500        | Feb 2024   | -           |            | 0.500         | Continuing       | Continuing | -                        |
| IR Modeling and Simulation                  | MIPR                   | Various : TBD                      | -           | -       |            | -       |            | 1.729        | Dec 2023   | -           |            | 1.729         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                    | -           | 1.000   |            | 1.000   |            | 2.229        |            | -           |            | 2.229         | Continuing       | Continuing | N/A                      |

**Remarks**

- Modeling and simulation
- This entails performance of modeling and simulation (to include threat hardware in-the-loop) which helps to predict advanced expendable countermeasure effectiveness and develop and define Air Force requirements
  - Performing activity varies; conducted by AFRL and Georgia Tech Research Institute
- Range Test
- This is the cost to use the range for testing (Radiometric, Captive Seeker, Flight, etc.)
  - Performing Activity & Location varies; 96th Test Wing, Eglin AFB, FL, White Sands Missile Range, NM, Gila Bend, AZ
- Test Support
- This includes but is not limited to Seeker Test Vans (multiple vans required for Captive Seeker), duo chrome camera, and other test equipment
  - Activities/support during testing (i.e. communications/electric/security)
  - Performing Activity & Location should remain "Various: TBD", multiple activities are included

| <b>Management Services (\$ in Millions)</b>                                     |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Program Support Costs (formerly Program Management Administration costs) -- UWR | Various                | AFMC AFLCMC : Robins AFB, GA   | -           | 0.093   | May 2022   | 0.102   | Feb 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>   |                        |                                | -           | 0.093   |            | 0.102   |            | -            |            | -           |            | -             | Continuing       | Continuing | N/A                      |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |  |
|--|---|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604270F / <i>Electronic Warfare Development</i> | <b>Project (Number/Name)</b><br>653891 / <i>Adv Infrared Counter Measures(Aircm)</i> |
|--|---|--|

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total |  | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|--|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |  |                  |            |                          |

**Remarks**  
AATC provides all the management, preparation and coordination of advanced expendable countermeasure testing efforts for ACC/CAF (this does not include support for AMC or AFSOC)

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | -           | 6.849   | 7.222   | 13.804       | -           | 13.804        | Continuing       | Continuing | N/A                      |

**Remarks**

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604270F / <i>Electronic Warfare Development</i> | <b>Project (Number/Name)</b><br>653891 / <i>Adv Infrared Counter Measures(Aircm)</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   |  |
|---|--|
| <b>Advance IR Aircm</b>                           |  |
| Modeling and Simulation                           |  |
| IR/UV: Black Body Thrusted Flare Development      |  |
| Threat Acquisition & Exploitation                 |  |
| Pyrophoric Alternative Material                   |  |
| High Frequency Chaff                              |  |
| IR Advanced Countermeasure Prototyping and Design |  |
| IR Modeling and Simulation                        |  |
| <b>Wideband Receiver for Radar Jammer</b>         |  |
| Next Generation Wide Band Receiver                |  |
| <b>Cognitive Electromagnetic Warfare (EW)</b>     |  |
| Cognitive Electromagnetic Warfare (EW)            |  |
| <b>Electromagnetic Battle Management (EMBM)</b>   |  |
| Electromagnetic Battle Management (EMBM)          |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604270F / <i>Electronic Warfare Development</i> | <b>Project (Number/Name)</b><br>653891 / <i>Adv Infrared Counter Measures(Aircm)</i> |

Schedule Details

| Events by Sub Project                                  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Advance IR Aircm</i></b>                         |         |      |         |      |
| Modeling and Simulation                                | 1       | 2022 | 1       | 2024 |
| IR/UV: Black Body Thrusted Flare Development           | 1       | 2022 | 2       | 2024 |
| Threat Acquisition & Exploitation                      | 2       | 2024 | 4       | 2028 |
| Pyrophoric Alternative Material                        | 2       | 2024 | 3       | 2027 |
| High Frequency Chaff                                   | 2       | 2024 | 2       | 2028 |
| IR Advanced Countermeasure Prototyping and Design      | 3       | 2024 | 4       | 2028 |
| IR Modeling and Simulation                             | 1       | 2024 | 4       | 2028 |
| <b><i>Wideband Receiver for Radar Jammer</i></b>       |         |      |         |      |
| Next Generation Wide Band Receiver                     | 1       | 2023 | 4       | 2028 |
| <b><i>Cognitive Electromagnetic Warfare (EW)</i></b>   |         |      |         |      |
| Cognitive Electromagnetic Warfare (EW)                 | 1       | 2024 | 4       | 2028 |
| <b><i>Electromagnetic Battle Management (EMBM)</i></b> |         |      |         |      |
| Electromagnetic Battle Management (EMBM)               | 1       | 2024 | 4       | 2028 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604281F / <i>Tactical Data Networks Enterprise</i> |
|---|--|

| COST (\$ in Millions)                 | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                 | -           | 122.940 | 129.941 | 74.023       | 0.000       | 74.023        | 74.432  | 76.528  | 128.499 | 80.926  | Continuing       | Continuing |
| 655050: <i>TDL System Integration</i> | -           | 122.940 | 129.941 | 74.023       | 0.000       | 74.023        | 74.432  | 76.528  | 128.497 | 80.924  | Continuing       | Continuing |
| 655262: <i>Family of Gateways*</i>    | -           | 0.000   | 0.000   | 0.000        | 0.000       | 0.000         | 0.000   | 0.000   | 0.002   | 0.002   | Continuing       | Continuing |

\*This project's R-2a exhibit has been suppressed due to funding not beginning until after FY 2024

**Note**

This program, BA 5, PE 0604281F, project 655050, Second Generation Anti-Jam Tactical UHF Radio for NATO (SATURN), is a new start.

N/A

**A. Mission Description and Budget Item Justification**

The Tactical Data Networks Enterprise (TDNE) develops, enhances and fields Tactical Data Links (TDL) including internet protocol (IP) networks, advanced waveforms, radios, network management tools, and associated hardware and software that comprise the Joint Aerial Layer Network (JALN). This will be accomplished by upgrading currently fielded communications and TDL systems and IP networks. The upgrades align with the development and fielding of more advanced systems in support of the Advanced Battle Management System (ABMS). ABMS is a family of systems which provides capabilities consisting of air, land, and maritime surveillance, tactical communications and networking, integrated with battle management command and control in support of Joint forces. ABMS is an integral component to transition to the Joint All Domain Command and Control (JADC2) concept at the tactical level of warfare. TDNE supports the development, fielding and training of aerial layer networking capabilities across multiple force projection missions including air superiority, ground precision attack, command and control, intelligence, surveillance and reconnaissance (ISR), and personal recovery while integrating capabilities with space operations. This program ensures the continued enhanced interoperability of Air Force and joint/ coalition/NATO assets through efforts such as early systems engineering for program requirements analysis and architectural design development/ coordination of all TDN standards and management capabilities, configuration management, platform/system interoperability assessments, development of government reference architectures, interoperability certification testing, and flight testing. The aerial layer extends to interfacing with space communication assets (both military and commercial). An example of this interface work includes the use of the Protected Tactical Waveform (PTW) designed to mitigate the effects of advanced jamming in Anti-Access/Area Denial environments. PTW development activities may include technical and acquisition-related studies, analysis, early systems engineering and risk reduction activities, addressing all subsystems to support both current program planning/execution and future AF program planning. This effort also funds PTW modem development and aperture development on suitable platforms.

TDL System Integration will provide for the study (acquisitions current and proposed), analysis, enhancement, development, integration, demonstration, test, and evaluation of TDLs as a subset of the broader aerial layer networks. TDLs are used in both peace time and combat environments to exchange information such as character-oriented and fixed-formatted messages, data, radar tracks, target information, platform status, imagery, free-text messaging and command assignments. TDLs provide interoperability, local and global connectivity, and situational awareness to the user when training or fighting under rapidly changing operational conditions. TDLs increase mission effectiveness by providing enhanced air domain situational awareness, positive combat identification of aircraft in the network, fusion/correlation of on-

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|   |  |
|---|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604281F / <i>Tactical Data Networks Enterprise</i> |
|---|--|

and off-board sensor data, digital sharing of machine-to-machine target and threat information, thereby, enabling time critical targeting and other mission assignment tasking.

TDLs are used by all service theater command and control (C2) elements, weapons platforms, and sensors. TDLs include, but are not limited to: Link 16, Link 22, and other Advanced TDL Link technologies, such as Tactical Targeting Network Technology (TTNT), Common Data Link (CDL), Intra-Flight Data Link (IFDL) and Multifunction Advanced Data Link (MADL) . SATURN (Second-Generation Anti-Jam Tactical UHF Radio for NATO) is the next generation UHF line-of-sight link and is required to supporting a DoD CIO Mandate a resilient voice and data capability for operations in a contested environment. Agile Communications includes the capability to share tactically significant information within/to/from highly contested environments in support of the Air Superiority 2030 Flight Plan. Agile Communication efforts provide processes and coordination for enterprise communication development activities. Connect The QUAD supports new capabilities based on government ownership and modular communications architecture for the next generation of fighter, bomber, and ISR platforms to operate within a Highly Contested Environment (HCE). High Capacity Backbone (HCB), a subset of the overall ABMS plan, will provide the warfighter with a robust communication infrastructure enhancing C2 capabilities. HCB connects users operating within disadvantaged conditions to space and terrestrial communications utilizing Deployed Ground Entry Points (DGEP) and aerial nodes. To address future Advanced Tactical Datalinks, development of a Software Programmable OMS compliant (SPOC) radio terminal prototype is being built and tested. SPOC will provide a next generation radio set capable of hosting a variety of advanced tactical datalinks which aligns with the ABMS plan, and allows for more than one waveform operating simultaneously resulting in improved connectivity and situational awareness for the warfighter. Another development and demonstration effort known as Small Form Factor (SFF) supports Digitally Assisted Close Air Support (DACAS) and other missions across the full spectrum of operating environments.

Communication gateways are necessary to support systems of systems integration and the delivery of information exchanges across disparate physical and logical network pathways. Gateway functions include enabling interoperability between data formats, protocols, and communication mediums. Additionally, gateway functions extend the connectivity range, consolidate data from multiple networks into high capacity links for transmission to key C2ISR nodes, route information between disadvantaged users, and fuse/correlate data from multiple sources to improve accuracy. Gateway functions also provide application hosting, shared data storage, on-demand information access, smart data forwarding, and system monitoring and network management. Family of Gateways provides for the study (acquisitions current and proposed), analysis, enhancements, development, integration, costing, demonstration, test, and evaluation efforts related to future TDL communications development that will allow joint combat forces to exchange information quickly and accurately by bridging discrete airborne, terrestrial, maritime, and space-based C4ISR networks producing operational effects not possible within individual networks. Efforts in this project include waveform, ground, and rapid acquisition activities supporting Air Force requirements for communication bridging across multiple platforms, sources and communication domains.

This program element may include necessary civilian pay expenses required to support, manage, execute, and deliver weapon system capabilities across the BACN platforms, aerial network, and tactical data network enterprise. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY2021 0.900M was expended for civilian pay expenses in this program element, and in FY2022 0.900M is forecasted for civilian pay expenses in this program element.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |  |
|---|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604281F / <i>Tactical Data Networks Enterprise</i> |
|---|--|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 159.836        | 133.117        | 92.813              | 0.000              | 92.813               |
| Current President's Budget                        | 122.940        | 129.941        | 74.023              | 0.000              | 74.023               |
| Total Adjustments                                 | -36.896        | -3.176         | -18.790             | 0.000              | -18.790              |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | -11.400        |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 12.500         |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | -32.039        | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -4.857         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | -4.276         | -18.790             | 0.000              | -18.790              |

**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

**Project:** 655050: *TDL System Integration*

Congressional Add: *Next Generation (Software Programmable Open Mission System Compliant (SPOC) radio)*

Congressional Add: *KC-135 advanced intelligent gateway "Congressional funding will allow KC-135s to be outfitted with an Advanced Intelligent Gateway capability by funding all up-front non-recurring engineering, RTI..."*

Congressional Add Subtotals for Project: 655050

Congressional Add Totals for all Projects

|  | <b>FY 2022</b> | <b>FY 2023</b> |
|--|----------------|----------------|
|  | 0.000          | 6.500          |
|  | 0.000          | 6.000          |
|  | 0.000          | 12.500         |
|  | 0.000          | 12.500         |

**Change Summary Explanation**

FY22:

- 10.505 AF FY22-51 PA DoD FY22-11 PA - OMNIBUS Part I - Implementation 4 (3400 and 3080)
- 11.888 AF FY22-79 PA DoD FY22-15 PA - SEPTEMBER E7 New Start (AWACS)
- 3.658 C3IN AFDCO BTR
- 0.670399 FY22 M-Code BTR
- 5.671600 Rapid Sustainment Modernization
- +0.354 FY22 3600 Realignment from 67 to LC - Distribution to MAJCOM
- 4.857 SBIR

FY23:

- +6.5 Congressional Add-SPOC

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force Date: March 2023

|   |  |
|---|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604281F / <i>Tactical Data Networks Enterprise</i> |
|---|--|

+6.0 Congressional Add-KC135 Advanced Intel Gateway  
-11.4 Congressional Mark PTW  
-4.276 for FFRDC reduction  
-3.931 SBIR \*not reflected in doc program change summary due to data load issues but will be reflected in staffer brief

FY24:  
-18.790 for realignment for higher Department of the Air Force priorities.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604281F / <i>Tactical Data Networks Enterprise</i> | <b>Project (Number/Name)</b><br>655050 / <i>TDL System Integration</i> |
|--|--|--|

| COST (\$ in Millions)                 | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 655050: <i>TDL System Integration</i> | -           | 122.940 | 129.941 | 74.023       | 0.000       | 74.023        | 74.432  | 76.528  | 128.497 | 80.924  | Continuing       | Continuing |
| Quantity of RDT&E Articles            | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**Note**

This program, BA 5, PE 0604281F, project 655050, Second Generation Anti-Jam Tactical UHF Radio for NATO (SATURN), is a new start.

**A. Mission Description and Budget Item Justification**

Tactical Data Links (TDL) System Integration provides for the study, analysis, enhancement, development, integration, demonstration, joint/coalition/NATO interoperability exercises, costing, test, trials, and evaluation of TDL as a subset of the broader aerial layer network. TDLs are used in both peacetime and combat environments to exchange information such as character-oriented and fixed-formatted messages, data, radar tracks, target information, platform status, imagery, free-text messaging and command assignments. TDLs provide interoperability, local and global connectivity, and situational awareness to the user when training or fighting under rapidly changing operational conditions. TDLs increase mission effectiveness by providing enhanced air domain situational awareness, positive combat identification of aircraft in the network, fusion/correlation of on- and off-board sensor data, digital sharing of machine to machine target and threat information and, thereby, enabling time critical targeting and other mission assignment tasking. TDLs are used by all service, NATO, and coalition theater C2 elements, weapons platforms, and sensors.

The number of Air Force platforms hosting TDLs has expanded from C2 aircraft (E-7, E-8, E-11A, EQ-4B, etc.) to the fighter, bomber, intelligence, surveillance and reconnaissance (ISR), tanker, airlift and other tactical fleets (F-15, F-16, F-22A, Rivet Joint, B-1, B-2, B-52, KC-46, etc.), as well as precision guided munitions. Utilization of TDLs in joint and international environments requires the integration of terminals into host platforms and interoperability of TDL networks across all deployed joint/Coalition/NATO platforms. USAF mandates require additional studies and analysis in order to meet frequency reprogramming and cryptographic requirements.

High Capacity Backbone (HCB) effort implements an incremental approach for deploying resilient reach back connectivity to DISN services and in-theater rear echelon organizations through dedicated aerial gateways and opportunistic airborne nodes. The HCB Transport supports a robust deployable ground infrastructure required, through reach back, range extension and payload control. It will use an open system approach composed of non-proprietary government and commercial interface standards. Link 16 Enhancement will develop and field advanced signal processing capabilities on 4th and 5th generation platforms to address threats in the contested and highly contested environments.

Efforts in this project include waveform and integration activities.

**Waveform:**

Waveform activities include, but are not limited to, enabling and supporting Joint Interoperability of Tactical Command and Control Systems (JINTACCS), joint/Coalition/NATO Interoperability, Link 16 enhancements, and development of a next generation waveform and/or advanced tactical data link. Funding will provide training, logistics,

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604281F / <i>Tactical Data Networks Enterprise</i> | <b>Project (Number/Name)</b><br>655050 / <i>TDL System Integration</i> |
|--|--|--|

development, testing and certification of individual TDL implementations to joint/allied standards, establishment of service-wide network management procedures/operations, and system-wide enhancements/testing, demonstration and experimentation.

**Integration:**  
Integration activities include but are not limited to, Data Link Test Facility (DTF), MIDS JTRS, Air Force Participating Test Unit (AFPTU), Interoperable System Management and Requirements Transformation (iSMART), Network Centric Capability Assessment (NCCA), NATO interoperability, Coalition interoperability, , integration analysis of C2 of JALN, Combat Cloud, Protected Tactical Waveform (PTW), second generation Anti Jam(AJ) Tactical Ultra High Frequency(UHF) Radio for North Atlantic Treaty Organization(NATO) (SATURN) and analysis of integration on platforms of existing TDN systems, system-of-systems analysis. Funding will ensure continued enhanced interoperability of Air Force/joint/Coalition/NATO assets through efforts such as early systems engineering for program requirements analysis and architectural design development/coordination of all TDN standards and management capabilities, configuration management, platform/system interoperability assessments, development of government reference architectures, integration of cyber technologies, interoperability certification testing, and flight testing, demonstration and experimentation. Another development and demonstration effort known as Small Form Factor (SFF) supports Digitally Assisted Close Air Support (DACAS) and other missions across the full spectrum of operating environments.

Activities also include studies, prototypes, analysis (engineering and cost), demonstrations and experiments to support both current program planning and execution and future program planning efforts for Tactical Data Networks (TDN), to include but not limited to development of joint concepts for C2, Analysis of Alternatives (AoA) follow-on analysis, advanced gateway planning, development/integration of Advanced Battle Management systems (ABMS) capabilities, across all aerial network and tactical data networks enterprise platforms including (but not limited to) E-11 Battlefield Airborne Communications Node (BACN).

Activities will also include joint/Coalition/NATO Interoperability that provides program office system engineering to support Foreign Military Sales (FMS).

Agile Communications include the capability to share tactically significant information within/to/from highly contested environments in support of the Air Superiority 2030 Flight Plan. Agile Communication efforts provide for pre-Analysis of Alternatives (AoA) and development activities. Agile Communications supports the application of open standards & advanced apertures over an Enterprise-wide Aerial Network, enabling all platforms to share combat-relevant data/info to, from & within the Highly Contested Environment (HCE).

This program element may include necessary civilian pay expenses required to support, manage, execute, and deliver weapon system capabilities across the BACN platforms, aerial network, and tactical data network enterprise. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In PY 0.9M was expended for civilian pay expenses in this program element, and in CY 0.9M is forecasted for civilian pay expenses in this program element.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|--|---------|---------|--------------|-------------|---------------|
| <b>Title:</b> Tactical Data Networks (TDN) Integration | 25.823  | 24.716  | 21.945       | 0.000       | 21.945        |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604281F / <i>Tactical Data Networks Enterprise</i> | <b>Project (Number/Name)</b><br>655050 / <i>TDL System Integration</i> |

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|---|---------|---------|--------------|-------------|---------------|
| <p><b>Description:</b> TDN Integration activities include but are not limited to, Data Link Test Facility (DTF), Air Force Participating Test Unit (AFPTU), Network Centric Capability Assessment (NCCA), Joint/Coalition/NATO Interoperability, Analysis of Alternatives (AoA) follow-on, gateway planning as well as Joint Interoperability of Tactical Command and Control Systems (JINTACCS) ensures interoperability of TDL systems with associated joint, allied, and Coalition systems.</p> <p>It includes configuration management of TDL Military Standards (MIL-STDs), TDL message development, interoperability test/certification, and TDL message standard implementation using interoperable System Management and Requirements Transformation (iSMART) for Link 16, Link 22, Intra-flight Data Link (IFDL), Multifunction Advanced Data Link (MADL), and others. Full Motion Video (FMV) Extended Unified Relay (FEURY) system development.</p> <p>Efforts also include AFPTU will purchase hardware and software in support for testing Link16 updates made by contractors and MAJCOMs to ensure they are in compliance with the MIL STD 6016 the Link 16 specification. The JINTACCS review and comment on changes being requested to the MIL STD Link16 specification, they support the various MAJCOM and coalition engagements that present new changes to the specification or changes to the message formats along with other documentation that could also impact the specification. Requirement analysis includes engagements with contractors and FFRDC regarding future capabilities/initiatives by conducting studies and analysis that will then feed into future requirements and capabilities.</p> <p><b>FY 2023 Plans:</b></p> <ul style="list-style-type: none"> <li>-Continue to manage the development, certification, training and logistics plans for individual TDL implementations to Joint/ allied standards.</li> <li>-Continue to provide the necessary engineering, technical, and administrative support required to add and/or update Air Force platform and system information exchange requirements</li> <li>-Continue to ensure compatibility and interoperability of TDLs by funding required Air Force/joint MIL-STD compliance and interoperability tests</li> <li>-Continue to ensure compatibility and interoperability of TDLs by developing TDL messaging capability to address new or updated operational requirements</li> </ul> <p><b>FY 2024 Base Plans:</b></p> <ul style="list-style-type: none"> <li>-Will continue to manage the development, certification, training and logistics plans for individual TDL implementations to Joint/ allied standards.</li> </ul> |         |         |              |             |               |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force  |  |  | <b>Date:</b> March 2023 |  |  |                |                |                     |                    |                      |
| <b>Appropriation/Budget Activity</b><br>3600 / 5   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604281F / <i>Tactical Data Networks Enterprise</i> | <b>Project (Number/Name)</b><br>655050 / <i>TDL System Integration</i> |                         |  |  |                |                |                     |                    |                      |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  |  |  |                         |  |  |                |                |                     |                    |                      |
| <p>-Will continue to provide the necessary engineering, technical, and administrative support required to add and/or update Air Force platform and system information exchange requirements</p> <p>-Will continue to ensure compatibility and interoperability of TDLs by funding required Air Force/joint MIL-STD compliance and interoperability tests</p> <p>-Will continue to ensure compatibility and interoperability of TDLs by developing TDL messaging capability to address new or updated operational requirements</p> <p><b>FY 2024 OCO Plans:</b><br/>N/A</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>TDN integration requirements fluctuate based on scope of analysis development and certification efforts for AFPTU (AF Participating Unit), JINTACC (Joint Interoperability of Tac Command &amp; Control Sys), NATO interoperability, and Coalition implementation. A slight reduction in scope of efforts has resulted in reduced funding required.</p>   |  |  |                         |  |  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
| <p><b>Title:</b> High Capacity Backbone (HCB)</p> <p><b>Description:</b> High Capacity Backbone (HCB) is an expeditionary dynamic network made up of aerial and ground nodes that augment existing communication networks to greatly increase connectivity, network capacity, and information sharing at all security levels in order to effectively employ military capability across the range of military operations. HCB reduces joint forces reliance on limited, relatively fixed/static satellite and surface line-of-sight communication components.</p> <p>HCB rapid prototyping is a demonstration of HCB network transport installed in existing USAF aircraft and deployable ground entry points that meets this Rapid Prototyping Requirements Document's threshold technical and functional requirements while operating as an integral part of an aerial layer network in a realistic operational environment. HCB capabilities are required to close four specific capability gaps: network connectivity, network capacity, share information and data, and network management.</p> <p><b>FY 2023 Plans:</b><br/>-Will complete development and demonstrate the HCB capability</p> <p><b>FY 2024 Base Plans:</b></p> |  |  |                         |  |  | 17.161         | 15.154         | 16.448              | 0.000              | 16.448               |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604281F / <i>Tactical Data Networks Enterprise</i> | <b>Project (Number/Name)</b><br>655050 / <i>TDL System Integration</i> |

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| <p>-Complete core development and conduct the flight operational demonstration of the HCB prototype as directed in ACC's RPRD. The successful demonstration will lead to the development and production of initial test article systems that will be integrated on various platforms identified in the approved 1067 documentation.</p> <p>-Will develop and award a follow on contract of the HCB that will be fielded in ground units and will be integrated on the E-11 as well as other various platforms</p> <p><b>FY 2024 OCO Plans:</b><br/>N/A</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding slightly increases as developments prototypes are refined to closer production ready hardware/software and project shifts toward testing (both ground/flight) and modifications necessary to ready HCB for production/fielding.</p>   |                |                |                     |                    |                      |
| <p><b>Title:</b> Protected Tactical Waveform (PTW)</p> <p><b>Description:</b> Protected Tactical Waveform (PTW) is a waveform designed to mitigate the effects of advanced jamming in Anti- Access/Area Denial environments. PTW provides worldwide, beyond line of sight, Anti-Jam (AJ), Low Probability of Intercept communications, via military and commercial satellite systems for tactical users in all Services. This effort funds PTW modem development and aperture development on suitable platforms to include but not limited to; F-35, RQ-4 Global Hawk and EQ-4B/E-11A Battlefield Airborne Communications Node (BACN). PTW provides communications path diversity by increasing SATCOM resilience through satellite, spectral, and waveform diversity. This effort continues work started in Protected Tactical Service Field Demonstration (PTSFD) to complete PTW maturity and modem development, leveraging TALON Tacet Avis aperture work to develop PTW antenna and radome. It includes terminal certification efforts (Information Assurance (IA), NSA and MIL-STD). This effort funds continued development of PTW components, protected tactical terminal modems that will be capable of being fully integrated into existing wideband terminals and will ensure delivery of protected tactical SATCOM to the joint and coalition warfighters in contested, degraded environments. PTW development activities may also include technical and acquisition related studies, analysis, and early systems engineering and risk reduction activities addressing all subsystems to support both current program planning/execution and future AF program planning.</p> <p><b>FY 2023 Plans:</b><br/>-Continue the development, integration and testing of an airborne modem that will be utilized by fighter and wide-body aircraft.</p> | 27.553         | 26.364         | 0.000               | 0.000              | 0.000                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604281F / <i>Tactical Data Networks Enterprise</i> | <b>Project (Number/Name)</b><br>655050 / <i>TDL System Integration</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| <p>-Develop a standards-based PTW modem with Anti-Jam (AJ) capability to augment existing Aerial SATCOM terminals across vendors and platforms.</p> <p>-Continue addition of COMSEC capability to allow use of classified data and fully certify the crypto to be able to encrypt data for multiple waveforms.</p> <p>-Complete the development and conduct the test of two (BIFROST and HAAM-R) prototype modem kits in CY23.</p> <p><b>FY 2024 Base Plans:</b><br/>There is no funding in FY2024.</p> <p>However, the E-11A SPO has funding in FY24 to begin the integration of HAAM-R on the platform and the MAJCOM is working a draft 1067 for integrating PTW HAAM-R on other platforms.</p> <p><b>FY 2024 OCO Plans:</b><br/>N/A</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>An 11.4M cut in the FY23 PTW funding hampered the development and slowed test planning but BIFROST will be demonstrated in April/May timeframe and HAAM-R is planned to be tested at Northern Edge Exercise in May 23. HAAM-R version is on contract to deliver 14-16 operational test kits that would be available in CY23. These unintended delays in project development and testing for PTW as well as reductions in funding prioritization have altered the scope and deferred requirements to later Fiscal Years which delays fielding of necessary Protected SATCOM terminals to the warfighters.</p> |                |                |                     |                    |                      |
| <p><b>Title:</b> Agile Comms</p> <p><b>Description:</b> Agile Comms supports the application of open standards, multi-function processors, and advanced apertures over an Enterprise-wide Aerial Network, enabling all platforms to share combat-relevant data/info to, from and within the Highly Contested Environment (HCE) regardless of the data link and messages format that they are operating on. It supports the application of open standards, multi-function processors, and advanced apertures over the Enterprise-wide Aerial Network, enables all platforms to share combat relevant data/info to, from and within the Highly Contested Environment. This includes supporting the development of airborne gateways. Agile Comms further includes initial integration of advanced communications and networking capabilities onto tactically-relevant aircraft. Finally, this effort supports planning, data collection, development and analysis for initial technology maturation experimentation campaign.</p>  | 27.157         | 40.114         | 33.060              | 0.000              | 33.060               |



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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604281F / <i>Tactical Data Networks Enterprise</i> | <b>Project (Number/Name)</b><br>655050 / <i>TDL System Integration</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| <p>Combat Tactical Edge Network (CTEN) effort within Agile Comms addresses unique challenges of DoD networks by using content routing to establish connections between heterogeneous networks across different media and domains. It is a software (SW) overlay network that routes data within and between permissive, contested, and highly contested environments. To meet the needs of the DoD Networks and in the future CTEN will be integrated on various platforms allowing the flexibility to support various missions. The effort will also continue to support message translation allowing the flexibility to Message transforms and extensible markup languages (XMLs) development. Additional work will continue to support advanced non proprietary antenna apertures supporting various missions. Work will continue in the study/analysis of a ATDL waveform to meet the needs of the modern warfighter.</p> <p><b>FY 2023 Plans:</b><br/>-Continue to develop and demonstrate the Common Tactical Edge Network (CTEN) Minimum Viable Product (MVP) and mature the Enterprise Approach to the Joint Aerial Network</p> <p><b>FY 2024 Base Plans:</b><br/>-Continue to develop and demonstrate the Common Tactical Edge Network (CTEN) Minimum Viable Product (MVP) and continue the development of the software architecture and support advanced non proprietary antenna apertures necessary to mature the Enterprise Approach to the Joint Aerial Network.<br/>-Begin development of an enterprise Advanced Tactical Data Link (ATDL) and Weapons Data Links (WDL) capabilities in direct support of Connect the QUAD initiative to include the study/analysis of a ATDL waveform to meet the needs of the modern/future warfighters.</p> <p><b>FY 2024 OCO Plans:</b><br/>N/A</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Requirements and funding align with scope of demonstration efforts to support maturing Enterprise approaches and future comm needs. As CTEN continues to mature, DAF has realigned some focus within Agile Comms toward Advanced Tactical Data Link (ATDL) and Weapons Data Links (WDL) capabilities.</p> |                |                |                     |                    |                      |
| <p><b>Title:</b> Second Generation Anti-Jam Tactical UHF Radio for NATO (SATURN)</p> <p><b>Description:</b> SATURN is a fast frequency hopping waveform that was developed as a replacement for the Have Quick waveform.” The upgrade to SATURN will provide an improved radio resistant to jamming through fast-frequency hopping and digital modulation techniques.</p>   | 0.000          | 0.000          | 1.790               | 0.000              | 1.790                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force  |  |                |  | <b>Date:</b> March 2023 |                      |
| <b>Appropriation/Budget Activity</b><br>3600 / 5   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604281F / <i>Tactical Data Networks Enterprise</i> |                | <b>Project (Number/Name)</b><br>655050 / <i>TDL System Integration</i> |                         |                      |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  |  |                |  |                         |                      |
|  | <b>FY 2022</b>   | <b>FY 2023</b> | <b>FY 2024 Base</b>  | <b>FY 2024 OCO</b>      | <b>FY 2024 Total</b> |
| <p><b>FY 2023 Plans:</b><br/>N/A</p> <p><b>FY 2024 Base Plans:</b><br/>Will continue to update the waveform specification complying with NATO STANAG and testing utilizing the Reference Implementation Lab (RIL).</p> <p><b>FY 2024 OCO Plans:</b><br/>N/A</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Increase of funds due to new phase of waveform development/certification/testing</p>   |  |                |  |                         |                      |
| <p><b>Title:</b> SFF/DACAS Modernization and System-of-Systems (SoS) Enterprise Integration</p> <p><b>Description:</b> This effort will support the development and demonstration of Small Form Factor (SFF) technologies that can support Digitally Assisted Close Air Support (DACAS) and other missions across the full spectrum of operating environments. This effort will consider System-of-Systems (SoS) engineering, technical analysis/performance, platform integration, and Tactics, Techniques, and Procedures (TTPs) to best utilize technologies and acquisition approaches for enterprise modernization. SFF Phase II (TURTLE) will be a rapid prototyping and demonstration effort.</p> |  |                |  |                         |                      |
| <p><b>FY 2023 Plans:</b><br/>Will conduct testing of solutions with JTACS and TACP fielders.</p> <p><b>FY 2024 Base Plans:</b><br/>Will continue testing of solutions with JTACS and TACP fielders will complete the development and demonstration in late CY23.</p> <p><b>FY 2024 OCO Plans:</b><br/>N/A</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Decrease of funds due to effort shifting to final phase of development and completion of demonstrations.</p>   |  |                |  |                         |                      |
| <b>Title:</b> Link 16 Enhancements   |  |                |  |                         |                      |
|  | 4.437  | 5.333          | 0.780  | 0.000                   | 0.780                |
|  | 20.809   | 5.760          | 0.000  | 0.000                   | 0.000                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604281F / <i>Tactical Data Networks Enterprise</i> | <b>Project (Number/Name)</b><br>655050 / <i>TDL System Integration</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| <p><b>Description:</b> Link 16 Enhancements will develop and field Link 16 Anti Jam (AJ) capabilities on 4th and 5th generation platforms to address Link 16 jamming threats in the contested and highly contested environments. This effort will implement Link 16 technologies into TDL terminals and investigate integration of additional baseline(s) to efficiently execute development and enhancements. Emerging technologies will be developed and evaluated for efficacy; recommendations will be identified for appropriate terminal fielding/upgrades to platforms and will be considered when evaluating enterprise TDL capabilities/gaps. Early Development of Next Generation radio (SPOC) were within Link 16 Enhancements and completed until an FY23 Congressional Add, in which the effort was broken out separately beginning in FY23.</p> <p><b>FY 2023 Plans:</b><br/>Continued work on Link 16 development/fielding/upgrades.</p> <p><b>FY 2024 Base Plans:</b><br/>N/A</p> <p><b>FY 2024 OCO Plans:</b><br/>N/A</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>FY25 will be the next iterations of development/fielding/upgrades.</p> |                |                |                     |                    |                      |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 122.940        | 117.441        | 74.023              | 0.000              | 74.023               |
|   | <b>FY 2022</b> | <b>FY 2023</b> |                     |                    |                      |
| <p><b>Congressional Add:</b> Next Generation (Software Programmable Open Mission System Compliant (SPOC) radio)</p> <p><b>FY 2022 Accomplishments:</b> This effort will support the development and demonstration of Software Programmable Open Mission System Compliant (SPOC) radio. SPOC is a software defined radio prototype that will allow three waveforms to operate simultaneously and will have the capability to reprogram said waveforms to allow for greater mission flexibility. The Radio will be designed for use in airborne and ground platforms.</p> <p><b>FY 2023 Plans:</b> Will complete the development and demonstration of the two prototypes. Begin Phase 2 to update the SPOC radio to meet cryptological, environmental and airworthiness compliance</p>  | 0.000          | 6.500          |                     |                    |                      |
| <p><b>Congressional Add:</b> KC-135 advanced intelligent gateway</p>  | 0.000          | 6.000          |                     |                    |                      |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604281F / <i>Tactical Data Networks Enterprise</i> | <b>Project (Number/Name)</b><br>655050 / <i>TDL System Integration</i> |
|--|--|--|

|   |                |                |
|---|----------------|----------------|
|   | <b>FY 2022</b> | <b>FY 2023</b> |
| "Congressional funding will allow KC-135s to be outfitted with an Advanced Intelligent Gateway capability by funding all up-front non-recurring engineering, RTI..."  |                |                |
| <b>FY 2022 Accomplishments:</b> No FY22 Actions   |                |                |
| <b>FY 2023 Plans:</b> These funds were incorrectly aligned, DAF will realign these funds appropriately to ensure proper execution and successful development effort initiated to meet Congressional intent. |                |                |
| <b>Congressional Adds Subtotals</b>   | 0.000          | 12.500         |

**C. Other Program Funding Summary (\$ in Millions)**

| <u>Line Item</u>                        | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |            |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|------------|
| • RDTE 07 PE                            | 1.587          | 1.616          | -                             | -                            | -                              | -              | -              | -              | -              | -                                 | Continuing        | Continuing |
| 0207448F: <i>C2ISR TDL</i>              |                |                |                               |                              |                                |                |                |                |                |                                   |                   |            |
| • APAF 05 Line Item F01500: <i>F-15</i> | 20.933         | 21.310         | -                             | -                            | -                              | -              | -              | -              | -              | -                                 | Continuing        | Continuing |
| • APAF 05 Line Item F01600: <i>F-16</i> | 8.695          | 8.851          | -                             | -                            | -                              | -              | -              | -              | -              | -                                 | Continuing        | Continuing |
| • APAF 05 Line Item B00200: <i>B-2A</i> | 0.210          | 0.213          | -                             | -                            | -                              | -              | -              | -              | -              | -                                 | Continuing        | Continuing |
| • APAF 05 Line Item B01B00: <i>B-1B</i> | 0.000          | 0.000          | -                             | -                            | -                              | -              | -              | -              | -              | -                                 | Continuing        | Continuing |
| • OPAF 03 Line Item 834010:             | 1.701          | 1.731          | -                             | -                            | -                              | -              | -              | -              | -              | -                                 | Continuing        | Continuing |
| <i>General Information Technology</i>   |                |                |                               |                              |                                |                |                |                |                |                                   |                   |            |

**Remarks**

**D. Acquisition Strategy**

The Airborne Networking Directorate provides for common development, integration, and interoperability across the entire airborne network and ensures that data links are procured and maintained as a joint, end-to-end command and control system. Platform acquisition strategies vary by program, but the majority of development and integration is normally accomplished by the weapon system prime contractor.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604281F / <i>Tactical Data Networks Enterprise</i> | <b>Project (Number/Name)</b><br>655050 / <i>TDL System Integration</i> |
|--|--|--|

| <b>Product Development (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| TDN Integration                             | Various                | Various : Various              | -           | 10.226  | Jan 2022   | 12.966  | May 2023   | 7.156        |            | -           |            | 7.156         | Continuing       | Continuing | -                        |
| High Capacity Backbone (HCB)                | C/TBD                  | Various : Various              | -           | 17.220  | Mar 2022   | 15.154  | Feb 2023   | 16.448       |            | -           |            | 16.448        | Continuing       | Continuing | -                        |
| Agile Comms                                 | Various                | Various : Various              | -           | 28.081  | Jan 2022   | 40.114  | May 2023   | 33.060       |            | -           |            | 33.060        | Continuing       | Continuing | -                        |
| SFF/DACAS Modernization and SoS Enterprise  | Various                | Various : Various              | -           | 4.436   | Jan 2022   | 5.333   | Feb 2023   | 0.780        |            | -           |            | 0.780         | Continuing       | Continuing | -                        |
| Protected Tactical Waveform (PTW)           | C/TBD                  | Not specified. : TBD           | -           | 25.517  | Jan 2022   | 26.364  | Mar 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Link 16 Enhancements                        | Various                | Not specified. : TBD           | -           | 11.900  | Jan 2022   | 5.760   | Mar 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Next generation Radio (SPOC)                | C/CPAF                 | Not specified. : TBD           | -           | 10.904  | Apr 2022   | 6.500   | Aug 2023   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| KC-135 advanced intelligent gateway         | C/CPAF                 | Not specified. : TBD           | -           | -       |            | 6.000   |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 108.284 |            | 118.191 |            | 57.444       |            | -           |            | 57.444        | Continuing       | Continuing | N/A                      |

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                      |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location       | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| TDN Integration - DTF                       | PO                     | 46th Test Squadron : Eglin AFB, FL   | -           | 1.500   | Dec 2021   | 1.500   | Nov 2022   | 2.000        |            | -           |            | 2.000         | Continuing       | Continuing | -                        |
| JINTACCS                                    | C/FFP                  | Spectrum Comm Inc : Newport News, VA | -           | 3.815   | Mar 2022   | 3.900   | Mar 2023   | 8.495        |            | -           |            | 8.495         | Continuing       | Continuing | -                        |
| TDN Integration - AFPTU                     | Various                | Various : Various                    | -           | 2.336   | Jan 2022   | 2.500   | Sep 2023   | 2.500        |            | -           |            | 2.500         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                      | -           | 7.651   |            | 7.900   |            | 12.995       |            | -           |            | 12.995        | Continuing       | Continuing | N/A                      |



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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604281F / <i>Tactical Data Networks Enterprise</i> | <b>Project (Number/Name)</b><br>655050 / <i>TDL System Integration</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

| <b><i>Tactical Data Network Enterprise</i></b>         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| TDN Integration  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| JINTACCS   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| High Capacity Backbone (HCB)                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Protected Tactical Waveform (PTW)                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| TDL Planning, Analysis, and Monitoring (TDL PAM)       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Agile Comms  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| SFF/DACAS Modernization and SoS Enterprise Integration |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604281F / <i>Tactical Data Networks Enterprise</i> | <b>Project (Number/Name)</b><br>655050 / <i>TDL System Integration</i> |

Schedule Details

| Events by Sub Project                                  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Tactical Data Network Enterprise</i></b>         |         |      |         |      |
| TDN Integration  | 1       | 2022 | 4       | 2027 |
| JINTACCS   | 1       | 2022 | 4       | 2027 |
| High Capacity Backbone (HCB)                           | 1       | 2022 | 4       | 2024 |
| Protected Tactical Waveform (PTW)                      | 1       | 2022 | 4       | 2023 |
| TDL Planning, Analysis, and Monitoring (TDL PAM)       | 1       | 2022 | 4       | 2027 |
| Agile Comms  | 1       | 2022 | 4       | 2027 |
| SFF/DACAS Modernization and SoS Enterprise Integration | 1       | 2022 | 4       | 2024 |



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604287F / <i>Physical Security Equipment</i> |
|---|--|

| COST (\$ in Millions)                              | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                              | -           | 8.302   | 6.897   | 10.605       | 0.000       | 10.605        | 10.551  | 11.063  | 11.289  | 11.697  | Continuing       | Continuing |
| 655120: <i>Physical Security Equipment - SD ED</i> | -           | 8.302   | 6.897   | 10.605       | 0.000       | 10.605        | 10.551  | 11.063  | 11.289  | 11.697  | Continuing       | Continuing |
| Quantity of RDT&E Articles                         | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

The Physical Security Equipment (PSE) program provides for Air Force (AF) Integrated Base Defense Security Systems (IBDSS) improvements and enhancements, to include the demonstration and testing of PSE systems related to Force Protection. This program supports the protection of tactical, fixed, and nuclear weapons systems, AF personnel and AF facilities. The PSE program includes spectrum planning for radio frequency (RF), communication security (cyber), information assurance requirements, integration and interoperability Command Control & Communication (C3) platform & components. This Program Element also includes funding for Force Protection Commercial Off the Shelf (FP COTS) equipment, market research, evaluation and testing. Force Protection programs are inherently subject to rapid changes in the operational environment and will retain sufficient program flexibility to meet changes in location, scope and capability in order to protect AF people, facilities and warfighting assets. The Defender Multi-Domain Command, Control and Communications (DMDC3) is an initiative developing the foundational structure of IBDSS to provide a platform that integrates the computing power, the means of communication, and the tools for situational awareness. PSE efforts support Modular Open Source Architecture (MOSA) standards to enable faster installations and greater interoperability to address the Chief of Staff of the AF (CSAF's) 'Fight the Base' goals.

IBDSS FY24 developmental efforts will continue to evaluate and test state-of-the-art technology to support integrated based defense systems installations worldwide, continue to improve and integrate COTS efforts into IBDSS physical security equipment, and further develop, integrate and test Defender Multi-Domain Command, Control and Communications (DMDC3) software applications. IBDSS-3 expands upon and scales IBDSS modernization efforts first developed under IBDSS-2. Capability improvements include zero-trust architecture, Machine Language (ML)/Artificial Intelligence (AI) integration, expanded sensor capabilities, Unmanned Aerial System(UAS)/Unmanned Ground Vehicle (UGV integration), and improved mobile C3.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY(FY23) 1.409M forecasted for civilian pay expenses in this program element, and in FY(FY24) 0.000M is forecasted for civilian pay expenses in this program element.

This requirement supports performance of a full financial audit as required by title 10 U.S.C. Chapter 9A, Sec 240-D.)

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604287F / <i>Physical Security Equipment</i> |
|---|--|

| <b>B. Program Change Summary (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget   | 8.469          | 8.493          | 10.374              | 0.000              | 10.374               |
| Current President's Budget  | 8.302          | 6.897          | 10.605              | 0.000              | 10.605               |
| Total Adjustments   | -0.167         | -1.596         | 0.231               | 0.000              | 0.231                |
| • Congressional General Reductions  | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions   | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions   | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds  | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers  | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer  | -0.167         | 0.000          |                     |                    |                      |
| • Other Adjustments   | 0.000          | -1.596         | 0.231               | 0.000              | 0.231                |
| <br><b>Change Summary Explanation</b>   |                |                |                     |                    |                      |
| FY2023 Reduction for FFRDC \$1.596  |                |                |                     |                    |                      |
| FY2024 Increase to complete RDT&E efforts for Tactical Sensor System \$1.500                                |                |                |                     |                    |                      |
| FY2024 Funding request reduced by \$1.269 to account for the availability of prior year execution balances. |                |                |                     |                    |                      |

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <b>Title:</b> IBDSS-2  | 8.302          | 0.000          | 0.000          |
| <b>Description:</b> IBDSS-2 (Integrated Base Defense Security Systems) qualifies, demonstrates, and tests Physical Security Equipment (PSE) systems to include Force Protection. |                |                |                |
| <b>FY 2023 Plans:</b><br>N/A   |                |                |                |
| <b>FY 2024 Plans:</b><br>N/A   |                |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>N/A  |                |                |                |
| <b>Title:</b> IBDSS-3  | 0.000          | 6.897          | 10.605         |
| <b>Description:</b> IBDSS-3 (Integrated Base Defense Security Systems) qualifies, demonstrates, and tests Physical Security Equipment (PSE) systems to include Force Protection. |                |                |                |
| <b>FY 2023 Plans:</b>  |                |                |                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604287F / <i>Physical Security Equipment</i> |
|---|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <p>-Conduct market research, evaluation and testing to address capability gaps and obsolescence to include, but not limited to Force Protection Commercial Off The Shelf (COTS).</p> <p>-Integrate and test to qualify COTS equipment to provide essential upgrades/improvements and state-of-the-art technology to support integrated based security systems installations worldwide.</p> <p>-Integration and/or modification of COTS efforts to improve IBDSS physical security equipment.</p> <p>-Further development, integration and testing Defender Multi-Domain Command, Control and Communications (DMDC3) software applications.</p> <p>- Integration of DMDC3 with external systems in order to meet Advanced Battle Management System/Joint All Domain Command and Control (ABMS/JADC2) directive.</p> <p>- Expand upon and scales IBDSS modernization efforts first developed under IBDSS-2 to include, but not limited to, zero-trust architecture, Machine Learning/Artificial Intelligence (ML/AI) integration, expanded sensor capabilities, Unmanned Aerial Systems/ Unmanned Ground Vehicle (UAS/UGV) integration, and improved mobile C3.</p> <p><b>FY 2024 Plans:</b></p> <p>-Will continue to conduct market research, evaluation and testing to address capability gaps and obsolescence to include, but not limited to Force Protection Commercial Off The Shelf (COTS).</p> <p>-Will continue further integration and testing to qualify COTS equipment to provide essential upgrades/improvements and state-of-the-art technology to support integrated based security systems installations worldwide.</p> <p>-Will continue with the integration and/or modification of COTS efforts to improve IBDSS physical security equipment.</p> <p>-Will continue further development, integration and testing Defender Multi-Domain Command, Control and Communications (DMDC3) software applications.</p> <p>- Will continue integration of DMDC3 with external systems in order to meet ABMS/JADC2 directive.</p> <p>- Will continue to expand upon and scales IBDSS modernization efforts first developed under IBDSS-2 to include, but not limited to, zero-trust architecture, ML/AI integration, expanded sensor capabilities, UAS/UGV integration, and improved mobile C3.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding increased due to continued development of DMDC3 capabilities.</p> |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 8.302          | 6.897          | 10.605         |

| <b>D. Other Program Funding Summary (\$ in Millions)</b>      |                |                |                |                |                |                |                |                |                |                 |                   |
|---|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|-------------------|
| <b>Line Item</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> | <b>FY 2024</b> | <b>FY 2024</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b> | <b>FY 2028</b> | <b>Cost To</b>  | <b>Total Cost</b> |
|   |                |                | <b>Base</b>    | <b>OCO</b>     | <b>Total</b>   |                |                |                |                | <b>Complete</b> | <b>Total Cost</b> |
| • OPAF 03 Line Item 29: <i>Base Physical Security Systems</i> | 44.812         | 49.370         | 83.386         | -              | 83.386         | 104.102        | 105.134        | 70.959         | 72.238         | Continuing      | Continuing        |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604287F / <i>Physical Security Equipment</i> |
|---|--|

**D. Other Program Funding Summary (\$ in Millions)**

| <u>Line Item</u> | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|

**Remarks**

**E. Acquisition Strategy**

Air Force Security Force Center (AFSFC) and Force Protection program office investigates requirements to include new and/or obsolete items. COTS sub-systems, equipment and components are competitively acquired from industry after thorough market research. Equipment for testing is purchased via competitive selection processes via direct purchase orders. For security systems COTS that are required to be qualified for nuclear security environments where industry COTS sources may not be mature, consideration is given to replacement of new items or modification of COTS through the competitive selection procedure as well.

Delivery Orders on Indefinite Delivery/Indefinite Quantity contract vehicles or other approved purchase methods are utilized to acquire equipment.

The Force Protection program office is developing new capabilities, updating existing capabilities, exploring and fielding COTS capabilities, using both a Middle Tier of Acquisition program and other means.

Notional strategy to deploy Defender Multi-Domain Command, Control and Communications (DMDC3) and IBDSS of the future. DMDC3 Pathfinder operations at Vindicator and Advantor IDS Systems at various bases.

Supports Modular Open Source Architecture (MOSA) standards to enable faster installations and greater interoperability to enable Chief of Staff of the Air Force (CSAF's) 'Fight the Base' goals.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604287F / <i>Physical Security Equipment</i> | <b>Project (Number/Name)</b><br>655120 / <i>Physical Security Equipment - SD ED</i> |
|--|--|---|

| <b>Product Development (\$ in Millions)</b>        |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                                 | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Integrated Base Defense Security Systems (IBDSS-3) | Various                | Various : Various              | -           | 0.000   |            | 3.610   | Dec 2022   | 4.324        | Dec 2024   | -           |            | 4.324         | Continuing       | Continuing | -                        |
| Integrated Base Defense Security Systems (IBDSS-2) | Various                | Various : Various              | -           | 4.091   | Mar 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                                    |                        |                                | -           | 4.091   |            | 3.610   |            | 4.324        |            | -           |            | 4.324         | Continuing       | Continuing | N/A                      |

| <b>Support (\$ in Millions)</b>  |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Integrated Base Defense Security Systems (IBDSS-3)                       | Various                | Various : Various              | -           | 0.000   |            | 1.787   | May 2023   | 2.000        | May 2024   | -           |            | 2.000         | Continuing       | Continuing | -                        |
| Integrated Base Defense Security Systems (IBDSS-2)                       | Various                | Various : Various              | -           | 1.621   | Apr 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Integrated Base Defense Security Systems (IBDSS-2) Direct Cite Authority | Various                | Various : Various              | -           | 1.158   | Apr 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>  |                        |                                | -           | 2.779   |            | 1.787   |            | 2.000        |            | -           |            | 2.000         | Continuing       | Continuing | N/A                      |

**Remarks**  
 The support funding is planned at the above amounts. If the support contracts are less, the available funds will be transitioned to the Product Development line.

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| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2024 Air Force</b> |  |  |  |  |  |  |  |  |  |  | <b>Date: March 2023</b>   |  |  |  |  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                       |  |  |  |  |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604287F / <i>Physical Security Equipment</i> |  |  |  |  | <b>Project (Number/Name)</b><br>655120 / <i>Physical Security Equipment - SD ED</i> |  |  |  |  |

| <b>Test and Evaluation (\$ in Millions)</b>        |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> |                         |                   |                                 |
|--|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                          | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| Integrated Base Defense Security Systems (IBDSS-3) | Various                           | Various : Various                         | -                  | 0.000          |                   | 1.500          | Dec 2022          | 4.281               | Aug 2024          | -                  |                   | 4.281                | Continuing              | Continuing        | -                               |
| Integrated Base Defense Security Systems (IBDSS-2) | Various                           | Various : Various                         | -                  | 1.432          | Jan 2022          | -              |                   | -                   |                   | -                  |                   | -                    | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>                                    |                                   |   | -                  | 1.432          |                   | 1.500          |                   | 4.281               |                   | -                  |                   | 4.281                | Continuing              | Continuing        | N/A                             |
| <b>Project Cost Totals</b>                         |                                   |   | -                  | 8.302          |                   | 6.897          |                   | 10.605              |                   | -                  |                   | 10.605               | Continuing              | Continuing        | N/A                             |

**Remarks**  
 Various delivery orders will be awarded through out the fiscal year for numerous projects.

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604287F / <i>Physical Security Equipment</i> | <b>Project (Number/Name)</b><br>655120 / <i>Physical Security Equipment - SD ED</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |  |
|--|--|
| <b>FY21 Events</b>                                 |  |
| Integrated Base Defense Security Systems (IBDSS-2) | ██████████   |
| <b>FY22 Events</b>                                 |  |
| Integrated Base Defense Security Systems (IBDSS-2) | ████████████████████   |
| <b>FY23 Events</b>                                 |  |
| Integrated Base Defense Security Systems (IBDSS-3) | ██████████████████████████████   |
| <b>FY24 Events</b>                                 |  |
| Integrated Base Defense Security Systems (IBDSS-3) | ██████████████████████████████████████   |
| <b>FY25 Events</b>                                 |  |
| Integrated Base Defense Security Systems (IBDSS-3) | ██                             |
| <b>FY26 Events</b>                                 |  |
| Integrated Base Defense Security Systems (IBDSS-4) | ██                 |
| <b>FY27 Events</b>                                 |  |
| Integrated Base Defense Security Systems (IBDSS-4) | ██ |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604287F / <i>Physical Security Equipment</i> | <b>Project (Number/Name)</b><br>655120 / <i>Physical Security Equipment - SD ED</i> |

Schedule Details

| Events by Sub Project                              | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>FY21 Events</i></b>                          |         |      |         |      |
| Integrated Base Defense Security Systems (IBDSS-2) | 2       | 2022 | 1       | 2023 |
| <b><i>FY22 Events</i></b>                          |         |      |         |      |
| Integrated Base Defense Security Systems (IBDSS-2) | 1       | 2022 | 4       | 2023 |
| <b><i>FY23 Events</i></b>                          |         |      |         |      |
| Integrated Base Defense Security Systems (IBDSS-3) | 1       | 2023 | 4       | 2024 |
| <b><i>FY24 Events</i></b>                          |         |      |         |      |
| Integrated Base Defense Security Systems (IBDSS-3) | 1       | 2024 | 4       | 2025 |
| <b><i>FY25 Events</i></b>                          |         |      |         |      |
| Integrated Base Defense Security Systems (IBDSS-3) | 1       | 2025 | 4       | 2026 |
| <b><i>FY26 Events</i></b>                          |         |      |         |      |
| Integrated Base Defense Security Systems (IBDSS-4) | 1       | 2026 | 4       | 2027 |
| <b><i>FY27 Events</i></b>                          |         |      |         |      |
| Integrated Base Defense Security Systems (IBDSS-4) | 1       | 2027 | 4       | 2028 |



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |  |
|---|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604602F / <i>Armament/Ordnance Development</i> |
|---|--|

| COST (\$ in Millions)                    | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                    | -           | 8.821   | 5.279   | 5.918        | 0.000       | 5.918         | 7.144   | 7.324   | 7.474   | 7.745   | Continuing       | Continuing |
| 653133: <i>Bombs &amp; Fuzes</i>         | -           | 3.851   | 1.134   | 0.966        | 0.000       | 0.966         | 1.534   | 1.573   | 1.605   | 1.663   | Continuing       | Continuing |
| 655361: <i>Stores-Aircraft Interface</i> | -           | 4.970   | 4.145   | 4.952        | 0.000       | 4.952         | 5.610   | 5.751   | 5.869   | 6.082   | Continuing       | Continuing |

**A. Mission Description and Budget Item Justification**

The Armament Ordnance Development program provides for the initial and continuing development of weapons, munitions, and munitions equipment for aircraft integration, support, and operational use. This program develops, characterizes, and improves current, future, and legacy munitions, ammunitions, and subsystems.

653133: The Bombs & Fuzes project improves conventional weapons/munitions (kinetic and non-kinetic), fuzes, and height-of-burst sensors (HOBS), and develops and integrates complementary common weapon components, data links, position, navigation, and timing (PNT) capabilities (i.e. GPS, non-GPS, optical, passive, active, etc.) using modern acquisition best practices, to include digital acquisition practices (e.g. government-owned open system architectures, Model Based Systems Engineering (MBSE) and agile software development). It also provides for the development and testing necessary for a suitable manufacturing base of conventional warheads, fuzes, HOBS, and munitions material handling equipment (MMHE). Bombs & Fuzes also provides research, development, testing, and guidance of conventional warheads, fuzing, HOBS modifications, and anti-personnel anti-materiel (APAM) weapons to improve lethality and survivability against area, mobile, hard and deeply buried, and fixed targets. Finally, this project provides an opportunity to quickly insert emerging technologies into existing and developing aircraft munitions and fuzes and supports strategic planning to achieve compliance of AF munitions with Department of Defense insensitive munitions (IM) standards.

Leverages common component development, in collaboration with other weapon systems, to reduce redundant costs between systems with similar subsystems requirements. Invests in analytical, information management, data management, digital environments, networks, facilities, and security infrastructure upgrades directly supporting development and sustainment of this program's capabilities, while leveraging DoD and DAF enterprise IT solutions.

The FY2024 funding request was reduced by \$1.070M to account for the availability of prior year execution balances.

655361: The Stores-Aircraft Interface project is home to the Universal Armament Interface (UAI). UAI is the Air Force's common standard aircraft/weapon interface and is an acquisition requirement, to be used by all weapons and combat aircraft as practicable. The UAI program continues development and maintenance of the standardized interface including mission planning components. Users include Air Force, Army, and Navy customers. The UAI program office is also responsible for development, enhancement, and maintenance of the standard to support coalition, allied, and joint interoperability efforts for weapons-platform interface. These responsibilities include acquisition, upgrade, repair, and provision of UAI certification tools, and implementation support to US Air Force, Army, Navy, and allied aircraft and weapons systems. UAI provides cost/schedule savings over traditional integration efforts. This is accomplished by enabling integration of weapons independent of aircraft Operational Flight Programs (OFP) cycles. UAI incorporates complex info such as: power management, target info, waypoints, flight/trajectory profile, fusing, launch parameters, verification of data sent/received, sensor info, and propulsion profiles.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|   |  |
|---|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604602F / <i>Armament/Ordnance Development</i> |
|---|--|

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY22 0.363M was expended for civilian pay expenses in this program element, and in FY23 0.255M is forecasted for civilian pay expenses in this program element.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 9.047          | 5.279          | 6.973               | 0.000              | 6.973                |
| Current President's Budget                        | 8.821          | 5.279          | 5.918               | 0.000              | 5.918                |
| Total Adjustments                                 | -0.226         | 0.000          | -1.055              | 0.000              | -1.055               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -0.226         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | -1.055              | 0.000              | -1.055               |

**Change Summary Explanation**

The FY 2024 funding request was reduced to account for the availability of prior year execution balances.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604602F / <i>Armament/Ordnance Development</i> | <b>Project (Number/Name)</b><br>653133 / <i>Bombs &amp; Fuzes</i> |
|--|--|---|

| COST (\$ in Millions)            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|----------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 653133: <i>Bombs &amp; Fuzes</i> | -           | 3.851   | 1.134   | 0.966        | 0.000       | 0.966         | 1.534   | 1.573   | 1.605   | 1.663   | Continuing       | Continuing |
| Quantity of RDT&E Articles       | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

The Bombs & Fuzes project improves conventional weapons/munitions (kinetic and non-kinetic), fuzes, and height-of-burst sensors (HOBS), and develops and integrates complementary common weapon components, data links, position, navigation, and timing (PNT) capabilities (i.e. GPS, non-GPS, optical, passive, active, etc.) using modern acquisition best practices, to include digital acquisition practices (e.g. government-owned open system architectures, Model Based Systems Engineering (MBSE) and agile software development). It also provides for the development and testing necessary for a suitable manufacturing base of conventional warheads, fuzes, HOBS, and munitions materiel handling equipment (MMHE). Bombs & Fuzes also provides research, development, testing, and guidance of conventional warheads, fuzing, HOBS modifications, and anti-personnel anti-materiel (APAM) weapons to improve lethality and survivability against area, mobile, hard and deeply buried, and fixed targets. Finally, this project provides an opportunity to quickly insert emerging technologies into existing and developing aircraft munitions and fuzes and supports strategic planning to achieve compliance of AF munitions with Department of Defense insensitive munitions (IM) standards.

- Munitions Materiel Handling Equipment (MMHE): MMHE is a continuing project to develop and improve the standardization and commonality of munitions handling and armament equipment to preclude duplication. Efforts are primarily the study, design, and development of MMHE and armament control systems; however, support may be provided to other functional areas as requested. Procurement will be performed and funded by the applicable weapons system project.

- Medium Caliber Ammunition project assesses, refines, and develops medium caliber ammunition, to include, but not limited to, conducting 25mm (F-35) qualification testing, comparative testing, and mitigating ammunition inventory health issues.

- Insensitive Munitions (IM) and Emerging Technologies: IM projects support AF IM strategic planning to achieve IM compliance IAW U.S. Code, Title 10, Subtitle A, Part N, Chapter 141, Section 2389, ensuring safety regarding insensitive munitions. IM models and validates current munition performance, integrates less sensitive explosive fills, addresses IM explosive fill deficiencies, and develops bomb case modifications to improve the response of conventional weapons to unplanned stimuli. This project also explores and develops IM and Energetics technology, assessing, analyzing, and evaluating emerging and developed technologies for future and existing weapon and fuze capabilities to improve lethality, accuracy, and reliability in accordance with the National Defense Strategy roadmap.

- DSU-43/B Cockpit-selectable Height-Of-Burst Sensor (C-HOBS): The C-HOBS will be a replacement for the current DSU-33D/B proximity sensor. C-HOBS will replace the single factory height-of-burst setting with the addition of multiple height-of-burst options selectable via both manual switches and a cockpit interface. These selection options allow flexibility during flight to address a wide array of targets. The C-HOBS is intended to interface with Combat Air Forces (CAF) aircraft and provide proximity height-of-burst functionality to general and special purpose weapons (to include NGAAWs).

Implements Digital Acquisition tenants of Open, Agile, and Digital; builds and establishes industrial base innovation around the program's enterprise for modularity and adaptability for the life cycle of the weapons system. Leverages common component development, in collaboration with other weapon systems, to reduce redundant

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604602F / <i>Armament/Ordnance Development</i> | <b>Project (Number/Name)</b><br>653133 / <i>Bombs &amp; Fuzes</i> |
|--|--|---|

costs between systems with similar subsystems requirements. Invests in analytical, information management, data management, digital environments, networks, facilities, and security infrastructure upgrades directly supporting development and sustainment of this program's capabilities, while leveraging DoD and DAF enterprise IT solutions. Expands program office staff, facilities, and security infrastructure to support the required classification levels for this program's activities. Engages with DoD, DAF, and industry stakeholders to refine threat analysis, refine inventory requirements, and plan upgrade requirements. Capitalizes on and incorporates successful laboratory research and development efforts applicable to this program's capability.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY22 0.168M was expended for civilian pay expenses in this program element, and in FY23 0.096M is forecasted for civilian pay expenses in this program element.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|---|---------|---------|--------------|-------------|---------------|
| <p><b>Title:</b> Munitions Materiel Handling Equipment (MMHE)</p> <p><b>Description:</b> Armament Standardization/Control/Munitions Materiel Handling Equipment (MMHE) is a continuing project to develop and improve the standardization and commonality of munitions handling and armament equipment to preclude duplication. Efforts are primarily the study, design, and development of MMHE and armament control systems; however, support may be provided to other functional areas as requested. Procurement will be performed and funded by the applicable weapons system project.</p> <p><b>FY 2023 Plans:</b><br/>Continuation of MMHE support projects to include engineering, drafting, proof load, technical data, and safety authorizations. Fabricate prototypes for test and evaluation purposes. Continue first article equipment fabrications for drafting verification and delivery to Air Force units for additional test and evaluation. Provide support to all system program offices with new weapons and aircraft configurations, as needed. Continue support to the F-35 with designs and manufacturing of equipment to aid safe munitions loading and handling of various pylons and adapters. Continue to support the B-21 program office with evaluations and recommendations for equipment to aid safe munitions loading and handling of various pylons and adapters. Continue support to DARPA with designs and manufacturing of equipment to aid safe munitions loading and handling of hypersonic weapons. Continue support for Air Force Research Laboratory on future munition concept demonstrators.</p> <p><b>FY 2024 Base Plans:</b><br/>Continuation of MMHE support projects to include engineering, drafting, proof load, technical data, and safety authorizations. Fabricate prototypes for test and evaluation purposes. Continue first article equipment fabrications for drafting verification and delivery to Air Force units for additional test and evaluation. Provide support to all system program offices with new weapons and aircraft configurations, as needed. Continue</p> | 0.576   | 0.700   | 0.777        | 0.000       | 0.777         |

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

|  |  |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604602F / <i>Armament/Ordnance Development</i> | <b>Project (Number/Name)</b><br>653133 / <i>Bombs &amp; Fuzes</i> |
|--|--|---|

|   |                |                |                     |                    |                      |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|

support to the F-35 with designs and manufacturing of equipment to aid safe munitions loading and handling of various pylons and adapters. Continue to support the B-21 program office with evaluations and recommendations for equipment to aid safe munitions loading and handling of various pylons and adapters. Continue support to DARPA with designs and manufacturing of equipment to aid safe munitions loading and handling of hypersonic weapons. Continue support for Air Force Research Laboratory on future munition concept demonstrators.

**FY 2024 OCO Plans:**  
N/A

**FY 2023 to FY 2024 Increase/Decrease Statement:**  
Funding increased because of increased demand for MMHE work to support the warfighter.

|   |       |       |       |       |       |
|---|-------|-------|-------|-------|-------|
| <b>Title:</b> Medium Caliber Ammunition | 0.100 | 0.100 | 0.100 | 0.000 | 0.100 |
|---|-------|-------|-------|-------|-------|

**Description:** The Medium Caliber Ammunition efforts support the warfighter's medium caliber ammunition research, development, test, and evaluation (RDT&E) requirements, DoN/USAF collaboration for the medium caliber family of ammunition, foreign comparative testing, inventory health challenges, procurement of ammunition, and other emerging technologies.

**FY 2023 Plans:**  
Continue to provide engineering and technical support for PGU-48/B rounds as well as further comparative testing/EMD of alternative products/sources. Assess and mitigate Medium Caliber ammunition inventory health challenges.

**FY 2024 Base Plans:**  
Continue to provide engineering and technical support for PGU-48/B rounds as well as further comparative testing/EMD of alternative products/sources. Assess and mitigate Medium Caliber ammunition inventory health challenges.

**FY 2024 OCO Plans:**  
N/A

**FY 2023 to FY 2024 Increase/Decrease Statement:**  
N/A

|  |       |       |       |       |       |
|--|-------|-------|-------|-------|-------|
| <b>Title:</b> Insensitive Munitions (IM) and Emerging Technology | 0.250 | 0.334 | 0.089 | 0.000 | 0.089 |
|--|-------|-------|-------|-------|-------|

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604602F / <i>Armament/Ordnance Development</i> | <b>Project (Number/Name)</b><br>653133 / <i>Bombs &amp; Fuzes</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| <p><b>Description:</b> Model and validate current munition performance; explore and develop IM and Energetics technology; assess, analyze, and evaluate emerging and developed technologies for future and existing weapon and fuze capabilities to improve lethality, accuracy, and reliability in accordance with the National Defense Strategy roadmap.</p> <p><b>FY 2023 Plans:</b><br/>Continue to provide guidance to ensure munitions are as safe as practical to include; assessing, analyzing, and evaluating emerging and future development of technologies in our weapons. Enhance and evolve direct attack weapon capabilities by identifying new technology through collaboration with industry, academia, and other government stakeholders and uniting specialized expertise.</p> <p><b>FY 2024 Base Plans:</b><br/>Continue to provide guidance to ensure munitions are as safe as practical to include; assessing, analyzing, and evaluating emerging and future development of technologies in our weapons. Enhance and evolve direct attack weapon capabilities by identifying new technology through collaboration with industry, academia, and other government stakeholders and uniting specialized expertise.</p> <p><b>FY 2024 OCO Plans:</b><br/>N/A</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding decrease because the FY2024 Bombs and Fuzes funding request was reduced by \$0.535 million to account for the availability of prior year execution balances.</p> |                |                |                     |                    |                      |
| <p><b>Title:</b> Cockpit-Selectable Height-Of-Burst Sensor (C-HOBS)</p> <p><b>Description:</b> DSU-43/B Cockpit-selectable Height-Of-Burst Sensor (C-HOBS). The C-HOBS will be a replacement for the legacy DSU-33D/B proximity sensor. C-HOBS will replace the single factory height-of-burst setting with the addition of multiple height-of-burst options selectable via both manual switches and a cockpit interface. These selection options allow flexibility during flight to address a wide array of targets. The C-HOBS is intended to interface with the weapon via the cockpit and provide a cockpit-selectable proximity function for general and special purpose weapons (to include Next Generation Area Attack Weapons, NGAAWs).</p> <p><b>FY 2023 Plans:</b></p>  | 2.925          | 0.000          | 0.000               | 0.000              | 0.000                |

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

|  |  |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604602F / <i>Armament/Ordnance Development</i> | <b>Project (Number/Name)</b><br>653133 / <i>Bombs &amp; Fuzes</i> |
|--|--|---|

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b> | FY 2022 | FY 2023 | FY 2024<br>Base | FY 2024<br>OCO | FY 2024<br>Total |
|---|---------|---------|-----------------|----------------|------------------|
| N/A   |         |         |                 |                |                  |
| <b>FY 2024 Base Plans:</b>                                  |         |         |                 |                |                  |
| N/A   |         |         |                 |                |                  |
| <b>FY 2024 OCO Plans:</b>                                   |         |         |                 |                |                  |
| N/A   |         |         |                 |                |                  |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b>      |         |         |                 |                |                  |
| N/A   |         |         |                 |                |                  |
| <b>Accomplishments/Planned Programs Subtotals</b>           | 3.851   | 1.134   | 0.966           | 0.000          | 0.966            |

| <b>C. Other Program Funding Summary (\$ in Millions)</b> |                |                |                         |                        |                          |                |                |                |                |                             |                   |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| <b>Line Item</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024<br/>Base</b> | <b>FY 2024<br/>OCO</b> | <b>FY 2024<br/>Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b> | <b>FY 2028</b> | <b>Cost To<br/>Complete</b> | <b>Total Cost</b> |
| • PAAF 01 Line Item 356120: <i>Fuzes</i>                 | 20.795         | 102.918        | 109.562                 | -                      | 109.562                  | 131.919        | 136.838        | 134.160        | 157.675        | Continuing                  | Continuing        |
| • PAAF 01 Line Item<br>352010: <i>Cartridges</i>         | 161.917        | 117.064        | 101.104                 | -                      | 101.104                  | 122.823        | 127.099        | 124.745        | 122.226        | Continuing                  | Continuing        |

**Remarks**

**D. Acquisition Strategy**

- Fuzes (including C-HOBS) is a continuing effort with most activities performed through contracted services.
- Munitions Materiel Handling Equipment (MMHE) project activities are performed in-house with limited technical and analysis contract support.
- Medium Caliber Ammunition project activities are performed in-house with technical and analysis contract support, organic government test support, and possible contracted services (small contracts).
- Insensitive Munitions project activities are performed in-house with limited technical and analysis contract support
- Emerging Technologies are innovative efforts with most activities performed through various contracted services such as OTA's and DOTC; a limited number of activities such as technical analysis and test are performed by organic resources and support contractors.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604602F / Armament/Ordnance Development | <b>Project (Number/Name)</b><br>653133 / Bombs & Fuzes |
|--|---|--|

| <b>Product Development (\$ in Millions)</b> |                        |  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location             | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Emerging Technology/IM                      | Various                | Various : Eglin AFB, FL                    | -           | 0.000   | Mar 2022   | 0.173   | Mar 2023   | 0.021        | Mar 2024   | -           |            | 0.021         | Continuing       | Continuing | -                        |
| MMHE - Prototypes                           | Various                | Prototype Fabrication Shop : Eglin AFB, FL | -           | 0.368   | Jan 2022   | 0.328   | Jan 2023   | 0.370        | Jan 2024   | -           |            | 0.370         | Continuing       | Continuing | -                        |
| CHOBS - HW/SW                               | C/Various              | Various : Eglin AFB, FL                    | -           | 0.000   | Oct 2021   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |  | -           | 0.368   |            | 0.501   |            | 0.391        |            | -           |            | 0.391         | Continuing       | Continuing | N/A                      |

| <b>Support (\$ in Millions)</b> |                        |                                     |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---------------------------------|------------------------|-------------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item              | Contract Method & Type | Performing Activity & Location      | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| MMHE - Shipping/Supplies        | Various                | MMHE Program Office : Eglin AFB, FL | -           | 0.026   | Nov 2021   | 0.042   | Nov 2022   | 0.050        | Nov 2023   | -           |            | 0.050         | Continuing       | Continuing | -                        |
| DCA Civ Pay (653133)            | Allot                  | AFLCMC/EBD : Eglin AFB, FL          | -           | 0.168   | Oct 2021   | 0.096   | Oct 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                 |                        |                                     | -           | 0.194   |            | 0.138   |            | 0.050        |            | -           |            | 0.050         | Continuing       | Continuing | N/A                      |

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| CHOBS - Test and Evaluation                 | C/Various              | Various : Various              | -           | 2.925   | Oct 2021   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| MMHE - Test Support                         | PO                     | 96 TW : Eglin AFB, FL          | -           | 0.000   | Nov 2021   | 0.025   | Nov 2022   | 0.025        | Nov 2023   | -           |            | 0.025         | Continuing       | Continuing | -                        |
| Emerging Technology - Test Wing             | PO                     | 96 TW : Eglin AFB, FL          | -           | 0.022   | Nov 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| NGAAW- Test and Evaluation                  | PO                     | 96 TW : Eglin AFB, FL          | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604602F / Armament/Ordnance Development | <b>Project (Number/Name)</b><br>653133 / Bombs & Fuzes |
|--|---|--|

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| <b>Subtotal</b>                             |                        |                                | -           | 2.947   |            | 0.025   |            | 0.025        |            | -           |            | 0.025         | Continuing       | Continuing | N/A                      |

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| IM and Emerging Technology- PMA             | Various                | Various : Eglin AFB, FL        | -           | 0.060   | Dec 2021   | 0.065   | Dec 2022   | 0.068        | Dec 2023   | -           |            | 0.068         | Continuing       | Continuing | -                        |
| Medium Caliber - PMA                        | Various                | Various : Eglin AFB, FL        | -           | 0.100   | Jun 2022   | 0.100   | Jun 2023   | 0.100        | Jun 2024   | -           |            | 0.100         | Continuing       | Continuing | -                        |
| MMHE - PMA                                  | Various                | Various : Eglin AFB, FL        | -           | 0.182   | Mar 2022   | 0.305   | Mar 2023   | 0.332        | Jan 2024   | -           |            | 0.332         | Continuing       | Continuing | -                        |
| CHOBS - PMA                                 | Various                | Various : Eglin AFB, FL        | -           | 0.000   | Oct 2021   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 0.342   |            | 0.470   |            | 0.500        |            | -           |            | 0.500         | Continuing       | Continuing | N/A                      |

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |     |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|-----|
| <b>Project Cost Totals</b> |             | -       | 3.851   | 1.134        | 0.966       | -             | 0.966            | Continuing | Continuing               | N/A |

**Remarks**  
 Program Support Costs (PSC) Other Government Costs: Travel, Government Purchase Card (GPC), Program Support Personnel.

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604602F / <i>Armament/Ordnance Development</i> | <b>Project (Number/Name)</b><br>653133 / <i>Bombs &amp; Fuzes</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |  |
|--|--|
| <b><i>Bombs and Fuzes</i></b>                          |  |
| MMHE: design, prototype, test priority efforts         |  |
| IM and Emerging Technologies                           |  |
| Medium Caliber Ammunition: Assess, refine, and develop |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604602F / <i>Armament/Ordnance Development</i> | <b>Project (Number/Name)</b><br>653133 / <i>Bombs &amp; Fuzes</i> |

Schedule Details

| Events by Sub Project                                  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Bombs and Fuzes</i></b>                          |         |      |         |      |
| MMHE: design, prototype, test priority efforts         | 1       | 2022 | 4       | 2028 |
| IM and Emerging Technologies                           | 1       | 2022 | 4       | 2028 |
| Medium Caliber Ammunition: Assess, refine, and develop | 1       | 2022 | 4       | 2028 |

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604602F / <i>Armament/Ordnance Development</i> | <b>Project (Number/Name)</b><br>655361 / <i>Stores-Aircraft Interface</i> |
|--|--|---|

| COST (\$ in Millions)                    | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 655361: <i>Stores-Aircraft Interface</i> | -           | 4.970   | 4.145   | 4.952        | 0.000       | 4.952         | 5.610   | 5.751   | 5.869   | 6.082   | Continuing       | Continuing |
| Quantity of RDT&E Articles               | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

655361: The Stores-Aircraft Interface conducts stores-aircraft interface upgrades and standards development to include the Universal Armament Interface (UAI). UAI is the Air Force's standardized interface for aircraft weapons and mission planning, and its use is mandated by SAF/AQ. The savings realized from this effort is on average 6 years of schedule and \$22M per aircraft/weapon combination. This is accomplished by enabling integration of weapons independent of aircraft Operational Flight Programs (OFP) cycles. UAI is currently implemented on the F-15E, F-16 Block 40/50 and European Participating Air Forces (EPAF) F-16 aircraft, F/A-18, Small Diameter Bomb (SDB) I and II, Joint Direct Attack Munition (JDAM)(all variants), Laser JDAM, Joint Air-to-Surface Stand-off Missile (JASSM), Enhanced Paveway II, Joint Mission Planning System (JMPS) and Precision Guided Munitions Planning Software (PGMPS). Planned implementations include Joint Strike Fighter (JSF/F-35), B-21, B-52, AC-130J, F-15EX, MQ-9, JASSM-Extended Range (JASSM-ER), Advanced Anti-Radiation Guided Missile - Extended Range (AARGM-ER), Stand-in Attack Weapon (SiAW), Long Range Anti-Ship Missile (LRASM), Grey Wolf, Combat Weapons Delivery Software (CWDS), Select Precision Effects At Range Capability 3 (SPEAR3), Joint Strike Missile (JSM), Next-Generation Open Mission Services (NOMS) for mission planning. The UAI program office is responsible for development and enhancement of the UAI standard to maintain technical currency, support to coalition/allied/joint interoperability efforts for weapons-platform interface, provision of certification tools, and implementation support to aircraft and weapons. The Stores-Aircraft Interface funding also supports innovation activities to include studies, analyses, requirements definition, and quick-reaction capability prototypes/demonstrations to accelerate planning for technology transition, technology insertion and future acquisition programs.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program's funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY22 0.195M was expended for civilian pay expenses in this program element, and in FY23 0.159M is forecasted for civilian pay expenses in this program element.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|--|---------|---------|--------------|-------------|---------------|
| <b>Title:</b> Universal Armament Interface (UAI) Development   | 4.970   | 4.145   | 4.952        | 0.000       | 4.952         |
| <b>Description:</b> Continue development and maintenance of the Air Force's mandated aircraft/weapon interface, to include UAI Mission Planning and Launch Acceptability Region (LAR) components.  |         |         |              |             |               |
| <b>FY 2023 Plans:</b><br>Continue development and fielding of UAI software improvements including updates to enhance and standardize geospatial zones implementation, Common Flexible Weapon (CFW) ICD incorporation, GPS and M-code improvements, and smart carriage system interactions. In addition, the program will continue to develop the |         |         |              |             |               |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604602F / <i>Armament/Ordnance Development</i> | <b>Project (Number/Name)</b><br>655361 / <i>Stores-Aircraft Interface</i> |

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | FY 2022 | FY 2023 | FY 2024<br>Base | FY 2024<br>OCO | FY 2024<br>Total |
|--|---------|---------|-----------------|----------------|------------------|
| <p>Mission Planning UAI Common Component with the transition from the Joint Mission Planning System (JMPS) compatibility to the Navy Open Mission Systems (NOMS) operating environment. UAI updates will include continued development of the Launch Acceptability Region (LAR) tool-set required by weapon systems and mission planning developers standardized for generation of weapon performance truth data, engagement envelopes, training tools, and support way-point flying munitions into Platform-Store/Mission Planning. FY23 includes funding for ongoing air-to-ground integration support across USAF, USN, and Army customers, including development support for advanced carriage systems as store quantities and new management capabilities increase, hypersonic weapons, and certification tool software updates. Support working groups, technical meetings and workshops, risk reduction assessments, common mission planning, and system-specific implementations of UAI. Maintain and logistically support existing certification tools to meet current and future user system integration lab test certification needs. These tools are shared among aircraft and weapon programs to reduce time and cost for UAI integration efforts. Support international efforts including but not limited to Joint Strike Missile (JSM) and Select Precision Effects At Range - Capability 3 (SPEAR3), both of which are integrating on the F-35 using UAI Platform Store Interface Control Document Rev 05, and implementing the multinational Memorandum of Understanding.</p> <p><b><i>FY 2024 Base Plans:</i></b><br/>Continue development and fielding of UAI software improvements including updates to enhance and standardize geospatial zones implementation, GPS and M-code improvements, smart carriage system interactions, and incorporation of the Common Flexible Weapon (CFW) Interface. In addition, the program will continue to develop and field the Mission Planning UAI Common Component legacy and new capabilities for implementation in the Next-Generation Open Mission Services (NOMS) mission planning operating environment. Backward compatibility with the Joint Mission Planning System (JMPS) will be maintained. UAI updates will include continued development of the Launch Acceptability Region (LAR) tool-set required by weapon systems and mission planning developers as a common and standardized method for generating weapon performance truth data, engagement envelopes, training tools, and support of way-point flying munitions. These tools and their products will be incorporated in the Platform Store and Mission Planning ICDs and associated products. FY24 includes funding for ongoing air-to-ground integration support across USAF, USN, and Army customers, including development support for advanced carriage systems as store quantities and management capabilities increase, hypersonic weapons, network enabled weapons, and certification tool software updates. Support will continue for working groups, technical meetings and workshops, risk reduction assessments, common mission planning, and system-specific implementations of UAI. Maintenance and logistic support for existing certification tools to meet current and future user system integration lab test certification needs will continue.</p> |         |         |                 |                |                  |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604602F / <i>Armament/Ordnance Development</i> | <b>Project (Number/Name)</b><br>655361 / <i>Stores-Aircraft Interface</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| <p>These tools are shared among aircraft and weapon programs to reduce time and cost for UAI integration efforts. UAI will continue to support international efforts including but not limited to Joint Strike Missile (JSM) and Select Precision Effects At Range - Capability 3 (SPEAR3), both of which are integrating on the F-35 using UAI Platform Store Interface Control Document Rev 05 and implementing the multinational Memorandum of Understanding.</p> <p><b>FY 2024 OCO Plans:</b><br/>n/a</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding increased because of inflation adjustment; also reflects the FY2023 Armament/Ordnance Development request was reduced by \$1.500M based on the availability of prior year funding.</p> |                |                |                     |                    |                      |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 4.970          | 4.145          | 4.952               | 0.000              | 4.952                |

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

Program Support Costs (PSC) Other Government Costs: Travel, Government Purchase Card (GPC), Program Support Personnel.

**D. Acquisition Strategy**

In December 2004, under the authority of a class Justification and Approval (J&A), the UAI program office awarded individual Cost Plus Fixed Fee (CPFF) contracts to Boeing, Lockheed Martin, Northrop Grumman, and Raytheon. Each Original Equipment Manufacturer is responsible for a different piece of the total UAI requirement based on its product-specific (platform/weapon) expertise. During FY10, the original contracts expired. Under the authority of a class J&A, Cost Plus Incentive Fee (CPIF) contracts were awarded to the four UAI vendors in August 2010. Follow-on period of performance was awarded in March 2014 for 16 months to better align future contract awards with funding through the Future Years Defense Program. The period of performance was extended to 1 November 2015 to allow immediate start of the effort on F-35/JSF request for changes. A new J&A was approved in January 2015 for the follow-on sole-source contracts to the original equipment manufacturers (OEMs). These new sole-source contracts were awarded in November 2015 and expired in November 2019. A new J&A was signed in December 2018, prior to contract expiration, and four new five-year sole-source contracts (CPFF) were awarded in November 2019. A new Justification and Approval (J&A) will be pursued to support award of follow-on sole-source contracts in November 2024 (1Q FY25).

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604602F / Armament/Ordnance Development | <b>Project (Number/Name)</b><br>655361 / Stores-Aircraft Interface |
|--|---|--|

| <b>Product Development (\$ in Millions)</b>                      |                        |  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location                             | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Interface Control Document (ICD) Development/Updates/Maintenance | SS/<br>Various         | Boeing Northrop Grumman Lockheed Martin Raytheon : Various | -           | 4.624   | Nov 2021   | 3.804   | Nov 2022   | 4.715        | Nov 2023   | -           |            | 4.715         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>  |                        |  | -           | 4.624   |            | 3.804   |            | 4.715        |            | -           |            | 4.715         | Continuing       | Continuing | N/A                      |

**Remarks**  
New 5 year Follow-on contract was awarded in November 2019.

| <b>Support (\$ in Millions)</b> |                        |                                       |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---------------------------------|------------------------|---------------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item              | Contract Method & Type | Performing Activity & Location        | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| DCA Civ Pay (655361)            | Allot                  | AFLCMC/WAX : Wright-Patterson AFB, OH | -           | 0.195   | Oct 2021   | 0.159   | Oct 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                 |                        |                                       | -           | 0.195   |            | 0.159   |            | -            |            | -           |            | -             | Continuing       | Continuing | N/A                      |

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| A&AS Contractor Support                     | Various                | Various : Various              | -           | 0.140   | Jun 2022   | 0.145   | Jun 2023   | 0.177        | Jun 2024   | -           |            | 0.177         | Continuing       | Continuing | -                        |
| Program Office Travel                       | C/CPAF                 | Not specified. : TBD           | -           | 0.011   |            | 0.037   |            | 0.060        |            | -           |            | 0.060         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 0.151   |            | 0.182   |            | 0.237        |            | -           |            | 0.237         | Continuing       | Continuing | N/A                      |

**Remarks**  
DCS/Sumaria Contractor provides support to the Program Office for financial services.

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|--|--------------------|----------------|--|--|---------------------|--------------------|---|-------------------------|-------------------|---------------------------------|--|
| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2024 Air Force |                    |                |  |  |                     |                    | <b>Date:</b> March 2023   |                         |                   |                                 |  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                       |                    |                | <b>R-1 Program Element (Number/Name)</b><br>PE 0604602F / <i>Armament/Ordnance Development</i> |  |                     |                    | <b>Project (Number/Name)</b><br>655361 / <i>Stores-Aircraft Interface</i> |                         |                   |                                 |  |
|  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b>   |  | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b>  | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |  |
| <b>Project Cost Totals</b>   | -                  | 4.970          | 4.145  |  | 4.952               | -                  | 4.952   | Continuing              | Continuing        | N/A                             |  |

**Remarks**



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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604602F / <i>Armament/Ordnance Development</i> | <b>Project (Number/Name)</b><br>655361 / <i>Stores-Aircraft Interface</i> |

|  | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|  | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |
| <b>Stores-Aircraft Interface</b>   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Governance (Super Joint Interface Control Working Group)                           |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| SJICWG Meeting - CY 2nd quarter 2023 Update  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| SJICWG Meeting - CY 4th quarter 2023 Update  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| SJICWG Meeting - CY 1st quarter 2024 Update  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| SJICWG Meeting - CY 3rd quarter 2024 Update  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| SJICWG Meeting - CY 3rd quarter 2025 Update  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| SJICWG Meeting - CY 2nd quarter 2026 Update  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| SJICWG Meeting - CY 2nd quarter 2027 Update  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| SJICWG Meeting - CY 4th quarter 2027 Update  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| SJICWG Meeting - CY 3rd quarter 2028 Update  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Platform-Store Interface Control Document (PS ICD) Change Notices 3rd quarter 2024 |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Platform-Store Interface Control Document (PS ICD) Change Notices 1st quarter 2025 |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Platform-Store Interface Control Document (PS ICD) Change Notices 4th quarter 2025 |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |



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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604602F / <i>Armament/Ordnance Development</i> | <b>Project (Number/Name)</b><br>655361 / <i>Stores-Aircraft Interface</i> |
|--|--|---|

|  | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|  | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |
| System Integration Lab (SIL) Certification Tool (CT) software 2nd quarter 2024 updates |         |   |   |   |         |   |   |   |         | ■ |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| System Integration Lab (SIL) Certification Tool (CT) software 1st quarter 2025 updates |         |   |   |   |         |   |   |   |         |   |   |   |         | ■ |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| System Integration Lab (SIL) Certification Tool (CT) software 4th quarter 2025 updates |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   | ■ |         |   |   |   |         |   |   |   |         |   |   |   |
| System Integration Lab (SIL) Certification Tool (CT) software 2nd quarter 2026 updates |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   | ■ |         |   |   |   |         |   |   |   |
| System Integration Lab (SIL) Certification Tool (CT) software 1st quarter 2027 updates |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   | ■ |
| System Integration Lab (SIL) Certification Tool (CT) software 4th quarter 2027 updates |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   | ■ |
| System Integration Lab (SIL) Certification Tool (CT) software 3rd quarter 2028 updates |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   | ■ |
| Mission Planning CT software 3rd quarter 2023 updates                                  |         |   |   |   |         |   |   | ■ |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Mission Planning CT software 1st quarter 2024 updates                                  |         |   |   |   |         |   |   |   |         |   |   | ■ |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Mission Planning CT software 1st quarter 2025 updates                                  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   | ■ |         |   |   |   |         |   |   |   |         |   |   |   |
| Mission Planning CT software 2nd quarter 2026 updates                                  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   | ■ |         |   |   |   |         |   |   |   |
| Mission Planning CT software 2nd quarter 2027 updates                                  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   | ■ |
| Mission Planning CT software 3rd quarter 2028 updates                                  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   | ■ |
| UAI (Mission Planning) Common Component (CC)   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| CC software 4th quarter 2023 updates   |         |   |   |   |         |   |   | ■ |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |

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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604602F / <i>Armament/Ordnance Development</i> | <b>Project (Number/Name)</b><br>655361 / <i>Stores-Aircraft Interface</i> |
|--|--|---|

|  | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|  | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| CC software 3rd quarter 2024 updates   | █ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CC software 2nd quarter 2025 updates   | █ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CC software 2nd quarter 2026 updates   | █ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CC software 1st quarter 2027 updates   | █ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CC software 1st quarter 2028 updates   | █ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Weapon Sustainment/Regression Efforts:<br>JDAM, JASSM-ER, SDB I+II   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| A/C Sustainment/Regression Efforts: F-16 Blk<br>40/50, F-15E   |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Weapon Dev: SiAW, JSM, SPEAR3,<br>LRASM, AARGM-ER, JAGM-F, hypersonics,<br>advanced carriage systems, CFW, Grey Wolf |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| A/C Dev: F-16 Foreign Military Sales, F-35,<br>B-21, B-1, A-10, F-22, F-18, MQ-9, F-15EX,<br>MQ-IC, AC-130J, B-52    |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604602F / <i>Armament/Ordnance Development</i> | <b>Project (Number/Name)</b><br>655361 / <i>Stores-Aircraft Interface</i> |

Schedule Details

| Events by Sub Project   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b>Stores-Aircraft Interface</b>  |         |      |         |      |
| Governance (Super Joint Interface Control Working Group)  | 1       | 2022 | 4       | 2028 |
| SJICWG Meeting - CY 2nd quarter 2023 Update   | 2       | 2023 | 2       | 2023 |
| SJICWG Meeting - CY 4th quarter 2023 Update   | 4       | 2023 | 4       | 2023 |
| SJICWG Meeting - CY 1st quarter 2024 Update   | 1       | 2024 | 1       | 2024 |
| SJICWG Meeting - CY 3rd quarter 2024 Update   | 3       | 2024 | 3       | 2024 |
| SJICWG Meeting - CY 3rd quarter 2025 Update   | 3       | 2025 | 3       | 2025 |
| SJICWG Meeting - CY 2nd quarter 2026 Update   | 2       | 2026 | 2       | 2026 |
| SJICWG Meeting - CY 2nd quarter 2027 Update   | 2       | 2027 | 2       | 2027 |
| SJICWG Meeting - CY 4th quarter 2027 Update   | 4       | 2027 | 4       | 2027 |
| SJICWG Meeting - CY 3rd quarter 2028 Update   | 3       | 2028 | 3       | 2028 |
| Platform-Store Interface Control Document (PS ICD) Change Notices 3rd quarter 2024                  | 3       | 2024 | 3       | 2024 |
| Platform-Store Interface Control Document (PS ICD) Change Notices 1st quarter 2025                  | 1       | 2025 | 1       | 2025 |
| Platform-Store Interface Control Document (PS ICD) Change Notices 4th quarter 2025                  | 4       | 2025 | 4       | 2025 |
| Platform-Store Interface Control Document (PS ICD) Change Notices 2nd quarter 2026                  | 2       | 2026 | 2       | 2026 |
| Platform-Store Interface Control Document (PS ICD) Change Notices 4th quarter 2027                  | 4       | 2027 | 4       | 2027 |
| Platform-Store Interface Control Document (PS-ICD) Change Notices 3rd quarter 2028                  | 3       | 2028 | 3       | 2028 |
| Platform-Store Interface Control Document (PS ICD) Change Notices - GeoZone Conops 2nd quarter 2023 | 2       | 2023 | 2       | 2023 |
| Platform-Store Interface Control Document (PS ICD) Change Notices - GeoZone Conops 1st quarter 2024 | 1       | 2024 | 1       | 2024 |
| Platform-Store Interface Control Document (PS ICD) Change Notices - GeoZone Conops 2nd quarter 2025 | 2       | 2025 | 2       | 2025 |

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2024 Air Force **Date:** March 2023

|  |   |  |
|--|---|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604602F / Armament/Ordnance Development | <b>Project (Number/Name)</b><br>655361 / Stores-Aircraft Interface |
|--|---|--|

| Events by Sub Project   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| Platform-Store Interface Control Document (PS ICD) Change Notices - Advanced Carriage Systems | 2       | 2023 | 2       | 2023 |
| Platform-Store Interface Control Document (PS ICD) Rev 06                                     | 2       | 2023 | 2       | 2023 |
| Platform-Store Interface Control Document (PS ICD) Change Notices - M-Code Update             | 1       | 2024 | 1       | 2024 |
| Common Flexible Weapon (CFW) Interface Control Document (ICD) Incorporation                   | 1       | 2023 | 2       | 2025 |
| Certification Tools (CTs) Dev/ Update   | 1       | 2022 | 4       | 2028 |
| System Integration Lab (SIL) Certification Tool (CT) software 2nd quarter 2023 updates        | 2       | 2023 | 2       | 2023 |
| System Integration Lab (SIL) Certification Tool (CT) software 4th quarter 2023 updates        | 4       | 2023 | 4       | 2023 |
| System Integration Lab (SIL) Certification Tool (CT) software 2nd quarter 2024 updates        | 2       | 2024 | 2       | 2024 |
| System Integration Lab (SIL) Certification Tool (CT) software 1st quarter 2025 updates        | 1       | 2025 | 1       | 2025 |
| System Integration Lab (SIL) Certification Tool (CT) software 4th quarter 2025 updates        | 4       | 2025 | 4       | 2025 |
| System Integration Lab (SIL) Certification Tool (CT) software 2nd quarter 2026 updates        | 2       | 2026 | 2       | 2026 |
| System Integration Lab (SIL) Certification Tool (CT) software 1st quarter 2027 updates        | 1       | 2027 | 1       | 2027 |
| System Integration Lab (SIL) Certification Tool (CT) software 4th quarter 2027 updates        | 4       | 2027 | 4       | 2027 |
| System Integration Lab (SIL) Certification Tool (CT) software 3rd quarter 2028 updates        | 3       | 2028 | 3       | 2028 |
| Mission Planning CT software 3rd quarter 2023 updates   | 3       | 2023 | 3       | 2023 |
| Mission Planning CT software 1st quarter 2024 updates   | 1       | 2024 | 1       | 2024 |
| Mission Planning CT software 1st quarter 2025 updates   | 1       | 2025 | 1       | 2025 |
| Mission Planning CT software 2nd quarter 2026 updates   | 2       | 2026 | 2       | 2026 |
| Mission Planning CT software 2nd quarter 2027 updates   | 2       | 2027 | 2       | 2027 |
| Mission Planning CT software 3rd quarter 2028 updates   | 3       | 2028 | 3       | 2028 |
| UAI (Mission Planning) Common Component (CC)  | 1       | 2022 | 4       | 2028 |
| CC software 4th quarter 2023 updates  | 4       | 2023 | 4       | 2023 |

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2024 Air Force **Date:** March 2023

|  |  |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604602F / <i>Armament/Ordnance Development</i> | <b>Project (Number/Name)</b><br>655361 / <i>Stores-Aircraft Interface</i> |
|--|--|---|

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| CC software 3rd quarter 2024 updates   | 3       | 2024 | 3       | 2024 |
| CC software 2nd quarter 2025 updates   | 2       | 2025 | 2       | 2025 |
| CC software 2nd quarter 2026 updates   | 2       | 2026 | 2       | 2026 |
| CC software 1st quarter 2027 updates   | 1       | 2027 | 1       | 2027 |
| CC software 1st quarter 2028 updates   | 1       | 2028 | 1       | 2028 |
| Weapon Sustainment/Regression Efforts: JDAM, JASSM-ER, SDB I+II  | 1       | 2022 | 4       | 2028 |
| A/C Sustainment/Regression Efforts: F-16 Blk 40/50, F-15E  | 1       | 2022 | 4       | 2028 |
| Weapon Dev: SiAW, JSM, SPEAR3, LRASM, AARGM-ER, JAGM-F, hypersonics, advanced carriage systems, CFW, Grey Wolf | 1       | 2022 | 4       | 2028 |
| A/C Dev: F-16 Foreign Military Sales, F-35, B-21, B-1, A-10, F-22, F-18, MQ-9, F-15EX, MQ-IC, AC-130J, B-52    | 1       | 2022 | 4       | 2028 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604604F / <i>Submunitions</i> |
|---|---|

| COST (\$ in Millions)                                    | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                                    | -           | 2.954   | 3.273   | 3.345        | 0.000       | 3.345         | 3.421   | 3.507   | 3.578   | 3.707   | Continuing       | Continuing |
| 653166: <i>Joint Smart Munitions Test and Evaluation</i> | -           | 2.954   | 3.273   | 3.345        | 0.000       | 3.345         | 3.421   | 3.507   | 3.578   | 3.707   | Continuing       | Continuing |
| Quantity of RDT&E Articles                               | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

Project Chicken Little (PCL) continues providing superior rapid reaction signature exploitation capabilities for use on both the traditional and the asymmetrical battlefield. PCL delivers vital one-of-a-kind research, development, test, and evaluation (RDT&E) expertise directly to the warfighter, capability developer, and allied/coalition forces.

From its inception in 1985, PCL constantly advances the state-of-the-art for developmental smart munitions, seekers/sensors, and their platforms. PCL also focuses its capability against today's networked weapons, emerging weapon concepts, and helps develop innovative targeting technologies to be employed against a wide variety of vehicle targets, theater air defense units, and an extensive array of associated equipment.

Combat systems and support equipment exhibit physical characteristics (i.e. signatures) and present certain vulnerabilities, which can be exploited by various targeting technologies leading to the elimination or incapacitation of the threat through the application of force (e.g. smart munitions or directed energy) or application of intelligence, surveillance, reconnaissance (ISR) methods. PCL collects physical, functional, and signature attributes of real foreign threat systems and related equipment; this data feeds high-fidelity models used to predict detection, classification, vulnerability, and effectiveness performance for ISR sensor and weapon system design. PCL collects high resolution signature data using a variety of ground, air, and space-based sensors against both new and existing (obtained, sustained, and maintained to be signature representative) foreign targets; with and without the presence of camouflage, concealment, and deception materials; and operated using enemy tactics/Concept of Operations (CONOPS). The resulting highly reliable, realistic data directly support munitions/targeting development programs and helps mitigate overall acquisition risk. PCL serves as a major focal point for joint signature exploitation, collection, and dissemination within the DoD. PCL is a prime contributor in the time critical process to rapidly exploit, assess, and determine US and allied weapon/targeting performance against high value targets. Customers include: the major Defense and Service Intelligence Centers, all Services, the Joint Technical Coordinating Group (JTTCG) who develop the Joint Munitions Effectiveness Manuals (JMEMs), Combatant Commands, AF Major Commands, US Air Force Weapons School curriculum support, and others. Current projects include, but are not limited to: target signature exploitation, target geometric modeling (for identifying vulnerabilities), improving air capabilities against protected structures (specifically hard and deeply buried targets), and the testing of multiple seekers, sensors, and targeting technologies in representative environments against Combatant Command/Major Command/Intelligence Community high value targets.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 00605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 \$0.00 was expended for civilian pay expenses in this program element, and in FY23 \$0.00 is forecasted for civilian pay expenses in this program element.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604604F / <i>Submunitions</i> |
|---|---|

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 2.954          | 3.273          | 3.338               | 0.000              | 3.338                |
| Current President's Budget                        | 2.954          | 3.273          | 3.345               | 0.000              | 3.345                |
| Total Adjustments                                 | 0.000          | 0.000          | 0.007               | 0.000              | 0.007                |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 0.007               | 0.000              | 0.007                |

**Change Summary Explanation**

No Significant Changes

**C. Accomplishments/Planned Programs (\$ in Millions)**

**Title:** Project Chicken Little (PCL)

**Description:** Provide the DoD community accurate multi-spectral signatures obtained from high-value, signature representative modern threat systems using advanced collection technologies.

Exploitations typically occur CONUS; however, PCL is postured to support OCONUS collections as dictated by mission requirements.

A critical underpinning of the System Exploitation major thrust area, Sensor Week, occurs every two years and provides a unique air and ground demonstration/validation of candidate Seeker/Sensor/Intelligence, Surveillance, and Reconnaissance (ISR) technologies.

Plan and conduct captive carry flight tests and signature collection for seeker/sensor technology evaluations.

|   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| <p><b>Title:</b> Project Chicken Little (PCL)</p> <p><b>Description:</b> Provide the DoD community accurate multi-spectral signatures obtained from high-value, signature representative modern threat systems using advanced collection technologies.</p> <p>Exploitations typically occur CONUS; however, PCL is postured to support OCONUS collections as dictated by mission requirements.</p> <p>A critical underpinning of the System Exploitation major thrust area, Sensor Week, occurs every two years and provides a unique air and ground demonstration/validation of candidate Seeker/Sensor/Intelligence, Surveillance, and Reconnaissance (ISR) technologies.</p> <p>Plan and conduct captive carry flight tests and signature collection for seeker/sensor technology evaluations.</p> | 2.954          | 3.273          | 3.345               | 0.000              | 3.345                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604604F / <i>Submunitions</i> |
|---|---|

**C. Accomplishments/Planned Programs (\$ in Millions)**

|   | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|---|---------|---------|--------------|-------------|---------------|
| <p>Develop, validate, and accredit improved models for target vulnerability and weapons effectiveness in support of Combatant Commands' (COCOMs) requirements.</p> <p><b>FY 2023 Plans:</b><br/>Exploit high value threat systems (typically 4 per year). Provide signature data from multiple threat systems in various environments using advanced and developmental seeker/sensor technologies.</p> <p>Conduct Acoustic Week, providing a singularly unique forum for joint service demonstration of developmental and operational acoustic sensors against a wide array of US, coalition, and foreign national ground targets. Sensor platforms will include highly proliferated, asymmetric threat Unmanned Aerial Systems (UAS).</p> <p>Exploit the signatures of ISR targets; conduct rapid reaction performance analysis &amp; evaluations in support of COCOM/MAJCOM immediate/urgent warfighter needs; optimize current project methods to support ISR testing; capture and catalog multi-spectral signatures on asymmetric threat UAS.</p> <p>No OCONUS requirements.</p> <p>Assist in obtaining relevant, high value, and emergent threat assets and/or decoys. Ensure the fleet foreign threat assets remain properly "signature representative" for systems development and testing.<br/>Develop, validate, and accredit improved computer models to determine target vulnerability and weapons effectiveness in support of warfighter requirements.</p> <p><b>FY 2024 Base Plans:</b><br/>Exploit high value threat systems (typically 4 per year). Provide signature data from multiple threat systems in various environments using advanced and developmental seeker/sensor technologies.</p> <p>Conduct Sensor Week (SW), providing a singularly unique forum for joint service demonstration of developmental and operational seekers/sensors/ISR assets against a wide array of US, coalition, and foreign national ground targets.</p> <p>Exploit the signatures of ISR targets; conduct rapid reaction performance analysis &amp; evaluations in</p> |         |         |              |             |               |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604604F / <i>Submunitions</i> |
|---|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|---|---------|---------|--------------|-------------|---------------|
| support of COCOM/MAJCOM immediate/urgent warfighter needs; optimize current project methods to support ISR testing; capture and catalog multi-spectral signatures on asymmetric threat Unmanned Aerial Systems (UAS). |         |         |              |             |               |
| Assist in obtaining relevant, high value, and emergent threat assets and/or decoys. Ensure the threat assets remain properly "signature representative" for systems development and testing.                          |         |         |              |             |               |
| Develop, validate, and accredit improved computer models to determine target vulnerability and weapons effectiveness in support of warfighter requirements.   |         |         |              |             |               |
| <b><i>FY 2024 OCO Plans:</i></b><br>N/A   |         |         |              |             |               |
| <b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br>Funding increased due to inflation adjustment.   |         |         |              |             |               |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 2.954   | 3.273   | 3.345        | 0.000       | 3.345         |

**D. Other Program Funding Summary (\$ in Millions)**  
N/A

**Remarks**

**E. Acquisition Strategy**  
Funds are executed organically in support of test and evaluation activities including studies, analyses, flight & ground tests, model building and simulation. Work is performed in-house by the 96th Test Wing.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604604F / <i>Submunitions</i> | <b>Project (Number/Name)</b><br>653166 / <i>Joint Smart Munitions Test and Evaluation</i> |
|--|---|---|

| <b>Support (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item              | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Maintain Test Asset Relevancy   | PO                     | Various : Las Vegas, NV        | -           | 0.800   | Nov 2021   | 0.800   | Nov 2022   | 0.800        | Nov 2023   | -           |            | 0.800         | Continuing       | Continuing | 0.800                    |
| <b>Subtotal</b>                 |                        |                                | -           | 0.800   |            | 0.800   |            | 0.800        |            | -           |            | 0.800         | Continuing       | Continuing | N/A                      |

**Remarks**  
Fleet relevance addresses the acquisition of new and emerging threat vehicles, acquisition of high fidelity decoys, and sustainment of fleet signature quality.

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Conduct Test and Analysis                   | MIPR                   | 96th Test Wing : Eglin AFB, FL | -           | 2.109   | Nov 2021   | 2.411   | Nov 2022   | 2.451        | Nov 2023   | -           |            | 2.451         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 2.109   |            | 2.411   |            | 2.451        |            | -           |            | 2.451         | Continuing       | Continuing | N/A                      |

**Remarks**  
96th Test Wing (96 CTG, 46 TS) is the Program Office which conducts inhouse testing.

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Management Services                         | MIPR                   | 46TS/TGBB : Eglin, FL          | -           | 0.045   | Nov 2021   | 0.062   | Nov 2022   | 0.094        | Nov 2023   | -           |            | 0.094         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 0.045   |            | 0.062   |            | 0.094        |            | -           |            | 0.094         | Continuing       | Continuing | N/A                      |

**Remarks**  
96th Test Wing (96 CTG, 46 TS) is the Program Office which conducts in house testing.

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |     |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|-----|
| <b>Project Cost Totals</b> |             | -       | 2.954   | 3.273        | 3.345       | -             | 3.345            | Continuing | Continuing               | N/A |

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|  |                    |                |   |                     |                    |   |                         |                   |                                 |  |
|--|--------------------|----------------|---|---------------------|--------------------|---|-------------------------|-------------------|---------------------------------|--|
| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2024 Air Force |                    |                |   |                     |                    |   | <b>Date:</b> March 2023 |                   |                                 |  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                       |                    |                | <b>R-1 Program Element (Number/Name)</b><br>PE 0604604F / <i>Submunitions</i> |                     |                    | <b>Project (Number/Name)</b><br>653166 / <i>Joint Smart Munitions Test and Evaluation</i> |                         |                   |                                 |  |
|  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b>  | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b>  | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |  |

Remarks

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604604F / <i>Submunitions</i> | <b>Project (Number/Name)</b><br>653166 / <i>Joint Smart Munitions Test and Evaluation</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   |  |
|---|--|
| <b><i>Project Chicken Little; JMT&amp;E</i></b>                                 |  |
| Target/warhead evaluation/analysis, signature test, captive carry flight tests. |  |
| FY22 Sensor Week  |  |
| FY23 Acoustic Week  |  |
| FY24 Sensor Week  |  |
| FY25 Acoustic Week  |  |
| FY26 Sensor Week  |  |
| FY27 Acoustic Week  |  |
| FY28 Sensor Week  |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604604F / <i>Submunitions</i> | <b>Project (Number/Name)</b><br>653166 / <i>Joint Smart Munitions Test and Evaluation</i> |

Schedule Details

| Events by Sub Project   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Project Chicken Little; JMT&amp;E</i></b>                                 |         |      |         |      |
| Target/warhead evaluation/analysis, signature test, captive carry flight tests. | 1       | 2022 | 4       | 2028 |
| FY22 Sensor Week  | 1       | 2022 | 4       | 2022 |
| FY23 Acoustic Week  | 1       | 2023 | 3       | 2023 |
| FY24 Sensor Week  | 1       | 2024 | 4       | 2024 |
| FY25 Acoustic Week  | 1       | 2025 | 3       | 2025 |
| FY26 Sensor Week  | 1       | 2026 | 4       | 2026 |
| FY27 Acoustic Week  | 1       | 2027 | 3       | 2027 |
| FY28 Sensor Week  | 1       | 2028 | 4       | 2028 |



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**Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force** **Date:** March 2023

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|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604617F / <i>Agile Combat Support</i> |
|---|---|

| COST (\$ in Millions)                      | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                      | -           | 26.972  | 19.252  | 21.967       | 0.000       | 21.967        | 22.086  | 25.185  | 25.328  | 26.178  | Continuing       | Continuing |
| 652895: <i>Civil Engineering Readiness</i> | -           | 25.307  | 19.252  | 21.967       | 0.000       | 21.967        | 22.086  | 25.185  | 25.328  | 26.147  | Continuing       | Continuing |
| 654910: <i>Aeromedical Readiness</i>       | -           | 1.665   | 0.000   | 0.000        | 0.000       | 0.000         | 0.000   | 0.000   | 0.000   | 0.031   | Continuing       | Continuing |

**A. Mission Description and Budget Item Justification**

This program provides lighter, leaner, rapidly-deployable and technologically-advanced material, and capabilities to the warfighter. Current projects in this program include Civil Engineering Readiness (Project 652895) and Aeromedical Readiness (Project 654910). Aeromedical Readiness (Project 654910) will be removed from 0604617F in FY24 and moved to 0208036F (Medical Counter-Chemical, Biological, Radiological, Nuclear (C-CBRN)) to better align project with program core function. Civil Engineering Readiness projects enable airfield protection, and airfield damage recovery for sustainment, and increased resiliency of airfield operations anywhere in the world. Aeromedical Readiness projects provide aerospace medical systems and treatment equipment to improve casualty care and meet worldwide warfighter medical operational requirements.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, and 0606398F. In FY22 0.000 were expended, and in FY23 0.000 is forecast for civilian pay expenses in this program element.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 27.938         | 14.252         | 23.187              | 0.000              | 23.187               |
| Current President's Budget                        | 26.972         | 19.252         | 21.967              | 0.000              | 21.967               |
| Total Adjustments                                 | -0.966         | 5.000          | -1.220              | 0.000              | -1.220               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 5.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -0.966         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | -1.220              | 0.000              | -1.220               |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

**Appropriation/Budget Activity**  
 3600: *Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)*

**R-1 Program Element (Number/Name)**  
 PE 0604617F / *Agile Combat Support*

**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

**Project:** 652895: *Civil Engineering Readiness*

Congressional Add: *Carbon Materials*

Congressional Add: *Airfield Sustainment & Damage Recovery Technologies*

Congressional Add: *Modern Timber Products for Expeditionary Construction*

Congressional Add Subtotals for Project: 652895

Congressional Add Totals for all Projects

| FY 2022 | FY 2023 |
|---------|---------|
| 2.890   | 0.000   |
| 4.817   | 0.000   |
| 4.817   | 5.000   |
| 12.524  | 5.000   |
| 12.524  | 5.000   |

**Change Summary Explanation**

FY24 changes includes a funding realignment of -\$2.001 from Airbase Technologies to Aeromedical Readiness (Project 654910), with Medical C-CBRN (Program 0208036F).

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604617F / Agile Combat Support | <b>Project (Number/Name)</b><br>652895 / Civil Engineering Readiness |
|--|--|--|

| COST (\$ in Millions)                      | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 652895: <i>Civil Engineering Readiness</i> | -           | 25.307  | 19.252  | 21.967       | 0.000       | 21.967        | 22.086  | 25.185  | 25.328  | 26.147  | Continuing       | Continuing |
| Quantity of RDT&E Articles                 | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

This Civil Engineering (CE) Readiness project develops Airbase Technologies (ABT), Airfield Damage Repair (ADR), Airfield Protection (AP), Energy & Utilities (E&U), and CE Materials (CEM) solutions for in-garrison, expeditionary, and contingency installations and airbases. This includes: technologies for airfield assessment, pavement repair and unexploded ordnance identification and mitigation to enable rapid recovery and regeneration of airfield operations; infrastructure design criteria, construction methods, hardened shelters, evaluation tools, materials, aviation firefighting, force protection, expeditionary energy, waste water recycling/treatment, CE materials applications and systems for improved resiliency and rapid recovery of airbase and airfield operations following an attack.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, and 0606398F. In FY22 \$0.000 were expended, and in FY23 \$0.000 is forecast for civilian pay expenses in this program element.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | FY 2022 | FY 2023 | FY 2024 |
|---|---------|---------|---------|
| <b>Title:</b> Airbase Technologies  | 4.069   | 4.195   | 7.498   |
| <b>Description:</b> Technical support providing RDT&E capabilities for cross-cutting CE applications and processes for all CE functional areas. Provides replacements and repair of critical RDT&E lab equipment, test systems and instruments. Specialized RDT&E systems and software required to conduct CE RDT&E.  |         |         |         |
| <b>FY 2023 Plans:</b><br>Continue development and testing material technologies to maximize indigenous resourcing for expeditionary civil engineering applications, processes for production of cementitious materials in theatre with increased sustainment and reduced life cycle costs, development and testing of deployable large-scale platforms, and variable material formulations for additive manufacturing of buildings and equipment for CE applications, development of functionalized materials for hardened infrastructure and force protection applications, mitigation technologies for Aqueous Film Forming Form (AFFF) and transition to next generation fire-fighting and fire suppression agents and systems, evaluation of energy, utility, and infrastructure improvements, energy storage systems and incorporation of alternative and renewable energy systems with USAF assets. Replace/repair critical RDT&E lab equipment. Fund program management support, RDT&E IT systems and software required to conduct CE RDT&E. |         |         |         |
| <b>FY 2024 Plans:</b><br>Continue development and testing material technologies for indigenous soil-based cements and minimal basing processes including bio-based cementation for expeditionary ADR, test and evaluation of low resource manufacturing technologies for  |         |         |         |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force   |  | <b>Date:</b> March 2023  |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 5  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604617F / Agile Combat Support | <b>Project (Number/Name)</b><br>652895 / Civil Engineering Readiness |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   |  | <b>FY 2022</b>   | <b>FY 2023</b> | <b>FY 2024</b> |
| <p>reduced life cycle costs, development and testing of additive manufacturing approaches for CE applications, development of functionalized materials for hardened infrastructure and force protection applications, evaluation, treatment, and mitigation technologies for AFFF and development and testing of next generation fire-fighting and fire suppression agents, evaluation of expeditionary energy, utility, and infrastructure improvements, energy storage systems and incorporation of renewable energy systems with USAF assets. Replace/repair critical RDT&amp;E lab equipment. Fund program management support, RDT&amp;E IT systems and software required to conduct CE RDT&amp;E.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Planned increase for Civil Engineering Materials and Processes and Additive Manufacturing.</p>   |  |  |                |                |
| <p><b>Title:</b> Airfield Damage Repair</p> <p><b>Description:</b> This effort develops, tests, and certifies equipment, materials, and Tactics, Techniques, and Procedures (TTPs) for the rapid assessment and repair of airfield damage, which includes identification, mitigation or removal of unexploded ordnance and expedient repairs for fuel and utility systems. This effort will also accelerate the transition of proven technologies and sustained protection of critical infrastructure, including operating surfaces, shelters, fuel storage and distribution systems, and command and control (C2) systems. Further, this effort focuses on the resiliency of airbase infrastructure as well as the timely repair and regeneration of airfield operations within established time limits in order to gain and maintain air superiority.</p> <p><b>FY 2023 Plans:</b><br/>Mature the rapid assessment, mitigation, and repair tool and material solutions for airfield damage recovery through research, development, testing, and evaluation. Rapid assessment includes spiral development and integration of small unmanned aircraft systems (SUAS), mobile towers, and handheld platforms to utilize various sensors, to provide data for automated damage detection software solutions to significantly decrease damage assessment time and improve automated detection of unexploded ordnance (UXO). Mitigation includes development, testing and evaluation of systems to remotely remove and neutralize UXO through a family of Rapid Explosive Hazard Mitigation (REHM) components. This family of systems will include manned and unmanned systems with improved blast resistance capability to fit on both new and existing systems. Repair of damage focuses on development, testing, and transition of materials and equipment sets for rapid recovery of enemy induced battle damaged runways. New materials will have minimal dependence on shipping and logistics, with new techniques and procedures to place locally sourced materials to provide equal or greater strength to current ADR equipment. New systems will be developed and tested to provide similar or greater repair speeds with smaller logistic requirement, and current equipment test and evaluation will focus heavily on testing and operation in extreme weather conditions. New procedures and equipment will be identified to fully replace/rejuvenate pavement runways using Full Depth Reclamation process.</p> <p><b>FY 2024 Plans:</b><br/>Continue to mature and transition the rapid assessment, mitigation, and repair tool and material solutions for airfield damage recovery through research, development, testing, and evaluation. Rapid assessment includes spiral development and integration</p> |  | 6.633  | 6.464          | 8.702          |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604617F / Agile Combat Support | <b>Project (Number/Name)</b><br>652895 / Civil Engineering Readiness |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p>of small unmanned aircraft systems (SUAS), mobile towers, and handheld platforms to utilize various sensors, to provide data for automated damage detection software solutions to significantly decrease damage assessment time and improve automated detection of unexploded ordnance (UXO). In order to meet improved sensor requirements for enhanced detection and classification of damage/debris, new platforms will be identified to meet current and future needs. Mitigation includes development, testing and evaluation of systems to remotely remove and neutralize UXO through a family of Rapid Explosive Hazard Mitigation (REHM) components. This family of systems will include manned and unmanned systems with improved blast resistance capability to fit on both new and existing heavy equipment, physical destruction of UXO through stand-off methods, and Subsurface Location, Access, and Mitigation (SLAM) of buried UXO. Repair of damage focuses on development, testing, and transition of materials and equipment sets for rapid recovery of enemy induced battle damaged runways. New materials will have minimal dependence on shipping and logistics through use of indigenous materials, with new techniques and procedures to place locally sourced materials to provide equal or greater strength to current ADR methodologies. New systems will be developed and tested to provide similar or greater repair speeds with smaller logistic requirement, and current equipment test and evaluation will focus heavily on testing and operation in extreme weather conditions, along with methods for repair that will support current Agile Combat Employment (ACE) operations and strategies.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Planned increase for Rapid Damage Recovery supporting ACE.</p> |                |                |                |
| <p><b>Title:</b> Airfield Protection</p> <p><b>Description:</b> Research, develop and transition technologies for hardening and protecting airfield infrastructure from munitions attack, unexploded ordnance and aircraft, equipment and infrastructure fires. Included within this effort are structural solutions, expeditionary and expedient hardening and protection solutions, explosive ordnance disposal technologies and aviation firefighting technologies. The technologies developed from this effort provide improved resiliency and rapid restoration of airbase and airfield operations following an attack.</p> <p><b>FY 2023 Plans:</b><br/>Research and prototype Camouflage Concealment and Deception (CCD) concepts for critical equipment and small aircraft. Test and evaluate additively manufactured concrete structures for blast and ballistic performance and update design guidance accordingly. Update personnel bunker designs to reduce the likelihood of traumatic brain injuries (TBI) from emerging threats. Continue development of building wall and roof sections to reduce construction cost and increase survivability against guided munitions. Improve equipment protection systems to better align with agile combat objectives. Evaluation of Per- and Polyfluoroalkyl Substances (PFAS)-free foams, mitigation technologies for Aqueous film forming foam (AFFF), and new/emergent technologies for fire protection and training.</p> <p><b>FY 2024 Plans:</b></p>  | 1.440          | 2.822          | 4.375          |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604617F / Agile Combat Support | <b>Project (Number/Name)</b><br>652895 / Civil Engineering Readiness |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <p>Upgrade/modernize existing personnel protective bunkers and Air Force infrastructure hardening standards to meet current threat(s). Continue RDT&amp;E of new concepts for protection materials for lighter, less expensive solutions for infrastructure hardening. Test and evaluate technologies against penetrating munitions including cruise missile hardening and improve expedient sheltering to address advanced threats through concepts such as Hasty Aircraft Inflatable Large Shelters (HAILS). Design and Develop Expedient Small Asset Protection (ESAP) equipment concepts and prototypes. Test and Validate ESAP systems against design threat weapons and improve design as necessary. Provide technical assistance for initial fielding of ESAP systems. Continue testing of selective hardening systems for infrastructure. Continue testing and evaluation of unconventional countermeasures technology for transition. Continue research and development of aviation firefighting technologies for treatment and replacement of the perfluorinated aqueous film forming foams (AFFF), clean firefighting agents - Halon replacement and aviation firefighting equipment. Continue RDT&amp;E of EOD technologies for neutralization UXO threats for transition into service.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Planned increase to support ACE protection needs.</p>   |                |                |                |
| <p><b>Title:</b> Energy &amp; Utilities</p> <p><b>Description:</b> Research, develop and transition technologies for energy and utilities resiliency for BEAR base and airbase infrastructure. The focus of this effort is for energy and utilities technologies that provide increased efficiency and decreased logistic costs for expeditionary and in-garrison applications. This includes: expeditionary shelters, environmental conditioning systems, water and waste stream processing, power production and power management systems.</p> <p><b>FY 2023 Plans:</b><br/>Continue bench and lab scale testing of new energy and utilities technologies at the Modular Expeditionary Technology Evaluation Resource (METER) site prior to scaling up to full scale test and evaluation at the Base Expeditionary Airfield Resources (BEAR) Technology Evaluation &amp; Integration Laboratory (BTEIL) site. Continue field testing and evaluation of expeditionary energy storage and shelter technologies that incorporate energy resiliency and sustainability capabilities for USAF expeditionary assets. Conduct field demonstration of innovative expeditionary water and waste processing systems in an operational environment prior to fielding. Continue supporting test and evaluation of commercial technologies/systems that includes: expeditionary shelters, environmental conditioning systems, hybrid renewable energy systems, energy storage, power generation and management system, water and waste stream processing system. Successful development of these systems will provide capabilities for warfighters that improve energy resiliency and energy efficiency while reducing logistics needs for expeditionary and fixed base applications.</p> <p><b>FY 2024 Plans:</b><br/>Continue bench and lab scale testing of new energy and utilities technologies at the METER site prior to scaling up to full scale test and evaluation at the BTEIL site. Continue test and evaluation of expeditionary energy storage and shelter technologies that</p> | 0.641          | 0.771          | 1.392          |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0604617F / Agile Combat Support | <b>Project (Number/Name)</b><br>652895 / Civil Engineering Readiness |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| incorporate resiliency and sustainability capabilities for USAF expeditionary assets. Conduct field demonstration of innovative expeditionary water and waste disposal systems in an operational environment prior to fielding such as in Arctic environments, in order to support current Arctic strategy needs. Support test and evaluation of commercial technologies/systems that includes: expeditionary shelters, environmental conditioning systems, hybrid renewable energy systems, energy storage, power generation and management system, water and waste stream processing system. These systems will provide warfighters with improved energy resiliency and efficiency while and reducing logistics for expeditionary and fixed base operations. |                |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Planned increase to support testing of new energy and utility technologies in support of ACE and Arctic operations.  |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 12.783         | 14.252         | 21.967         |

|   | <b>FY 2022</b> | <b>FY 2023</b> |
|---|----------------|----------------|
| <b>Congressional Add:</b> Carbon Materials  | 2.890          | 0.000          |
| <b>FY 2022 Accomplishments:</b> Conduct research into Carbon Materials for Civil Engineer applications.   |                |                |
| <b>FY 2023 Plans:</b> Continue to conduct research into Carbon Materials for Civil Engineer applications.   |                |                |
| <b>Congressional Add:</b> Airfield Sustainment & Damage Recovery Technologies   | 4.817          | 0.000          |
| <b>FY 2022 Accomplishments:</b> Conduct research into Airfield Sustainment and Damage Recovery Technologies for Civil Engineer applications.<br>Optimize technologies that will enable asphalt to set at cooler temperatures which will reduce energy consumption at forward base operations. |                |                |
| <b>FY 2023 Plans:</b> Continue to conduct research into Airfield Sustainment and Damage Recovery Technologies for Civil Engineer applications. Optimize technologies that will enable asphalt to set at cooler temperatures which will reduce energy consumption at forward base operations.  |                |                |
| <b>Congressional Add:</b> Modern Timber Products for Expeditionary Construction   | 4.817          | 5.000          |
| <b>FY 2022 Accomplishments:</b> Conduct research into Modern Timber Products for Expeditionary Construction and Civil Engineer applications.  |                |                |
| <b>FY 2023 Plans:</b> Continue and extend research into Modern Timber Products for Expeditionary Construction and Civil Engineer applications.  |                |                |
| <b>Congressional Adds Subtotals</b>   | 12.524         | 5.000          |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604617F / Agile Combat Support | <b>Project (Number/Name)</b><br>652895 / Civil Engineering Readiness |
|--|--|--|

**C. Other Program Funding Summary (\$ in Millions)**

| <u>Line Item</u>  | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • OPAF 04 Line Item 845100A:<br><i>Contingency Operations -<br/>Engineering and EOD Equipment</i> | 61.464         | 68.739         | 173.669                       | -                            | 173.669                        | 167.773        | 171.299        | -              | -              | Continuing                        | Continuing        |

**Remarks**

Procurement funding for Expedient Small Asset Protection (ESAP) systems, Rapid Airfield Damage Assessment System (RADAS) and Recovery of Airbases Denied by Ordnance (RADBO) in PE 0208028F.

**D. Acquisition Strategy**

This Civil Engineering (CE) Readiness project develops and evaluates technologies for in-garrison, expeditionary, and contingency installations & airbases. This encompasses a wide range of solutions and COTS equipment that are fielded to support the CE mission of the USAF. The acquisition strategy utilizes AFCEC RDT&E contracts as well as AFLCMC, GSA, other DoD and US Government laboratories/engineering centers, contracts and other transaction agreements whenever practical for the specific technology development effort.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604617F / Agile Combat Support | <b>Project (Number/Name)</b><br>652895 / Civil Engineering Readiness |
|--|--|--|

| <b>Product Development (\$ in Millions)</b>                   |                        |                                     |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|-------------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location      | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Airbase Technologies  | Various                | AFCEC : Tyndall AFB, FL             | -           | 2.487   | Nov 2021   | 2.622   | Oct 2022   | 3.888        | Nov 2023   | -           |            | 3.888         | Continuing       | Continuing | -                        |
| Airfield Damage Repair (ADR) ERDC                             | MIPR                   | USERDC : Vicksburg, MS              | -           | 1.175   | Jan 2022   | 0.046   | Nov 2022   | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Airfield Damage Repair (ADR) & Airfield Pavement Technologies | Various                | AFCEC : Tyndall AFB, FL             | -           | 0.994   | Nov 2021   | 2.206   | Dec 2022   | 3.183        | Nov 2023   | -           |            | 3.183         | Continuing       | Continuing | -                        |
| EOD & Robotics Technologies                                   | C/CPFF                 | Torch Technologies : Huntsville, AL | -           | 1.753   | Dec 2021   | 0.402   | Nov 2022   | 2.734        | Nov 2023   | -           |            | 2.734         | Continuing       | Continuing | -                        |
| RADAS Integration   | C/CPAF                 | Torch Technologies : Huntsville, AL | -           | 2.711   | Dec 2021   | 3.810   | Nov 2022   | 2.785        | Nov 2023   | -           |            | 2.785         | Continuing       | Continuing | -                        |
| Airfield Protection (AP) Infrastructure Hardening             | C/CPFF                 | Battelle : Panama City, FL          | -           | 1.112   | Nov 2021   | 2.025   | Nov 2022   | 2.983        | Nov 2023   | -           |            | 2.983         | Continuing       | Continuing | -                        |
| Airfield Protection (AP) Aviation Firefighting Technologies   | C/CPFF                 | Battelle : Panama City, FL          | -           | 0.328   | Nov 2021   | 0.797   | Oct 2022   | 1.392        | Nov 2023   | -           |            | 1.392         | Continuing       | Continuing | -                        |
| Energy & Utilities RDT&E                                      | C/CPFF                 | Battelle : Panama City, FL          | -           | 0.641   | Nov 2021   | 0.771   | Oct 2022   | 1.392        | Nov 2023   | -           |            | 1.392         | Continuing       | Continuing | -                        |
| Airfield sustainment and damage recovery technologies         | Various                | Kenai Defense : Homer, AK           | -           | 4.817   | Dec 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Carbon materials  | Various                | Kenai Defense : Homer, AK           | -           | 2.890   | Dec 2022   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Modern timber products for expeditionary construction         | Various                | Auburn University : Auburn, AL      | -           | 4.817   | Dec 2022   | 5.000   |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>   |                        |                                     | -           | 23.725  |            | 17.679  |            | 18.357       |            | -           |            | 18.357        | Continuing       | Continuing | N/A                      |

**Remarks**  
Airfield Pavements & Technologies was rolled into Airfield Damage Repair as these are a joint effort.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604617F / Agile Combat Support | <b>Project (Number/Name)</b><br>652895 / Civil Engineering Readiness |
|--|--|--|

| <b>Support (\$ in Millions)</b>         |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                      | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Program Management Administration (PMA) | Various                | AFCEC : Tyndall AFB, FL        | -           | 0.520   | Apr 2022   | 0.412   |            | 2.018        |            | -           |            | 2.018         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                         |                        |                                | -           | 0.520   |            | 0.412   |            | 2.018        |            | -           |            | 2.018         | Continuing       | Continuing | N/A                      |

**Remarks**  
PMA includes travel and supplies to support CE Readiness RDT&E activities.

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| A&AS Program Support RDT&E                  | C/FFP                  | Multiple : FL                  | -           | 1.062   | Oct 2021   | 1.161   | Oct 2022   | 1.592        | Oct 2023   | -           |            | 1.592         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 1.062   |            | 1.161   |            | 1.592        |            | -           |            | 1.592         | Continuing       | Continuing | N/A                      |

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | -           | 25.307  | 19.252  | 21.967       | -           | 21.967        | Continuing       | Continuing | N/A                      |

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |  |  |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604617F / Agile Combat Support | <b>Project (Number/Name)</b><br>652895 / Civil Engineering Readiness |
|--|--|--|

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

| <b>CE Readiness</b>   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Airbase Technologies  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ADR Robotic In-seat Appliques Phase 2                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ADR In-situ Material Repair RDT&E                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| REHM Spiral 2 Rapid UXO Clearance                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| RADAS Development, Test & Evaluation                        |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Airfield Mitigation and Recovery Robotics                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| AFFF Disposal and Mitigation Technologies                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Directed Energy Application for UXO Neutralization          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Civil Engineering Projects for Sustained Airbase Operations |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Airfield Protection - Advanced Hardening RDT&E              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| AFFF Replacement Agent Test & Evaluation                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Airfield Sustainment and Damage Recovery Technologies       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Carbon Materials  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Modern Timber Products for Expeditionary Construction       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Design, Development, Fielding and Testing of ESAP 3 Shelter |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604617F / Agile Combat Support | <b>Project (Number/Name)</b><br>652895 / Civil Engineering Readiness |
|--|--|--|

Schedule Details

| Events by Sub Project                                       | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b>CE Readiness</b>   |         |      |         |      |
| Airbase Technologies  | 1       | 2022 | 4       | 2027 |
| ADR Robotic In-seat Appliques Phase 2                       | 1       | 2022 | 2       | 2026 |
| ADR In-situ Material Repair RDT&E                           | 1       | 2022 | 4       | 2023 |
| REHM Spiral 2 Rapid UXO Clearance                           | 1       | 2022 | 4       | 2023 |
| RADAS Development, Test & Evaluation                        | 1       | 2022 | 4       | 2023 |
| Airfield Mitigation and Recovery Robotics                   | 1       | 2022 | 3       | 2027 |
| AFFF Disposal and Mitigation Technologies                   | 1       | 2022 | 4       | 2024 |
| Directed Energy Application for UXO Neutralization          | 1       | 2022 | 4       | 2024 |
| Civil Engineering Projects for Sustained Airbase Operations | 1       | 2022 | 1       | 2026 |
| Airfield Protection - Advanced Hardening RDT&E              | 1       | 2022 | 4       | 2027 |
| AFFF Replacement Agent Test & Evaluation                    | 1       | 2022 | 4       | 2026 |
| Airfield Sustainment and Damage Recovery Technologies       | 4       | 2022 | 4       | 2025 |
| Carbon Materials  | 4       | 2022 | 4       | 2025 |
| Modern Timber Products for Expeditionary Construction       | 4       | 2022 | 4       | 2025 |
| Design, Development, Fielding and Testing of ESAP 3 Shelter | 1       | 2023 | 4       | 2027 |

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |   |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0604617F / <i>Agile Combat Support</i> |                      |                |                | <b>Project (Number/Name)</b><br>654910 / <i>Aeromedical Readiness</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>  | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 654910: <i>Aeromedical Readiness</i>                                    | -                  | 1.665          | 0.000          | 0.000               | 0.000   | 0.000                | 0.000          | 0.000          | 0.000   | 0.031                   | Continuing              | Continuing        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -   | -                    | -              | -              | -   | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

Aeromedical Readiness provides key aeromedical devices, life-saving capabilities and quality of life technologies and equipment. This program enables the critical care of combat casualties by further developing and optimizing existing technologies for ground Expeditionary Medical Systems (EMEDS) and aeromedical evacuation systems. EMEDS and aeromedical evacuation systems provide the urgent care needed to treat deployed injured warfighters and return them to duty while in country, and to treat combat casualties that need to be safely transported to a stateside hospital for follow on treatment. The program also supports critical capabilities development in the multi-disciplinary areas for light-weight, durable, and rapidly deployable medical equipment to ensure the Air Force is poised to meet future medical readiness and operational requirements, to include but not limited to Spinal Immobilization Transport Device (SIT-D), Pathogen Detection Capability, Automated Vision Testing, Whole Blood Transport and other FDA approved medical treatment devices. This program supports projects ranging from research efforts to optimize human physiologic and cognitive performance for Air Combat Command, to development of patient isolation and transportation devices for Air Mobility Command that enable aeromedical evacuation of patients suffering with highly infectious diseases.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, and 0606398F. In FY22 \$0.000 were expended, and in FY23 \$0.000 is forecast for civilian pay expenses in this program element.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Aeromedical Equipment Testing/Studies/Minor Development   | 1.665          | 0.000          | 0.000          |
| <b>Description:</b> Aeromedical supports Defense Health Program, Joint Services and MAJCOM medical modernization. The Air Force Medical Readiness Agency (AFMRA) Surgeon General Requirement Oversight Council (SGROC) Governance process manages medical capability gaps, research and development, funding prioritization and decisional boards. Aeromedical procures and qualifies commercial-off-the-shelf (COTS) or near COTS medical and aeromedical products and/or performs minor development, studies and management efforts, under Aeromedical Readiness. Aeromedical Program efforts evaluate integrating technologies or prototype systems in a realistic operating environment, expedite technology transition from the laboratory to operational use, emphasis on proving maturity prior to integration and viable decision ready materiel solutions. |                |                |                |
| <b>FY 2023 Plans:</b><br>Contract Studies to develop Medical requirements.  |                |                |                |
| <b>FY 2024 Plans:</b><br>No FY24 activity   |                |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b>  |                |                |                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|---|-------------------------|

|  |   |   |
|--|---|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604617F / <i>Agile Combat Support</i> | <b>Project (Number/Name)</b><br>654910 / <i>Aeromedical Readiness</i> |
|--|---|---|

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b> | FY 2022 | FY 2023 | FY 2024 |
|---|---------|---------|---------|
| Aeromedical studies ending in FY23                          |         |         |         |
| <b>Accomplishments/Planned Programs Subtotals</b>           | 1.665   | 0.000   | 0.000   |

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

Multi-Modal Threat Detection and Mitigation Congressional Add improperly aligned to BPAC 654910. Funding is being executed out of BPAC 652895.

**D. Acquisition Strategy**

Whenever practical, commercial items are tested and evaluated as candidates for providing solutions to user needs. This normally involves contractor characterization, verification, and qualification testing to ensure Food and Drug Administration (FDA) approved, commercial off-the-shelf equipment is properly evaluated to identify any capability gaps that may require minor modifications for military use. However, acquisition strategies may also be carried out for traditional Engineering and Manufacturing Development (EMD). Funds may be used to address associated emerging Aeromedical Readiness requirements and for program management activities.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604617F / <i>Agile Combat Support</i> | <b>Project (Number/Name)</b><br>654910 / <i>Aeromedical Readiness</i> |
|--|---|---|

| Product Development (\$ in Millions)   |                        |                                    |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|------------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location     | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Aeromedical Equipment R&D (Production Representative Units, Testing, Manufacturing Maturation, Food and Drug Administration Clearance) | C/FFP                  | AFRLCMC : Wright-Patterson AFB, OH | -           | 1.665   | Sep 2022   | -       |            | -            |            | -           |            | -             | 0.000            | 1.665      | -                        |
| <b>Subtotal</b>  |                        |                                    | -           | 1.665   |            | -       |            | -            |            | -           |            | -             | 0.000            | 1.665      | N/A                      |
| <b>Project Cost Totals</b>   |                        |                                    | -           | 1.665   |            | -       |            | -            |            | -           |            | -             | 0.000            | 1.665      | N/A                      |

**Remarks**  
Multi-Modal Threat Detection and Mitigation Congressional Add improperly aligned to BPAC 654910. Funding is being executed out of BPAC 652895.

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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
|--|---|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604617F / <i>Agile Combat Support</i> | <b>Project (Number/Name)</b><br>654910 / <i>Aeromedical Readiness</i> |
|--|---|---|

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |  |
|--|--|
| <b><i>Aeromedical Readiness RDTE Efforts</i></b>                 |  |
| Aeromedical Equipment Testing/Studies/<br>Minor Development      |  |
| Spinal Transport Device testing concludes,<br>mod contract award |  |
| Digital Engineering Investment                                   |  |
| <b><i>Multi-Modal Threat Detection and Mitigation</i></b>        |  |
| Multi-Modal Threat Detection and Mitigation                      |  |



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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604617F / <i>Agile Combat Support</i> | <b>Project (Number/Name)</b><br>654910 / <i>Aeromedical Readiness</i> |

Schedule Details

| Events by Sub Project   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Aeromedical Readiness RDTE Efforts</i></b>              |         |      |         |      |
| Aeromedical Equipment Testing/Studies/Minor Development       | 1       | 2022 | 4       | 2027 |
| Spinal Transport Device testing concludes, mod contract award | 2       | 2024 | 2       | 2025 |
| Digital Engineering Investment                                | 4       | 2024 | 4       | 2025 |
| <b><i>Multi-Modal Threat Detection and Mitigation</i></b>     |         |      |         |      |
| Multi-Modal Threat Detection and Mitigation                   | 1       | 2022 | 4       | 2024 |

**Note**  
Multi-Modal Threat Detection and Mitigation Congressional Add improperly aligned to BPAC 654910. Funding is being executed out of BPAC 652895.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604706F / <i>Life Support Systems</i> |
|---|---|

| COST (\$ in Millions)               | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|-------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element               | -           | 22.335  | 50.042  | 39.301       | 0.000       | 39.301        | 25.457  | 26.341  | 30.026  | 31.113  | Continuing       | Continuing |
| 65412A: <i>Life Support Systems</i> | -           | 22.335  | 50.042  | 39.301       | 0.000       | 39.301        | 25.457  | 26.341  | 30.026  | 31.113  | Continuing       | Continuing |
| Quantity of RDT&E Articles          | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

This program saves Airmen's lives and improves aircrew performance through better aircrew flight equipment and airman combat systems. Air Force acquisition teams lead the upgrade and fielding of new equipment and systems by assessing deficiencies in existing equipment, identifying and assessing existing products or developing new technology, and conducting required Safe-to-Fly tests, certifications, and studies. Program efforts include, but are not limited to, the following projects: directed energy protective equipment; flight helmets and visors; oxygen breathing systems for aircrew; radios and locator beacons; support equipment; nuclear flash blindness protection; night vision devices; noise reduction devices; all types of flight suits and ensembles to protect aircrew against environmental threats; anti-gravity (anti-G) suits; flame resistant, retardant and blast/ballistic protective gear; aircraft seating; impact protection equipment; flotation devices; parachutes; ejection systems; post-ejection survival systems; physiological monitoring devices and other aircrew, life support, and ground crew systems required by the warfighter.

The total cost of the Next Gen Fixed Wing Helmet (NGFWH) Middle Tier of Acquisition effort is \$15.1M, including RDT&E. The NGFWH program is fully funded across the Future Years Defense Program.

The FY2024 funding request was reduced by \$8.737 million to account for the availability of prior year execution balances

This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, and 0606398F. In FY22 \$1.273M was expended for civilian pay expenses in this program element, and in FY23 \$1.491M is forecasted for civilian pay expenses in this program.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|  |   |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> / BA 5: <i>System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604706F / <i>Life Support Systems</i> |
|--|---|

| <b>B. Program Change Summary (\$ in Millions)</b> | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024 Base</u> | <u>FY 2024 OCO</u> | <u>FY 2024 Total</u> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 25.437         | 47.442         | 27.975              | 0.000              | 27.975               |
| Current President's Budget                        | 22.335         | 50.042         | 39.301              | 0.000              | 39.301               |
| Total Adjustments                                 | -3.102         | 2.600          | 11.326              | 0.000              | 11.326               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | -2.400         |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 5.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | -2.310         | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -0.792         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 11.326              | 0.000              | 11.326               |

**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

**Project:** 65412A: *Life Support Systems*

Congressional Add: *Physiological Monitoring*

Congressional Add Subtotals for Project: 65412A

Congressional Add Totals for all Projects

|  | <u>FY 2022</u> | <u>FY 2023</u> |
|--|----------------|----------------|
|  | -              | 5.000          |
|  | -              | 5.000          |
|  | -              | 5.000          |

**Change Summary Explanation**

FY22 adjustments for Small Business Innovative Research (SBIR) and several reprogrammings

FY23 Congressional Directed Reduction: -2.4M NGES Contract Delay and add of \$5M for pilot physiological monitoring

FY24 increase of 11.3M to fund Life Support Systems requirements

**C. Accomplishments/Planned Programs (\$ in Millions)**

|   | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Aircrew Performance Studies/Technology Projects and Minor Development Efforts   | 7.608          | 15.505         | 13.125         |
| <b>Description:</b> Air Force Life Cycle Management Center's Aircrew Performance Branch is the single USAF focal point for Aircrew Flight Equipment (AFE) Safe-to-Fly (STF) testing certification, addressing Safety Investigation Board (SIB) recommendations, along with studies and analysis. In addition, funding is for efforts that are responses to real-time capability gaps identified by the warfighter which may be satisfied by testing and qualifying commercial-off-the-shelf (COTS) products and/or performing minor development efforts to aircrew flight and life support equipment that are less than \$10M per year total. Previous successful efforts may evolve into enduring capabilities as other users and MAJCOMs seek to incorporate these STF assets into their inventory. Aircrew Laser Eye Protection - Technical Insertion (ALEP-TI), Next Generation Fixed Wing Helmet (NGFWH), BA-X Low Profile |                |                |                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force   |  | <b>Date:</b> March 2023   |                |                |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 5: System Development &amp; Demonstration (SDD)</i>  |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604706F / <i>Life Support Systems</i> |                |                |
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  |  | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| <p>Parachute (LPP) and Nuclear Flash Blindness Goggles (NFBG) are currently the active programs within Life Support Systems (LSS). Funds may be used to address associated emerging aircrew, ground crew, and egress requirements, and for program management activities.</p> <p><b>FY 2023 Plans:</b><br/>Continue to perform STF testing and certification of COTS products. Address SIB recommendations. Continue the development and test efforts for Aircrew Laser Eye Protection - Technical Insertion (ALEP-TI), radio frequency communication upgrades, Next Generation Fixed Wing Helmet, Next Generation Nuclear Flash Blindness technology, and improvement of parachute/flotation devices.</p> <p><b>FY 2024 Plans:</b><br/>Continue to perform STF testing and certification of COTS products. Address SIB recommendations. Continue the development/test efforts of aircrew laser eye protection - technical insertion (ALEP-TI) radio upgrades, next generation fixed wing helmet, next generation nuclear flash blindness technology, and improvement of parachute/flotation devices.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Decrease in budget authority is due to developmental efforts maturing in FY24.</p>   |  |   |                |                |
| <p><b>Title:</b> Next Generation Ejection Seat</p> <p><b>Description:</b> This effort includes the qualification, procurement, fielding and sustainment of an upgraded ejection seat escape system for ACES II-equipped aircraft. The new ejection seat escape system safely accommodates greater variation in aircrew minimum and maximum weights at minimum aircrew sitting height of 31 inches, including 59% of the female pilot population, and the use of Helmet Mounted Displays. It reduces the risk of injuries to the arms and legs (especially due to limb flail), neck, and spinal column throughout ejection phases.</p> <p><b>FY 2023 Plans:</b><br/>Continue contract effort awarded for aircraft integration qualification testing for follow-on NGES variants. Initial platform critical design review, test readiness review, and start of delta qualification sled testing. F-16 is scheduled to begin in FY23 to support continuous ejection system qualification.</p> <p><b>FY 2024 Plans:</b><br/>Complete initial platform (F-15) delta qualification sled testing. Continue F-16 aircraft integration qualification testing. F-22 is scheduled to begin in FY24 to support continuous ejection system qualification.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b></p> |  | 10.000  | 22.191         | 21.326         |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604706F / <i>Life Support Systems</i> |
|---|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| Decrease in budget authority is due to developmental efforts maturing in FY24.   |                |                |                |
| <b>Title:</b> Female Airmen Equipment  | 4.727          | 7.346          | 4.850          |
| <b>Description:</b> Female Fitment within Human Systems Division (HSD) of the Air Force Life Cycle Management Center develops and sustains organizational clothing and individual equipment (OCIE) & personal protective equipment (PPE) for female Airmen to enhance mission performance while improving safety and survival. HSD assigned Female Fitment as a top priority, matching CSAF vision, and ensures that the fullest extent of the AF female anthropometric range is incorporated into all of its programs. Outreach with other AF organizations and sister services ensures that requirements are collected to vector current and future programs. Anthropometric data collection ensures that these programs produce the OCIE and PPE that will allow women to perform their best in the missions they are assigned. OCIE and PPE for female aircrew includes, but is not limited to, the development and refinement of flight suits, bladder relief systems, helmets, ejection seats, G-suits, aircrew body armor, oxygen masks, and feedback mechanisms. |                |                |                |
| <b>FY 2023 Plans:</b><br>Continue testing and development of female flight equipment: Items anticipated to be worked include, but not limited to, the AF GearFit, aircrew harness, anthropometric studies  |                |                |                |
| <b>FY 2024 Plans:</b><br>Continue testing and development of female flight equipment: Items anticipated to be worked include, but not limited to, the AF GearFit App, aircrew harness, and anthropometric studies. Begin testing on in-flight bladder relief systems.  |                |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Decrease in FY24 due to ability to leverage collected anthropometric data gathered during previous programs for use in all future efforts.   |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 22.335         | 45.042         | 39.301         |

|  | <b>FY 2022</b> | <b>FY 2023</b> |
|--|----------------|----------------|
| <b>Congressional Add:</b> Physiological Monitoring   | -              | 5.000          |
| <b>FY 2023 Plans:</b> Aircrew Physiological Monitoring Incident Monitoring and Alerting (APIMA) Congressional Add will be used to assist with requirements maturation and Concept of Operations development for the real time monitoring and alerting of pilot cardiorespiratory performance and quality of breathing gas to assist in physiological event prevention. |                |                |
| <b>Congressional Adds Subtotals</b>  | -              | 5.000          |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604706F / <i>Life Support Systems</i> |
|---|---|

**D. Other Program Funding Summary (\$ in Millions)**

| <u>Line Item</u>  | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • OPAF 04 Line Item 842990:<br><i>Items Less Than \$5 Million</i><br><i>(Safety and Rescue Equipment)</i> | 74.247         | 105.776        | 60.473                        | -                            | 60.473                         | 106.236        | 94.711         | 98.131         | 99.151         | Continuing                        | Continuing        |

**Remarks**

**E. Acquisition Strategy**

The majority of efforts funded in this project employ a streamlined acquisition approach. Whenever practical, Government-Off-The-Shelf/Commercial-Off-The-Shelf (GOTS/COTS) items are tested and evaluated as candidates for solutions to user needs. This normally involves characterization, verification, and qualification testing to ensure GOTS/COTS equipment is properly certified and adapted for military purposes. However, acquisition strategies may be carried out at the project level for traditional Engineering and Manufacturing Development (EMD), e.g., Integrated Aircrew Ensemble (IAE) and Aircrew Laser Eye Protection - Technical Insertion (ALEP-TI). Funds may be used to address associated emerging aircrew/ground crew/egress requirements and for program management activities.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |  |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604706F / <i>Life Support Systems</i> | <b>Project (Number/Name)</b><br>65412A / <i>Life Support Systems</i> |
|--|---|--|

| <b>Product Development (\$ in Millions)</b>                               |                        |  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location           | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Congressional Add for Physiological Monitoring                            | MIPR                   | DIU : Picatinny Arsenal, NJ              | -           | -       |            | 5.000   |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Aircrew Performance Studies/Technology Projects/Minor Development Efforts | Various                | Multiple Contractors : TBD               | -           | 6.328   | Jan 2022   | 10.505  |            | 9.757        |            | -           |            | 9.757         | Continuing       | Continuing | -                        |
| Next Generation Ejection Seat (NGES)                                      | SS/CPFF                | Collins Aerospace : Colorado Springs, CO | -           | 7.291   | Feb 2022   | 22.191  |            | 19.741       |            | -           |            | 19.741        | Continuing       | Continuing | -                        |
| Female Flight Equipment   | Various                | Multiple Contractors : TBD               | -           | 4.727   | Feb 2022   | 5.397   |            | 4.913        |            | -           |            | 4.913         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>   |                        |  | -           | 18.346  |            | 43.093  |            | 34.411       |            | -           |            | 34.411        | Continuing       | Continuing | N/A                      |

| <b>Support (\$ in Millions)</b> |                        |                                   |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---------------------------------|------------------------|-----------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item              | Contract Method & Type | Performing Activity & Location    | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Direct Cite Authority           | TBD                    | AFLCMC : Wright-Patterson AFB, OH | -           | 1.209   |            | 1.209   |            | 1.522        |            | -           |            | 1.522         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                 |                        |                                   | -           | 1.209   |            | 1.209   |            | 1.522        |            | -           |            | 1.522         | Continuing       | Continuing | N/A                      |

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Program Tests (NGES, ACES, NGFWH, etc.)     | Various                | Various : Various, NV          | -           | 2.130   |            | 4.750   |            | 2.308        |            | -           |            | 2.308         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 2.130   |            | 4.750   |            | 2.308        |            | -           |            | 2.308         | Continuing       | Continuing | N/A                      |



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |  |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604706F / <i>Life Support Systems</i> | <b>Project (Number/Name)</b><br>65412A / <i>Life Support Systems</i> |
|--|---|--|

| <b>Management Services (\$ in Millions)</b> |                        |                                   |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|-----------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location    | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Program Management Administration (PMA)     | TBD                    | AFLCMC : Wright-Patterson AFB, OH | -           | 0.650   |            | 0.990   |            | 1.060        |            | -           |            | 1.060         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                   | -           | 0.650   |            | 0.990   |            | 1.060        |            | -           |            | 1.060         | Continuing       | Continuing | N/A                      |

**Remarks**  
PMA Description: Program Management Support and Travel.

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | -           | 22.335  | 50.042  | 39.301       | -           | 39.301        | Continuing       | Continuing | N/A                      |

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |   |  |
|--|---|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604706F / <i>Life Support Systems</i> | <b>Project (Number/Name)</b><br>65412A / <i>Life Support Systems</i> |
|--|---|--|

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

| <b><i>Life Support Systems RDTE Efforts</i></b>                                  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Aircrew Performance Aircrew Laser Eye Protection - Technical Insertion (ALEP-TI) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Continue projects in support of Aircrew Performance/Female Equipment             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Aircrew Performance Next Generation Fixed Wing Helmet Development                |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Next Generation Ejection Seat Qualification Effort                               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Integrated Aircrew Ensemble G-Suit Redesign                                      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Female Bladder Relief  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| A2CU-F   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Maternity FDU  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Physiological Monitoring   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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**Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force** **Date:** March 2023

|  |   |  |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604706F / <i>Life Support Systems</i> | <b>Project (Number/Name)</b><br>65412A / <i>Life Support Systems</i> |
|--|---|--|

Schedule Details

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Life Support Systems RDTE Efforts</i></b>                                  |         |      |         |      |
| Aircrew Performance Aircrew Laser Eye Protection - Technical Insertion (ALEP-TI) | 1       | 2022 | 3       | 2028 |
| Continue projects in support of Aircrew Performance/Female Equipment             | 1       | 2022 | 4       | 2025 |
| Aircrew Performance Next Generation Fixed Wing Helmet Development                | 1       | 2022 | 4       | 2023 |
| Next Generation Ejection Seat Qualification Effort                               | 1       | 2022 | 4       | 2027 |
| Integrated Aircrew Ensemble G-Suit Redesign                                      | 1       | 2022 | 3       | 2024 |
| Female Bladder Relief  | 2       | 2022 | 4       | 2027 |
| A2CU-F   | 1       | 2022 | 4       | 2027 |
| Maternity FDU  | 1       | 2022 | 4       | 2027 |
| Physiological Monitoring   | 1       | 2022 | 4       | 2023 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604735F / <i>Combat Training Ranges</i> |
|---|---|

| COST (\$ in Millions)                          | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                          | -           | 23.218  | 103.784 | 152.569      | 0.000       | 152.569       | 235.960 | 54.645  | 61.565  | 63.792  | 0.000            | 695.533    |
| 652286: <i>Combat Training Range Equipment</i> | -           | 23.218  | 103.784 | 152.569      | 0.000       | 152.569       | 235.960 | 54.645  | 61.565  | 63.792  | 0.000            | 695.533    |
| Quantity of RDT&E Articles                     | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**A. Mission Description and Budget Item Justification**

COMBAT TRAINING RANGES (CTR): Portfolio provides electronic warfare equipment and support to Air Force combat training ranges for training, testing, and evaluation of aircrews. Development and integration efforts include: aircraft pods, radar emitters, advanced radar emitters, communication jammers, command and control and debrief capability, and instrumentation equipment. All development efforts support USAF aircraft for Joint, Coalition, and Live Virtual Constructive (LVC) training events.

This program leverages Digital acquisition tenets of open, agile, and digital. Common component development, in collaboration with other weapon systems, to reduce redundant costs between systems with similar subsystems requirements. Invests in analytical, information management, data management, digital environments, networks, facilities, and security infrastructure upgrades directly supporting development and sustainment of this program's capabilities, while leveraging DoD and DAF enterprise IT solutions

ADVANCED RADAR THREAT SYSTEM (ARTS): The ARTS program will design, develop, and test threat systems based on replicating advanced foreign fielded Surface-to-Air Missile (SAM) radar and Electronic Warfare (EW) threat systems. The ARTS variants will be used at Department of Defense (DoD) test and training ranges for 4th generation, 5th generation, and 5th generation plus aircrew training and tactics development. ARTS variants are also developed for LVC integration and full simulation training. Efforts include but are not limited to: research, studies, technology development, engineering, and manufacturing advanced radar emitters.

MODERNIZATION RANGE THREATS SYSTEMS (RTS): The RTS program supports upgrading and modifying legacy range threat systems to provide combat training relevancy and enhanced systems capabilities. Legacy systems include Multiple Threat Emitter System (MUTES), Miniature Multiple Threat Emitter System (Mini-MUTES), Modular Threat Emitter (MTE) system, Tactical Radar Threat Generator (TRTG) system, Band Simulator, Unmanned Modular Threat Emitter (UMTE) system, and Joint Threat Emitter (JTE) system.

LIVE MISSION OPERATIONS CAPABILITY (LMOC): LMOC is an effort to modernize range control centers with common hardware and software that can support live-synthetic training missions. LMOC will provide a node-based enterprise that integrates all range system capabilities, including pre/post mission coordination, in a multi-level secure environment to enable blended live-synthetic training for 4th/5th generation aircraft and aircrew.

P6 COMBAT TRAINING SYSTEM (P6CTS): P6CTS replaced the existing P5 Combat Training System (P5CTS). P6CTS will resolve existing critical training capability gaps and will enable comprehensive, realistic training environments for 4th Gen - 5th Gen aircraft systems. Key upgrades include a trusted operating system, Multiple

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604735F / <i>Combat Training Ranges</i> |
|---|---|

Level Security (MLS) architecture, Type 1 encryption of over-air data, and increased processing capability. P6CTS investment will support a robust Air-to-Air and Air-to-Ground combat training environment and provide a growth path to LVC exercises.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F.

This FY24 funding request was reduced by \$2.024 million to account for the availability of prior year execution balances.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 23.980         | 91.284         | 182.696             | 0.000              | 182.696              |
| Current President's Budget                        | 23.218         | 103.784        | 152.569             | 0.000              | 152.569              |
| Total Adjustments                                 | -0.762         | 12.500         | -30.127             | 0.000              | -30.127              |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 12.500         |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -0.762         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | -30.127             | 0.000              | -30.127              |

**Change Summary Explanation**

FY22 reduced by 0.762M for SBIR

FY23 Congressional Add for 12.500M to support Joint Pacific Alaska Range Complex

FY24 funding reduced by 20.000M to properly align ARTS v3 for bed down; FY24 additionally reduced by 8.085M for ARTS V2 cancellation and 2.040M for availability of prior year execution balances.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>    | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <b>Title:</b> Advanced Radar Threat System-Variant 1 (ARTS-V1) | 0.314          | 0.100          | 0.000          |

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|--|--|---|----------------|----------------|
| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force   |  | <b>Date:</b> March 2023   |                |                |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>  |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604735F / <i>Combat Training Ranges</i> |                |                |
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  |  | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| <p><b>Description:</b> ARTS-V1 program to design, develop, build, and test radar threat systems based on advanced strategic, long-range, re-locatable foreign fielded SAM radar threat systems is now in production. ARTS-V1 leverages an existing DoD test resource development program to reduce non-recurring development cost, minimize schedule risk, and promote range interoperability between test and training. The focus of the program is to develop realistic radar threat systems meant to test 5th Generation aircraft capabilities.</p> <p><b>FY 2023 Plans:</b><br/>RDT&amp;E closeout efforts</p> <p><b>FY 2024 Plans:</b><br/>N/A. Program shift to procurement.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>RDT&amp;E reduced in FY24 due to reaching Milestone C.</p>  |  |   |                |                |
| <p><b>Title:</b> Advanced Radar Threat System-Variant 2 (ARTS-V2)</p> <p><b>Description:</b> ARTS-V2 program will design, develop, build, and test radar emitter systems based on an advanced tactical, mobile, short/medium range foreign fielded SAM radar threat system. Development efforts include ARTS-V2 integration into LVC architecture, ongoing analyses, studies, developing high-fidelity surrogate targets, and risk reduction.</p> <p><b>FY 2023 Plans:</b><br/>No FY23 activity. Contract has been terminated for convenience.</p> <p><b>FY 2024 Plans:</b><br/>No FY24 activity. Contract has been terminated for convenience.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>No activity planned for FY24. Contract has been terminated for convenience.</p>  |  | 0.100   | 0.000          | 0.000          |
| <p><b>Title:</b> Advanced Radar Threat System-Variant 3 (ARTS-V3)</p> <p><b>Description:</b> ARTS-V3 program will design, develop, build, and test advanced Surface-to-Air Missile (SAM) radar threat systems. ARTS-V3 will replicate strategic/tactical threats at the fidelity necessary for 5th generation and 5th generation plus aircraft supporting multi-domain platform engagements. The ARTS-V3 requirement is to develop a modular radar threat system that has a growth path to replicate multiple advanced SAM threats and support Live Virtual Constructive (LVC) training. Efforts include but are not limited to: development of a Production Representative Articles (PRA), development of command and control software, digital engineering, and efforts focused on integrating ARTS-V3 into test and training ranges plus LVC architectures.</p> |  | 22.704  | 86.193         | 123.858        |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force  |  | <b>Date:</b> March 2023   |                |                |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>   |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604735F / <i>Combat Training Ranges</i> |                |                |
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   |  | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| <p><b>FY 2023 Plans:</b><br/>Award the contract to develop the ARTS-V3 PRA for developmental and operational testing. Efforts include but are not limited to the following: PRA development, engineering, manufacturing, training range integration, interfaces, software development, and developmental tests, and operational tests.</p> <p><b>FY 2024 Plans:</b><br/>Continue the work awarded in FY 2023 to develop the ARTS-V3 Production Representative Articles (PRA) for developmental and operational testing. Efforts include but are not limited to the following: PRA development, engineering, manufacturing, training range integration, interfaces, software development, and developmental tests, and operational tests.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>The FY 2024 funding increased to enable the rest of the radar system to be built, integrating the long lead hardware and software from FY 2023, to have a full PRA designed and built for full system testing by FY 2025.</p>  |  |   |                |                |
| <p><b>Title:</b> Live Mission Operations Capability (LMOC)</p> <p><b>Description:</b> LMOC is an effort to modernize training range control centers with common hardware and software that can support live-synthetic training missions. LMOC provides a node-based software enterprise that integrates all range system capabilities, including pre/post mission coordination, in a multi-level secure environment to enable blended live-synthetic training for 4th/5th generation aircraft and aircrew.</p> <p><b>FY 2023 Plans:</b><br/>Funding supports continued development of "WarRoom" for all fielded locations, automated mission planning and Multi-Level Security development.</p> <p><b>FY 2024 Plans:</b><br/>FY24 plans include, but not limited to: continued development and testing of additional capabilities for WarRoom such as Mission Planning, Performance-based Training and Pre/Post Mission applications. Conduct further the development of multi-level security to provide the capability to guise, filter or block data as required.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding increased to allow the program to continue to develop and deliver minimum viable capability releases to the field. Increased funding will also support, but not limited to test and integration activities for WarRoom to include Spectrum upgrade testing.</p> |  | 0.100   | 4.864          | 6.970          |
| <p><b>Title:</b> P6 Combat Training System (P6CTS)</p>  |  | 0.000   | 12.627         | 21.741         |



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604735F / <i>Combat Training Ranges</i> |
|---|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p><b>Description:</b> P6CTS is aircraft instrumentation pod that will replace the existing P5CTS pods used for training exercises between 4th and 5th generation platforms. P6CTS will resolve existing critical training capability gaps and will enable comprehensive, realistic training environments for 4th Gen - 5th Gen aircraft systems. Key upgrades include the following: trusted operating system, Multiple Level Security (MLS) architecture, Type 1 encryption of over-air data, and increased processing capability.</p> <p><b>FY 2023 Plans:</b><br/>                     Funds will support but is not limited to product development, test, and aircraft integration on the F-15 and F-16. Funds will also support integrating P6CTS ground subsystem with select training ranges.</p> <p><b>FY 2024 Plans:</b><br/>                     Funds will support but is not limited to product development, test, and continued aircraft integration on the F-15 and F-16 and other AF platforms including F-35, T-38 and B-52. Funds will also support rehosting of P6CTS ground subsystem on Live Mission Operation Capability Center (LMOC) WarRoom infrastructure. Funds will also be applied toward cost-shared Class I Engineering Change Proposals (ECPs) to address Diminishing Manufacturing Sources and Material Shortages (DMSMS).</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>                     Funding increase to integrate onto additional AF platforms including F-35, T-38 and B-52 as well as the USAF cost-share of DMSMS driven Class I ECPs to include redesign of the KOV74a and the TCTS Inc II Time-Space-Position-Information (TSPI) unit.</p> |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 23.218         | 103.784        | 152.569        |

| <b>D. Other Program Funding Summary (\$ in Millions)</b>       |                |                |                         |                        |                          |                |                |                |                |                             |                   |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| <b>Line Item</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024<br/>Base</b> | <b>FY 2024<br/>OCO</b> | <b>FY 2024<br/>Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b> | <b>FY 2028</b> | <b>Cost To<br/>Complete</b> | <b>Total Cost</b> |
| • OPAF 03 Line Item 834190:<br><i>Combat Training Ranges</i>   | 320.088        | 139.213        | 103.977                 | -                      | 103.977                  | 95.433         | 214.758        | 223.760        | 228.504        | 0.000                       | 1,325.733         |
| • OPAF 05 Line Item 861900:<br><i>Spares and Repair Parts</i>  | 1.559          | 8.094          | 744.000                 | -                      | 744.000                  | 760.000        | 776.000        | 806.000        | 0.823          | 0.000                       | 3,096.476         |
| • APAF 07 Line Item 000075:<br><i>Other Production Charges</i> | 14.784         | 21.973         | 57.086                  | -                      | 57.086                   | 81.884         | 69.479         | 23.014         | 51.495         | 0.000                       | 319.715           |

**Remarks**

**E. Acquisition Strategy**  
 The acquisition strategy varies by effort. Overall strategy is competition focused, with the use of but not limited to other transaction authority, cost plus and fixed price contracts.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
|--|---|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604735F / <i>Combat Training Ranges</i> | <b>Project (Number/Name)</b><br>652286 / <i>Combat Training Range Equipment</i> |
|--|---|---|

| <b>Product Development (\$ in Millions)</b>                  |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|--|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                                    | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| Advanced Radar Threat System-Variant 1 (ARTS-V1) Development | Various                           | Georgia Tech Research : Pax River, MD     | -                  | 0.251          | Nov 2021          | 0.100          | Nov 2022          | -                   |                   | -                  |                   | -                    | 0.000                   | 0.351             | -                               |
| Advanced Radar Threat System-Variant 2 (ARTS-V2) Development | C/FPIF                            | Lockheed Martin : Grand Prairie, TX       | -                  | 0.080          | Dec 2021          | -              |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 0.080             | -                               |
| Advanced Radar Threat System-Variant 3 (ARTS-V3) Development | C/FFP                             | SAAB, LM, NG, DYNETICS : Various          | -                  | 18.025         | Jan 2022          | 64.484         | Apr 2023          | 117.275             | Apr 2024          | -                  |                   | 117.275              | 0.000                   | 199.784           | -                               |
| Not specified.   | Various                           | Various : TBD                             | -                  | -              |                   | -              |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 0.000             | -                               |
| P6 Combat Training System                                    | Various                           | Various : Various                         | -                  | -              |                   | 2.000          | Apr 2023          | 15.541              | Dec 2023          | -                  |                   | 15.541               | 0.000                   | 17.541            | -                               |
| Modernization Systems  | Various                           | Various : Hill AFB, UT                    | -                  | 0.080          | Nov 2021          | -              |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 0.080             | -                               |
| Live Mission Operation Capability (LMOC)                     | Various                           | Georgia Tech Research : Various           | -                  | -              |                   | 4.700          | Jan 2023          | 4.567               | Mar 2024          | -                  |                   | 4.567                | 0.000                   | 9.267             | -                               |
| <b>Subtotal</b>  |                                   |   | -                  | 18.436         |                   | 71.284         |                   | 137.383             |                   | -                  |                   | 137.383              | 0.000                   | 227.103           | N/A                             |

| <b>Support (\$ in Millions)</b>   |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| Advanced Radar Threat Systems-Variant 3 (Direct Msn Spt)                | Various                           | Various : Various                         | -                  | 0.250          | Dec 2021          | 2.000          | Dec 2022          | 1.500               | Oct 2023          | -                  |                   | 1.500                | 0.000                   | 3.750             | -                               |
| Advanced Radar Threat Systems-Variant 3 (Direct Cite Authority Civ Pay) | Various                           | Various : Various                         | -                  | 0.900          | May 2022          | 1.000          | Feb 2023          | 1.650               | Oct 2023          | -                  |                   | 1.650                | 0.000                   | 3.550             | -                               |
| Live Mission Operation Capability (Direct Cite Authority Civ Pay)       | Various                           | Various : Various                         | -                  | -              |                   | -              |                   | 0.823               | Oct 2023          | -                  |                   | 0.823                | Continuing              | Continuing        | -                               |
| Live Mission Operation Capability                                       | Various                           | Not specified. : TBD                      | -                  | -              |                   | -              |                   | 0.450               | Oct 2023          | -                  |                   | 0.450                | Continuing              | Continuing        | -                               |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604735F / <i>Combat Training Ranges</i> | <b>Project (Number/Name)</b><br>652286 / <i>Combat Training Range Equipment</i> |
|--|---|---|

| <b>Support (\$ in Millions)</b>       |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---------------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                    | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| (Intergovernmental Support Agreement) |                        |                                |             |         |            |         |            |              |            |             |            |               |                  |            |                          |
| P6CTS (Direct Cite Authority Civ Pay) | Various                | Various; Various : TBD         | -           | -       |            | -       |            | 2.000        | Feb 2024   | -           |            | 2.000         | 0.000            | 2.000      | -                        |
| <b>Subtotal</b>                       |                        |                                | -           | 1.150   |            | 3.000   |            | 6.423        |            | -           |            | 6.423         | Continuing       | Continuing | N/A                      |

| <b>Test and Evaluation (\$ in Millions)</b>              |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                                       | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Advanced Radar Threat Systems-Variant 3 (Direct Msn Spt) | C/Various              | Not specified. : TBD           | -           | 1.473   | Oct 2021   | 3.500   | Dec 2022   | 2.643        | Mar 2024   | -           |            | 2.643         | 0.000            | 7.616      | -                        |
| P6 Combat Training System                                | C/Various              | Not specified. : TBD           | -           | -       |            | 22.250  | Apr 2023   | 1.200        | Nov 2023   | -           |            | 1.200         | 0.000            | 23.450     | -                        |
| Live Mission Operations Capability                       | PO                     | Not specified. : TBD           | -           | -       |            | -       |            | 0.165        | Dec 2023   | -           |            | 0.165         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>  |                        |                                | -           | 1.473   |            | 25.750  |            | 4.008        |            | -           |            | 4.008         | Continuing       | Continuing | N/A                      |

| <b>Management Services (\$ in Millions)</b>  |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Advanced Radar Threat Systems-Variant 3 (Program Support Cost - Contractor Services) | Various                | Various : Hill AFB, UT         | -           | 2.050   | May 2022   | 3.000   | Dec 2022   | 0.790        | Feb 2024   | -           |            | 0.790         | 0.000            | 5.840      | -                        |
| Advanced Radar Threat Systems-Variant 3 (Program Support Cost - Other Govt. Costs)   | Various                | Various : Hill AFB, UT         | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604735F / <i>Combat Training Ranges</i> | <b>Project (Number/Name)</b><br>652286 / <i>Combat Training Range Equipment</i> |
|--|---|---|

| <b>Management Services (\$ in Millions)</b>                                     |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Live Mission Operations Capability (Program Support Cost - Contractor Services) | Various                | Various : Hill AFB, UT         | -           | 0.100   | Dec 2021   | 0.300   | Nov 2022   | 0.915        | Feb 2024   | -           |            | 0.915         | 0.000            | 1.315      | -                        |
| Live Mission Operations Capability (Program Support Cost - Other Govt. Costs)   | Various                | Various : Hill AFB, UT         | -           | -       |            | -       |            | 0.050        | May 2024   | -           |            | 0.050         | Continuing       | Continuing | -                        |
| P6 Combat Training System (Program Support Cost - Contractor Support costs)     | Various                | Various : Hill AFB, UT         | -           | -       |            | 0.450   | Apr 2023   | 2.000        | Feb 2024   | -           |            | 2.000         | 0.000            | 2.450      | -                        |
| P6 Combat Training System (Program Support Cost - Other Govt. Costs)            | Various                | Various : Hill AFB, UT         | -           | -       |            | -       |            | 1.000        | May 2024   | -           |            | 1.000         | 0.000            | 1.000      | -                        |
| Modernization Systems (Program Support Cost - Contractor Support)               | Various                | AFLCMC/XA : Hill AFB, UT       | -           | 0.009   | Oct 2021   | -       |            | -            |            | -           |            | -             | 0.000            | 0.009      | -                        |
| Modernization Systems (Program Support Cost - Other Govt. Costs)                | Various                | Not specified. : Hill AFB, UT  | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>   |                        |                                | -           | 2.159   |            | 3.750   |            | 4.755        |            | -           |            | 4.755         | Continuing       | Continuing | N/A                      |
| <b>Project Cost Totals</b>  |                        |                                | -           | 23.218  |            | 103.784 |            | 152.569      |            | -           |            | 152.569       | Continuing       | Continuing | N/A                      |

**Remarks**  
ARTS V2 program terminated for the convenience of the government.

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604735F / <i>Combat Training Ranges</i> | <b>Project (Number/Name)</b><br>652286 / <i>Combat Training Range Equipment</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   |  |
|---|--|
| <b>Combat Training Range Equipment</b>  |  |
| P6 CTS - Integration on USAF Aircraft   |  |
| -- P6 CTS - F-15/16 Aircraft Test & Integration                                   |  |
| Advanced Radar Threat System-Variant 1(ARTS-V1) EMD Phase                         |  |
| -- ARTS-V1 PRA Contract   |  |
| -- ARTS-V1 DT-E and OT-E  |  |
| -- ARTS-V1 Milestone C  |  |
| Advanced Radar Threat System-Variant 3 (ARTS-V3) System Spec Definition           |  |
| -- ARTS-V3 Intelligence Assessment  |  |
| -- ARTS-V3 Intelligence Model Development   |  |
| Advance Radar Threat System (ARTS-V3) Development                                 |  |
| -- Digital Modeling and Subscale Prototype Efforts                                |  |
| -- ARTS-V3 Request For Proposal (RFP) for Production Representative Article (PRA) |  |
| -- ARTS-V3 PRA Contract Award   |  |
| -- ARTS-V3 PRA Development  |  |
| -- VADR C2 App Development  |  |
| Modernization Systems   |  |
| -- Mini-MUTES Upgrade   |  |
| Live Mission Operations Capability (LMOC)   |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604735F / <i>Combat Training Ranges</i> | <b>Project (Number/Name)</b><br>652286 / <i>Combat Training Range Equipment</i> |

Schedule Details

| Events by Sub Project   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b>Combat Training Range Equipment</b>  |         |      |         |      |
| P6 CTS - Integration on USAF Aircraft   | 2       | 2023 | 2       | 2026 |
| -- P6 CTS - F-15/16 Aircraft Test & Integration                                   | 2       | 2023 | 2       | 2026 |
| Advanced Radar Threat System-Variant 1(ARTS-V1) EMD Phase                         | 1       | 2022 | 2       | 2022 |
| -- ARTS-V1 PRA Contract   | 1       | 2022 | 3       | 2022 |
| -- ARTS-V1 DT-E and OT-E  | 3       | 2022 | 2       | 2023 |
| -- ARTS-V1 Milestone C  | 2       | 2022 | 4       | 2022 |
| Advanced Radar Threat System-Variant 3 (ARTS-V3) System Spec Definition           | 1       | 2022 | 3       | 2022 |
| -- ARTS-V3 Intelligence Assessment  | 1       | 2023 | 4       | 2023 |
| -- ARTS-V3 Intelligence Model Development   | 1       | 2023 | 3       | 2023 |
| Advance Radar Threat System (ARTS-V3) Development                                 | 1       | 2022 | 1       | 2026 |
| -- Digital Modeling and Subscale Prototype Efforts                                | 1       | 2022 | 3       | 2023 |
| -- ARTS-V3 Request For Proposal (RFP) for Production Representative Article (PRA) | 1       | 2023 | 3       | 2023 |
| -- ARTS-V3 PRA Contract Award   | 3       | 2023 | 3       | 2023 |
| -- ARTS-V3 PRA Development  | 3       | 2023 | 1       | 2026 |
| -- VADR C2 App Development  | 1       | 2024 | 1       | 2026 |
| Modernization Systems   | 1       | 2022 | 4       | 2022 |
| -- Mini-MUTES Upgrade   | 1       | 2022 | 4       | 2022 |
| Live Mission Operations Capability (LMOC)   | 1       | 2022 | 4       | 2024 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604932F / <i>Long Range Standoff Weapon</i> |
|---|---|

| COST (\$ in Millions)               | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|-------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element               | 2,271.862   | 580.365 | 928.850 | 911.406      | 0.000       | 911.406       | 704.911 | 600.531 | 287.752 | 76.348  | 0.000            | 6,362.025  |
| 657011: <i>LONG RANGE STAND-OFF</i> | 2,271.862   | 580.365 | 928.850 | 911.406      | 0.000       | 911.406       | 704.911 | 600.531 | 287.752 | 76.348  | 0.000            | 6,362.025  |
| Quantity of RDT&E Articles          | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**Program MDAP/MAIS Code:** 489

**A. Mission Description and Budget Item Justification**

The Long Range Stand Off (LRSO) Cruise Missile is a long range survivable stand-off weapon capable of delivering lethal nuclear effects on strategic targets. LRSO will replace the currently fielded Air Launched Cruise Missile (ALCM) and will be integrated on both legacy and future bomber aircraft. The LRSO weapon system will be capable of penetrating and surviving advanced Integrated Air Defense Systems (IADS) from significant stand-off range to prosecute strategic targets in support of the Air Force's global attack capability and strategic deterrence core function.

Funds may be used to address emerging or short-notice Diminishing Manufacturing Sources and Material Shortage (DMSMS) and supply chain issues.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 \$0.00M was expended for civilian pay expenses in this program element, and in FY23 \$0.00M is forecasted for civilian pay expenses in this program element.

The program is conducting Development, Verification, and Test activities for design maturation, reliability growth and manufacturing maturation to support the Critical Design Review. The program is also conducting Engineering and Manufacturing Development tasks to validate requirements to support Development and Operational Testing, and Production Readiness.

FY24 PE 0604932F, RDT&E, Air Force is submitting a Technical Adjustment to realign \$20.0 million to PE 0202178F Operation and Maintenance, Air Force to prepare existing facilities at Barksdale Air Force Base (AFB) to directly support Aircraft Monitor and Control (AMAC) and IOT&E.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> / BA 5: <i>System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604932F / <i>Long Range Standoff Weapon</i> |
|--|---|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 599.042        | 928.850        | 964.245             | 0.000              | 964.245              |
| Current President's Budget                        | 580.365        | 928.850        | 911.406             | 0.000              | 911.406              |
| Total Adjustments                                 | -18.677        | 0.000          | -52.839             | 0.000              | -52.839              |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -18.677        | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | -52.839             | 0.000              | -52.839              |

**Change Summary Explanation**

FY22 reduction for Small Business Innovative Research  
 FY24 adjustment for: LRSO to Milestone B CAPE ICE

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
|---|----------------|----------------|----------------|

|  |         |         |         |
|--|---------|---------|---------|
| <b>Title:</b> Long Range Stand-Off (LRSO) Weapon Development   | 512.072 | 702.905 | 703.727 |
| <b>Description:</b> Long Range Standoff weapon development includes the Cruise Missile, payload and aircraft integration, logistics support systems, mission planning, and component and subsystem test and evaluation.                        |         |         |         |
| <b>FY 2023 Plans:</b>  |         |         |         |
| The program will continue to design, develop, integrate and test the LRSO weapon system through the Engineering and Manufacturing Development contract.  |         |         |         |
| During FY23, the program plans to conduct the system-level Critical Design Review and prepare for execution of Development Test and Evaluation. It will initiate B-52 flight envelope testing and conduct Control Test Vehicle flight testing. |         |         |         |
| Related FY23 Activities include, but are not limited to, the following:  |         |         |         |
| - continue efforts to finalize the system design and conduct verification and test activities in support of the Critical Design Review.  |         |         |         |
| - continue reliability growth, manufacturability, and maintainability maturation activities in preparation for formal Development Test and Evaluation activities.  |         |         |         |
| - continue systems engineering activities, focusing on design for reliability and design for manufacturing.  |         |         |         |
| - continue test activities, such as, but not limited to, continued envelope testing and weapon system flight tests.  |         |         |         |
| - continue planning for Production Readiness Reviews prior to the build of the Initial Operational Test & Evaluation (IOT&E) units.  |         |         |         |
| - continue qualification and nuclear hardness testing to verify the system operates in intended environments.  |         |         |         |



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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|  |   |
|--|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> / BA 5: <i>System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604932F / <i>Long Range Standoff Weapon</i> |
|--|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <ul style="list-style-type: none"> <li>- continue planning and development of logistics support systems.</li> <li>- develop and build associated carriage and launcher equipment, trainers, test equipment and support equipment.</li> <li>- continue to plan, develop, and mature support systems to include Common Support Equipment/Peculiar Support Equipment and transportation equipment.</li> <li>- continue planning for the use of Model Based System Engineering tools during Operations and Sustainment phase in order to transform supply chain management.</li> <li>- continue to mature the weapon system by conducting trade studies, system engineering, test activities, and system modeling and simulation.</li> <li>- continue to further develop analytical, information technology, and data management capabilities.</li> <li>- continue to implement information systems and information technology design to support EMD execution.</li> <li>- continue to expand and mature the analytical, information technology, test, and data management capabilities to ensure access to weapon system design information is properly controlled and securely transmitted between government and contractors.</li> <li>- continue to modify, modernize, and expand the analytic environment and labs to support EMD activities to enable full execution of the program's capability to own the technical baseline throughout the program life cycle. This involves establishing a digital engineering system including a supporting environment/infrastructure to perform digital activities, collaborate with and communicate across stakeholders.</li> <li>- continue to plan and execute critical software risk reduction activities.</li> <li>- continue to plan and execute payload and aircraft integration efforts.</li> <li>- continue to, through best program practices, ensure the following are met: requirements flow down, requirement allocation to hardware and software, and the requirements compliance matrix.</li> </ul> <p><b>FY 2024 Plans:</b><br/>The program will continue to design, develop, integrate and test the LRSO weapon system through the Engineering and Manufacturing Development contract.<br/>During FY24, The program plans to complete B-52 flight envelope testing and begin Development Test and Evaluation program execution.<br/>Related FY24 Activities include, but are not limited to, the following:</p> <ul style="list-style-type: none"> <li>- continue reliability growth, manufacturability, and maintainability maturation activities in preparation for formal Development Test and Evaluation activities.</li> <li>- continue systems engineering activities focusing on design for reliability and design for manufacturing.</li> <li>- continue test activities, such as, but not limited to, continued envelope testing and weapon system flight tests.</li> <li>- continue planning for Production Readiness Reviews prior to the build of the Initial Operational Test &amp; Evaluation (IOT&amp;E) units.</li> <li>- continue qualification and nuclear hardness testing to verify the system operates in intended environments.</li> <li>- continue planning and development of the logistics support systems.</li> </ul> |                |                |                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force  |  | <b>Date:</b> March 2023   |                |                |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>   |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604932F / <i>Long Range Standoff Weapon</i> |                |                |
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   |  | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| <ul style="list-style-type: none"> <li>- develop and build associated carriage and launcher equipment, trainers, test equipment and support equipment.</li> <li>- continue to plan, develop, and mature support systems to include Common Support Equipment/Peculiar Support Equipment and transportation equipment.</li> <li>- continue planning for the use of Model Based System Engineering tools during Operations and Sustainment phase in order to transform supply chain management.</li> <li>- continue to mature the weapon system by conducting trade studies, system engineering, test activities, and system modeling and simulation.</li> <li>- continue to further develop analytical, information technology, and data management capabilities.</li> <li>- continue to implement information systems and information technology design to support EMD execution.</li> <li>- continue to expand and mature the analytical, information technology, test, and data management capabilities to ensure access to weapon system design information is properly controlled and securely transmitted between government and contractors.</li> <li>- continue to modify, modernize, and expand the analytic environment and labs to support EMD activities to enable full execution of the program's capability to own the technical baseline throughout the program life cycle. This involves establishing a digital engineering system including a supporting environment/infrastructure to perform digital activities, collaborate with and communicate across stakeholders.</li> <li>- continue to plan and execute critical software risk reduction activities.</li> <li>- continue to plan and execute payload and aircraft integration efforts.</li> <li>- continue to, through best program practices, ensure the following are met: requirements flow down, requirement allocation to hardware and software, and the requirements compliance matrix.</li> </ul> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding increased due to increase in LRSD development activities through EMD</p> |  |   |                |                |
| <p><b>Title:</b> All-Up-Round</p> <p><b>Description:</b> All-Up-Round activities include payload integration and platform integration. Further, these efforts include activities and assets related to weapon design compatibility and qualification, and other nuclear certification activities with both threshold and objective aircraft.</p> <p><b>FY 2023 Plans:</b><br/>During FY23, the program will begin B-52 flight envelope testing in support of platform integration. Related FY23 activities include, but are not limited to the following:</p> <ul style="list-style-type: none"> <li>- continue through program practices to ensure the following are met: requirements flow down, requirement allocation to hardware and software, requirements compliance matrix, system performance, reliability, maintainability, product assurance, testability, producibility and supportability.</li> </ul>  |  | 36.740  | 150.616        | 148.062        |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force  |  | <b>Date:</b> March 2023   |                |                |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>   |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604932F / <i>Long Range Standoff Weapon</i> |                |                |
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   |  | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| <ul style="list-style-type: none"> <li>- continue facility and security infrastructure upgrades to enable secure connectivity and communication between Department of Defense (DoD), Department of Energy (DOE), and industry.</li> <li>- continue efforts to conduct parallel development, design, and test activities with the DOE to ensure the LRSO adequately integrates the DOE designed warhead into the system.</li> <li>- conduct safety studies and nuclear certification activities.</li> <li>- continue to perform aircraft integration efforts including activities associated with integration on threshold aircraft and aircraft mission planning system upgrades to accommodate the new weapon.</li> <li>- conduct joint DoD and DOE ground and flight activities to verify the missile to warhead interface and demonstrate the system meets performance specifications.</li> <li>- continue to collaborate with National Nuclear Security Administration to ensure seamless integration of DOE warhead assets into the cruise missile.</li> <li>- continue to execute and improve the unified certification strategy which meets nuclear surety, cyber security, and nuclear safety requirements.</li> <li>- continue other activities necessary for All-Up-Round integration. These efforts include: developing mission planning upgrade needs, Operational Flight Program (OFP) development and integration to deliver the OFP test tapes, planning activities necessary to integrate LRSO with aircraft, and ensuring the logical, electrical, and physical interfaces of the LRSO as defined in the Interface Control Document (ICD).</li> </ul> <p><b>FY 2024 Plans:</b><br/>During FY24, The program plans to complete B-52 flight envelope testing and begin Development Test and Evaluation program execution.<br/>Related FY24 Activities include, but are not limited to, the following:</p> <ul style="list-style-type: none"> <li>- continue through program practices to ensure the following are met: requirements flow down, requirement allocation to hardware and software, requirements compliance matrix, system performance, reliability, maintainability, product assurance, testability, producibility and supportability.</li> <li>- continue facility and security infrastructure upgrades to enable secure connectivity and communication between Department of Defense (DoD), Department of Energy (DOE), and industry.</li> <li>- continue efforts to conduct parallel development, design, and test activities with the DOE to ensure the LRSO adequately integrates the DOE designed warhead into the system.</li> <li>- conduct safety studies and nuclear certification activities.</li> <li>- continue to perform aircraft integration efforts including activities associated with integration on threshold aircraft and aircraft mission planning system upgrades to accommodate the new weapon.</li> <li>- conduct joint DoD and DOE ground and flight activities to verify the missile to warhead interface and demonstrate the system meets performance specifications.</li> </ul> |  |   |                |                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force   |  | <b>Date:</b> March 2023   |                |                |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 5: System Development &amp; Demonstration (SDD)</i>  |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604932F / <i>Long Range Standoff Weapon</i> |                |                |
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  |  | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| <p>- continue to collaborate with National Nuclear Security Administration to ensure seamless integration of DOE warhead assets into the cruise missile.</p> <p>- continue to execute and improve the unified certification strategy which meets nuclear surety, cyber security, and nuclear safety requirements.</p> <p>- continue other activities necessary for All-Up-Round integration. These efforts include: developing mission planning upgrade needs, Operational Flight Program (OFP) development and integration to deliver the OFP test tapes, planning activities necessary to integrate LRSO with aircraft, and ensuring the logical, electrical, and physical interfaces of the LRSO as defined in the Interface Control Document (ICD).</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding decrease due to a slight reduction in All-Up-Round efforts</p>   |  |   |                |                |
| <p><b>Title:</b> Test Support</p> <p><b>Description:</b> Conduct Test Support activities to support weapon development</p> <p><b>FY 2023 Plans:</b><br/>The Government formally arranges and funds the use of Government flight test support for ground and flight test activities. During FY23, the program will begin B-52 flight envelope testing and execute Control Test Vehicle flight testing. Related FY23 activities include, but are not limited to the following:</p> <ul style="list-style-type: none"> <li>- continue to perform design validation, verification, test, nuclear certification activities (to include design and operational certification) and system qualification activities.</li> <li>- continue test planning and execution activities to support LRSO weapon development, All-Up-Round technical integration, warhead integration and aircraft integration.</li> <li>- continue coordination with external test agencies in preparation for operational and post-production flight testing.</li> </ul> <p><b>FY 2024 Plans:</b><br/>The Government formally arranges and funds the use of Government flight test support for ground and flight test activities. During FY24, the program plans to complete B-52 flight envelope testing and begin Development Test and Evaluation program execution. Related FY24 Activities include, but are not limited to, the following:</p> <ul style="list-style-type: none"> <li>- continue to perform design validation, verification, test, nuclear certification activities (to include design and operational certification) and system qualification activities.</li> <li>- continue test planning and execution activities to support LRSO weapon development, All-Up-Round technical integration, warhead integration and aircraft integration.</li> </ul> |  | 31.553  | 75.329         | 59.617         |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604932F / <i>Long Range Standoff Weapon</i> |
|---|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| - continue coordination with external test agencies in preparation for operational and post-production flight testing.               |                |                |                |
| <b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br>Funding decreased due to a slight reduction in Test support efforts |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 580.365        | 928.850        | 911.406        |

| <b>D. Other Program Funding Summary (\$ in Millions)</b> |                |                |                         |                        |                          |                |                |                |                |                             |                   |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| <b>Line Item</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024<br/>Base</b> | <b>FY 2024<br/>OCO</b> | <b>FY 2024<br/>Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b> | <b>FY 2028</b> | <b>Cost To<br/>Complete</b> | <b>Total Cost</b> |
| • MPAF 02 MLRSO1: <i>Long Range Stand-Off Weapon</i>     | 0.000          | 31.454         | 66.816                  | -                      | 66.816                   | 135.218        | 295.087        | 1,073.038      | 1,682.164      | 6,485.740                   | 9,769.517         |
| • OPAF 03 833140: <i>Strategic Command And Control</i>   | 0.000          | 20.442         | 0.000                   | -                      | 0.000                    | 0.000          | 0.000          | 0.000          | 0.000          | 0.000                       | 20.442            |

**Remarks**

**E. Acquisition Strategy**

The acquisition strategy focuses on the development of the All Up Round Weapon System, integration with the nuclear warhead, executing aircraft integration activities, and conducting test and evaluation with a continued robust reliability and manufacturing approach. The program obtained a successful MS A decision in July 2016 and subsequently released a Request for Proposals. The program competitively selected two prime contractors in August 2017 to execute the Technology Maturation and Risk Reduction (TMRR) phase. The selected prime contractors executed the Cost-Plus-Fixed-Fee (CPFF) contracts during TMRR with activities focused on developing and maturing subsystem and system designs. In FY20, LRSO pivoted to sole source TMRR contractor, enabling Development RFP (dRFP) release & MS B. MS B was approved via an Acquisition Decision Memorandum in June 2021 and a contract for Engineering and Manufacturing Development was awarded in July 2021.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604932F / Long Range Standoff Weapon | <b>Project (Number/Name)</b><br>657011 / LONG RANGE STAND-OFF |
|--|--|---|

| <b>Product Development (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Long Range Standoff Weapon Development      | SS/CPFF                | Various : TBD                  | 1,800.484   | 471.269 | Oct 2021   | 659.563 | Oct 2022   | 668.626      | Oct 2023   | -           |            | 668.626       | 1,319.622        | 4,919.564  | -                        |
| <b>Subtotal</b>                             |                        |                                | 1,800.484   | 471.269 |            | 659.563 |            | 668.626      |            | -           |            | 668.626       | 1,319.622        | 4,919.564  | N/A                      |

| <b>Support (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item              | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Aircraft Integration Planning   | Various                | Various : TBD                  | 107.741     | 18.036  | Oct 2021   | 48.596  | Oct 2022   | 23.700       | Oct 2023   | -           |            | 23.700        | 24.400           | 222.473    | -                        |
| All-Up-Round Activities         | Various                | Various : TBD                  | 52.884      | 18.704  | Jan 2022   | 102.021 | Oct 2022   | 124.362      | Oct 2023   | -           |            | 124.362       | 126.629          | 424.600    | -                        |
| <b>Subtotal</b>                 |                        |                                | 160.625     | 36.740  |            | 150.617 |            | 148.062      |            | -           |            | 148.062       | 151.029          | 647.073    | N/A                      |

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Test Support                                | Various                | Various : TBD                  | 149.574     | 31.553  | Jan 2022   | 75.329  | Jan 2023   | 59.616       | Jan 2024   | -           |            | 59.616        | 142.620          | 458.692    | -                        |
| <b>Subtotal</b>                             |                        |                                | 149.574     | 31.553  |            | 75.329  |            | 59.616       |            | -           |            | 59.616        | 142.620          | 458.692    | N/A                      |

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Program Management Administration           | Various                | Various : TBD                  | 161.179     | 40.803  | Oct 2021   | 43.341  | Oct 2022   | 35.102       | Oct 2023   | -           |            | 35.102        | 71.068           | 351.493    | -                        |
| <b>Subtotal</b>                             |                        |                                | 161.179     | 40.803  |            | 43.341  |            | 35.102       |            | -           |            | 35.102        | 71.068           | 351.493    | N/A                      |

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|--|--------------------|----------------|--|--|--|---------------------|--|---|--|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2024 Air Force</b> |                    |                |  |  |  |                     |  | <b>Date:</b> March 2023                                       |  |                      |                         |                   |                                 |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                       |                    |                |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0604932F / Long Range Standoff Weapon |  |                     |  | <b>Project (Number/Name)</b><br>657011 / LONG RANGE STAND-OFF |  |                      |                         |                   |                                 |
|  | <b>Prior Years</b> | <b>FY 2022</b> |  | <b>FY 2023</b>   |  | <b>FY 2024 Base</b> |  | <b>FY 2024 OCO</b>  |  | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
| <b>Project Cost Totals</b>   | 2,271.862          | 580.365        |  | 928.850  |  | 911.406             |  | -   |  | 911.406              | 1,684.339               | 6,376.822         | N/A                             |

**Remarks**





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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604932F / <i>Long Range Standoff Weapon</i> | <b>Project (Number/Name)</b><br>657011 / <i>LONG RANGE STAND-OFF</i> |

Schedule Details

| Events by Sub Project                           | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Long Range StandOff Weapon</i></b>        |         |      |         |      |
| Engineering and Manufacturing Development Phase | 1       | 2022 | 2       | 2027 |
| CDR   | 2       | 2023 | 2       | 2023 |
| Milestone C Decision                            | 3       | 2027 | 3       | 2027 |

**Note**

Engineering and Manufacturing Development Phase contract awarded July 2021

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604933F / ICBM Fuze Modernization |
|---|---|

| COST (\$ in Millions)            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|----------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element            | 1,152.734   | 115.200 | 98.376  | 71.732       | 0.000       | 71.732        | 10.390  | 0.000   | 0.000   | 0.000   | 0.000            | 1,448.432  |
| 655082: <i>ICBM FUZE SUPPORT</i> | 1,152.734   | 115.200 | 98.376  | 71.732       | 0.000       | 71.732        | 10.390  | 0.000   | 0.000   | 0.000   | 0.000            | 1,448.432  |
| Quantity of RDT&E Articles       | 46          | 27      | 5       | 10           | -           | 10            | -       | -       | -       | -       |                  |            |

**Program MDAP/MAIS Code:** 0498

**Note**  
 • Prior year RDT&E includes 9.740M in PE 0604222F FY11 and 39.717M in PE 0604851F FY12

**A. Mission Description and Budget Item Justification**

The Intercontinental Ballistic Missile (ICBM) Fuze Modernization Program is designing and producing a form, fit and functionally equivalent replacement for the Mk21 fuze that will provide a 30-year objective design life. Currently available Mk21/W87-0 legacy fuze quantities do not meet United States Strategic Command (USSTRATCOM) requirements and the legacy fuze is three times beyond its original ten year design life. The Mk21 reentry vehicle and fuze is designed to be deployed on the current Minuteman III (MM III) and Sentinel (GBSD) weapon system.

The US Air Force (USAF) will develop the modernized Mk21 fuze using the Department of Energy National Nuclear Security Administration (DOE/NNSA) complex and a weapons system integration contractor. The DOE/NNSA complex consists of Sandia National Labs-California (SNL-CA), Sandia National Labs-New Mexico (SNL-NM) and Kansas City National Security Campus (KCNSC). The ICBM Fuze Modernization program will leverage technologies, parts, components, and development/production capabilities resulting from extensive fuze work performed by the US Navy (USN) and DOE/NNSA on the Mk5/W88 Alt 370 Fuze program. The Radar Module remains entirely common with Mk5/W88 Alt 370, while the Pathlength Module and Thermal Battery Assembly designs and qualification activities remain highly leveraged and only contain minor differences from USN counterparts. Significant design aspects of the Missile Interface Controller Module, Launch Safety Device, and the Terminal Protection Device are also similar to USN counterparts. The Firing Set Interface Module shares common technology with the Mk5/W88 Alt 370 Firing Set.

The ICBM Fuze Modernization Program replacement fuze is designed to integrate into the MM III and the Sentinel (GBSD) weapon systems, to include support/test equipment, data, flight test hardware, and training materials. The program will also conduct required system testing (including ground and flight tests). The program is coordinating Mk21 fuze replacement development efforts with the DOE/NNSA to synchronize USAF arming and fuze development activities with DOE/NNSA warhead requirements. When prudent, the program will conduct trade studies and initiate conceptual designs to address operational system issues and meet future requirements.

The Fiscal Year 2024 budget request continues cooperative efforts with the USN to leverage common components; conduct qualification tests; and continue development of lab, ground, and flight test assets. This program also includes any needed nuclear surety and certification and system vulnerability assessments.

As a cooperative USAF, USN and DOE/NNSA acquisition, the USAF is executing the program using Department of Defense (DoD)-DOE Manual 5030.55 Joint Nuclear Weapons Life Cycle Activities (Phase 6.X process) while using the DOD 5000-series instructions to meet Major Defense Acquisition Program (MDAP) statutory

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604933F / ICBM Fuze Modernization |
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and regulatory requirements. The DOE/NNSA 6.X process is an iterative process that drives overlap and concurrency between activities and events that occur during the Engineering and Manufacturing Development (EMD) and Production and Deployment phases of the DoD 5000 Instruction Series.

This program entered Phase 6.4 Production Engineering of the Phase 6.X process in Jan 2019. The program received Milestone C approval in October 2021. The program will conduct production engineering tasks required to progress to the DOE/NNSA Phase 6.5 and DoD Full Rate Production Decision milestones.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY2022 0.000M was expended for civilian pay expenses in this program element, and in FY2023 0.000M is forecasted for civilian pay expenses in this program element.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 129.709        | 98.376         | 72.756              | 0.000              | 72.756               |
| Current President's Budget                        | 115.200        | 98.376         | 71.732              | 0.000              | 71.732               |
| Total Adjustments                                 | -14.509        | 0.000          | -1.024              | 0.000              | -1.024               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | -9.999         | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -4.510         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | -1.024              | 0.000              | -1.024               |

**Change Summary Explanation**

FY22: \$2.500M transferred to Minuteman III PEC 0101213F and \$7.499M transferred to Mk21A Re-entry Vehicle PE 0101328F on Below Threshold Reprogramming actions.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Fuze Design and Development   | 93.674         | 79.076         | 59.782         |
| <b>Description:</b> Design and develop the Mk21 fuze required to support the ICBM W87-0 warhead. Coordinate design and development efforts with the ICBM weapon system integrator and support flight testing. |                |                |                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> / BA 5: <i>System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604933F / <i>ICBM Fuze Modernization</i> |
|--|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p><b><i>FY 2023 Plans:</i></b></p> <ul style="list-style-type: none"> <li>• Analyze Flight Test Unit 3 data and author Flight Test Unit 3 Test Report</li> <li>• Conduct Ground Test Unit 4 Test</li> <li>• Conduct Radiation Test Qualification</li> <li>• Analyze and report Ground Test Unit 4 test results</li> <li>• Release Qualification Evaluation for Arming and Fuzing Assembly testers (PT3800 and PT3945)</li> <li>• Complete Weapons Effects Test Lab Process-Prove-In unit destructive testing and assessment</li> <li>• Complete final reports for qualification tests conducted in FY2022</li> <li>• Update Arming and Fuzing Assembly requirement verification to include Arming and Fuzing Assembly qualification test results</li> <li>• Complete developmental requirements for major components</li> <li>• Complete Arming and Fuzing Assembly Production Readiness Review</li> <li>• Prepare for Full Rate Production Milestone</li> <li>• Further develop analytical, information technology, and data management capabilities.</li> </ul> <p><b><i>FY 2024 Plans:</i></b></p> <ul style="list-style-type: none"> <li>• Analyze Flight Test Unit 4 data and author Flight Test Unit 4 Test Report</li> <li>• Conduct AFA Qualification Evaluation Review</li> <li>• Conduct FTU-4 Operational Test</li> <li>• Complete DoD Independent Peer Review</li> <li>• Conduct Full Rate Production Decision Point</li> <li>• Complete entrance criteria and garner approval to enter DOE/NSA Phase 6.5 Low Scale Production Phase</li> <li>• Complete required qualification activities and garner First Production Unit approval.</li> <li>• Further develop analytical, information technology, and data management capabilities.</li> </ul> <p><b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br/>Funding decreased due to ramp down of development efforts and ramp up of production efforts.</p> |                |                |                |
| <p><b><i>Title:</i></b> Weapon System Integration/Systems Engineering</p> <p><b><i>Description:</i></b> Integrate the Mk21 fuze into the Intercontinental Ballistic Missile weapon system. Validate designs through ground tests on an Integrated Test Bed (ITB). Plan and conduct necessary ground and flight testing. Coordinate design, development and test efforts.</p> <p><b><i>FY 2023 Plans:</i></b></p> <ul style="list-style-type: none"> <li>• Continue Basic Nuclear Safety Assessment Report updates</li> <li>• Continue Nuclear Surety Evaluation Report updates</li> </ul>  | 21.526         | 19.300         | 11.950         |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> / BA 5: <i>System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604933F / <i>ICBM Fuze Modernization</i> |
|--|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | FY 2022 | FY 2023 | FY 2024 |
|--|---------|---------|---------|
| <ul style="list-style-type: none"> <li>• Continue ICBM Compatibility Certification Report updates</li> <li>• Support Flight Test Unit 3 data analysis and reporting</li> <li>• Support Ground Test Unit 4 Integrated Test Bed test</li> <li>• Support Ground Test Unit 4 data analysis and reporting</li> <li>• Chair and conduct Survivability Task Team (STT) efforts</li> <li>• Perform Comparative Analysis between Legacy Fuze and Modernized Fuze</li> <li>• Validate Fuze performance against all simulated and predicted environments</li> <li>• Continue various task team support</li> <li>• Initiate USSTRATCOM Survivability Certification</li> <li>• Continue Red Team Performance Assessment of SNL Radar</li> </ul> <p><b>FY 2024 Plans:</b></p> <ul style="list-style-type: none"> <li>• Complete Nuclear Certification efforts including Basic Nuclear Safety Assessment Report and Nuclear Surety Evaluation Report</li> <li>• Complete ICBM Compatibility Certification Report</li> <li>• Support Flight Test Unit 4 data analysis and reporting</li> <li>• Perform Phase III of comparative analysis between Legacy Fuze and Modernized Fuze</li> <li>• Continue various task team support</li> <li>• Complete Survivability Task Team (STT) efforts</li> <li>• Complete USSTRATCOM Survivability Certification</li> <li>• Continue Red Team Performance Assessment of SNL Radar</li> </ul> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding decreased due to ramp down of development efforts and ramp up of production efforts.</p> |         |         |         |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 115.200 | 98.376  | 71.732  |

| <b>D. Other Program Funding Summary (\$ in Millions)</b>           |                |                |                               |                              |                                |                |                |                |                |                                   |                   |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| <u>Line Item</u>   | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
| • MPAF 03 Line Item<br>M30FLH: <i>ICBM Fuze Mod</i>                | 100.770        | 137.364        | 158.789                       | -                            | 158.789                        | 161.424        | 99.820         | 97.436         | 89.042         | 143.400                           | 988.045           |
| • RDTE 04 PE 0605230F: <i>Ground Based Strategic Deterrent</i>     | 2,464.875      | 0.000          | 0.000                         | -                            | 0.000                          | 0.000          | 0.000          | 0.000          | 0.000          | 0.000                             | 2,464.875         |
| • RDTE 05 PE 0605238F: <i>Ground Based Strategic Deterrent EMD</i> | 0.000          | 3,614.290      | 3,746.935                     | -                            | 3,746.935                      | 3,401.679      | 3,246.870      | 2,610.928      | 1,855.302      | 2,168.865                         | 20,644.869        |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0604933F / <i>ICBM Fuze Modernization</i> |
|---|--|

**D. Other Program Funding Summary (\$ in Millions)**

| <u>Line Item</u>  | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • MPAF 01 Line Item MGBSD0:<br><i>Ground Based Strategic Deterrent</i>                        | 8.895          | 0.000          | 539.300                       | -                            | 539.300                        | 502.720        | 5,735.106      | 6,456.735      | 6,172.571      | 41,252.826                        | 60,668.153        |
| • RDTE 07 PE 0101328F<br>674920: <i>ICBM Reentry Vehicles W87-1/M21A</i>                      | 100.463        | 115.616        | 459.880                       | -                            | 459.880                        | 641.529        | 687.664        | 642.804        | 544.771        | 0.000                             | 3,192.727         |
| • RDTE 07 PE 0101328F 675920:<br><i>ICBM Reentry Vehicles Next Generation Reentry Vehicle</i> | 0.000          | 0.000          | 15.535                        | -                            | 15.535                         | 16.094         | 79.282         | 231.767        | 319.091        | Continuing                        | Continuing        |

**Remarks**

**E. Acquisition Strategy**

The ICBM Fuze Modernization program is executing a full cost reimbursable Strategic Partnership Project (SPP) with the DOE/NNSA complex using SNL-CA as the design agent and KCNSC as the production agent. The program is a collaborative effort with the USN reducing total program cost and development time by leveraging commonality between the ICBM and Submarine Launched Ballistic Missile fuze components. The USN Mk5/W88 Alt 370 fuze is being developed first, with the USAF Mk21 fuze effort following. Both services participate in all design and development efforts to ensure maximum use of common components, subassemblies and technologies. Both services are using DOE/NNSA SNL-CA to perform fuze design and development. The USAF, as lead systems integrator for the Mk21 fuze, competed a separate weapon system integration contract for integration support to assist the government with MM III unique modifications and fuze integration efforts. Both services are using KCNSC to produce fuzes.

The program completed a Milestone C decision in October 2021 and is forecasted to complete a Full Rate Production Decision in 2QFY2024.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604933F / ICBM Fuze Modernization | <b>Project (Number/Name)</b><br>655082 / ICBM FUZE SUPPORT |
|--|---|--|

| <b>Product Development (\$ in Millions)</b>                      |                        |  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location             | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Fuze Preliminary Design Development                              | MIPR                   | Sandia National Labs : Albuquerque, NM     | 672.990     | 37.090  | Nov 2021   | 41.611  | Nov 2022   | 13.200       | Nov 2023   | -           |            | 13.200        | 1.912            | 766.803    | 775.406                  |
| Fuze EMD   | Various                | Various : Various                          | 10.884      | 6.050   | Nov 2021   | 3.664   | Nov 2022   | 2.770        | Nov 2023   | -           |            | 2.770         | 0.401            | 23.769     | 24.914                   |
| Fuze Engineering Change Orders                                   | Various                | Various : Various                          | 12.674      | 1.870   | Nov 2021   | 1.528   | Nov 2022   | 1.562        | Nov 2023   | -           |            | 1.562         | 0.226            | 17.860     | 18.651                   |
| Fuze National Security Campus (formerly Kansas City Plant)       | MIPR                   | National Security Campus : Kansas City, MO | 247.411     | 42.443  | Nov 2021   | 27.633  | Nov 2022   | 37.410       | Nov 2023   | -           |            | 37.410        | 5.419            | 360.316    | 364.098                  |
| Fuze Weapon System Integration - ICBM Prime                      | C/CPAF                 | Northrop Grumman : Clearfield, UT          | 25.937      | -       |            | -       |            | -            |            | -           |            | -             | 0.000            | 25.937     | 25.937                   |
| Fuze Weapon System Integration - RS/RV Sub-System Contract (SSC) | C/CPAF                 | Lockheed Martin : Valley Forge, UT         | 84.691      | -       |            | -       |            | -            |            | -           |            | -             | 0.000            | 84.691     | 84.691                   |
| Fuze Weapon System Integration Contract (WSIC)                   | C/CPFF                 | Lockheed Martin : Valley Forge, PA         | 22.702      | 21.526  | Jan 2022   | 18.500  | Jan 2023   | 11.950       | Jan 2024   | -           |            | 11.950        | 1.731            | 76.409     | 76.151                   |
| <b>Subtotal</b>  |                        |  | 1,077.289   | 108.979 |            | 92.936  |            | 66.892       |            | -           |            | 66.892        | 9.689            | 1,355.785  | N/A                      |

| <b>Support (\$ in Millions)</b> |                        |                                      |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---------------------------------|------------------------|--------------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item              | Contract Method & Type | Performing Activity & Location       | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Fuze Engineering Support - BAH  | C/FP                   | Booz Allen Hamilton : Clearfield, UT | 2.757       | -       |            | -       |            | -            |            | -           |            | -             | 0.000            | 2.757      | 2.757                    |
| Fuze Engineering Support - BAE  | C/FFP                  | BAE : Clearfield, UT                 | 17.391      | 2.615   | Nov 2021   | 1.000   | Nov 2022   | -            |            | -           |            | -             | 0.000            | 21.006     | 19.856                   |
| Fuze Engineering Support - ISC  | C/TBD                  | TBD : TBD                            | 0.000       | -       |            | 1.220   | Apr 2023   | 1.620        | Nov 2023   | -           |            | 1.620         | 0.235            | 3.075      | 4.760                    |
| <b>Subtotal</b>                 |                        |                                      | 20.148      | 2.615   |            | 2.220   |            | 1.620        |            | -           |            | 1.620         | 0.235            | 26.838     | N/A                      |



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604933F / ICBM Fuze Modernization | <b>Project (Number/Name)</b><br>655082 / ICBM FUZE SUPPORT |
|--|---|--|

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Fuze Lead Project Office Support            | MIPR                   | AFNWC : Albuquerque, NM        | 10.480      | -       |            | -       |            | -            |            | -           |            | -             | 0.000            | 10.480     | 10.480                   |
| Fuze Finite Element Model Validation        | C/CPFF                 | LMTF : Little Mountain, UT     | 1.843       | -       |            | -       |            | -            |            | -           |            | -             | 0.000            | 1.843      | 1.843                    |
| Fuze Flight Test Support and Evaluation     | Various                | Various : Various              | 10.669      | -       |            | -       |            | -            |            | -           |            | -             | 0.000            | 10.669     | 10.669                   |
| <b>Subtotal</b>                             |                        |                                | 22.992      | -       |            | -       |            | -            |            | -           |            | -             | 0.000            | 22.992     | N/A                      |

**Remarks**  
The design agent, Sandia National Laboratories (listed as Fuze Preliminary Design Development in the R-3 Development section), is executing the test and evaluation efforts within the main design effort. There are no discretely funded test and evaluation efforts outside of the design agent's activities.

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Fuze Cost and Financial Management          | C/FFP                  | Tecolote : Salt Lake City, UT  | 5.157       | -       |            | -       |            | -            |            | -           |            | -             | 0.000            | 5.157      | 5.157                    |
| Fuze FFRDC Support                          | MIPR                   | Aerospace : Los Angeles, CA    | 7.642       | 1.186   | Nov 2021   | 0.780   | Nov 2022   | 0.780        | Nov 2023   | -           |            | 0.780         | 0.113            | 10.501     | 10.040                   |
| Fuze Program Support                        | C/FFP                  | BAE : Clearfield, UT           | 1.285       | -       |            | -       |            | -            |            | -           |            | -             | 0.000            | 1.285      | 1.285                    |
| Fuze Program Management Administration      | Various                | Various : Various              | 18.221      | 2.420   | Nov 2021   | 2.440   | Nov 2022   | 2.440        | Nov 2023   | -           |            | 2.440         | 0.353            | 25.874     | 384.664                  |
| <b>Subtotal</b>                             |                        |                                | 32.305      | 3.606   |            | 3.220   |            | 3.220        |            | -           |            | 3.220         | 0.466            | 42.817     | N/A                      |

|                            | Prior Years | FY 2022   | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |     |
|----------------------------|-------------|-----------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|-----|
| <b>Project Cost Totals</b> |             | 1,152.734 | 115.200 | 98.376       | 71.732      | -             | 71.732           | 10.390     | 1,448.432                | N/A |

**Remarks**  
Prior year RDT&E includes \$9.740M in PE 0604222F FY11 and \$39.717M in PE 0604851F FY12

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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0604933F / ICBM Fuze Modernization | <b>Project (Number/Name)</b><br>655082 / ICBM FUZE SUPPORT |
|--|---|--|

|  | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|  | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

| <b>AF ICBM Fuze Modernization Program</b>        |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Engineering and Manufacturing Development        |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Milestone C Review (Oct 2021)                    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Production and Deployment                        |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Flight Test 3 (Aug 2022)                         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Production Readiness Review (Oct 2022)           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Flight Test 4 (Feb 2024)                         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Full Rate Production Decision (Mar 2024)         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DOE/NNSA Phase 6.5 Milestone Decision (May 2024) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| First Production Unit (May 2024)                 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Initial Operating Capability (Feb 2025)          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| DOE/NNSA Phase 6.6 Milestone Decision (May 2025) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023                                    |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0604933F / ICBM Fuze Modernization | <b>Project (Number/Name)</b><br>655082 / ICBM FUZE SUPPORT |

Schedule Details

| Events by Sub Project                            | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b>AF ICBM Fuze Modernization Program</b>        |         |      |         |      |
| Engineering and Manufacturing Development        | 1       | 2022 | 3       | 2025 |
| Milestone C Review (Oct 2021)                    | 1       | 2022 | 1       | 2022 |
| Production and Deployment                        | 1       | 2022 | 4       | 2028 |
| Flight Test 3 (Aug 2022)                         | 4       | 2022 | 4       | 2022 |
| Production Readiness Review (Oct 2022)           | 1       | 2023 | 1       | 2023 |
| Flight Test 4 (Feb 2024)                         | 2       | 2024 | 2       | 2024 |
| Full Rate Production Decision (Mar 2024)         | 2       | 2024 | 2       | 2024 |
| DOE/NNSA Phase 6.5 Milestone Decision (May 2024) | 3       | 2024 | 3       | 2024 |
| First Production Unit (May 2024)                 | 3       | 2024 | 3       | 2024 |
| Initial Operating Capability (Feb 2025)          | 2       | 2025 | 2       | 2025 |
| DOE/NNSA Phase 6.6 Milestone Decision (May 2025) | 3       | 2025 | 3       | 2025 |

**Note**

The ICBM Fuze Mod Program discovered the need to de-couple Milestone C and Full Rate Production (FRP) Decision from Phase 6.5 and Phase 6.6 respectively. At the time of the initial baseline in 2014, Phase 6.5 and Phase 6.6 were selected as the surrogates for the DoD milestones. Since that time differences between the DOE Phase 6.x process and the DoDI 5000 series, as it relates to funding of Title 10 programs, drove a de-coupling of these milestones into the Acquisition Program Baseline. This program is still being managed according to the Phase 6.x process but Milestone C and FRP have been added as milestones that will be accomplished to satisfy statutory requirements of a Major Defense acquisition program.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605030F <i>I Joint Tactical Network Center (JTNC)</i> |
|---|---|

| COST (\$ in Millions)                             | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                             | -           | 0.000   | 2.222   | 2.256        | 0.000       | 2.256         | 8.732   | 8.950   | 9.135   | 9.465   | Continuing       | Continuing |
| 655068: <i>Joint Tactical Radio System (JTRS)</i> | -           | 0.000   | 2.222   | 2.256        | 0.000       | 2.256         | 8.732   | 8.950   | 9.135   | 9.465   | Continuing       | Continuing |
| Quantity of RDT&E Articles                        | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**Note**

Joint Tactical Networking Center (JTNC) is funded using a Joint budget strategy. Each Military Department (MILDEP) budgets for approximately one-third of the total program RDT&E requirements for joint efforts. FY24 and beyond is programmed in PE 0605030F by the Air Force, PE 0605030A by the Army and PE 0605030N by the Navy.

**A. Mission Description and Budget Item Justification**

The Joint Tactical Networking Center (JTNC) is chartered to enable the Department of Defense (DoD)'s rapid identification, characterization, procurement, fielding, and sustainment of modular, innovative tactical communications products that ensure secure, interoperable, and resilient Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) capabilities. The JTNC provides technical expertise to facilitate tactical communications management, innovation, and standardization. The JTNC: (1) maintains a cyber-hardened DoD Information Repository (IR), (2) provides Technical Analyses/Capability Characterizations on tactical communications products, (3) provides Open Systems Architecture Standards, (4) provides exportability analysis and licensing reviews, and (5) serves as Technical Advisor to the Communications, Command, and Control Leadership Board (C3LB) and Tactical Communications Senior Steering Group (TCSSG).

JTNC mission is executed in coordination with key government stakeholders to include: C3LB, TCSSG, Communications Technologies and Waveforms Working Group (CTWWG), Resiliency Sub-Working Group (RSWG), the Department of Defense (DoD) Chief Information Officer (CIO), Under Secretary of Defense for Acquisition and Sustainment (USD(A&S)), Joint Staff J6 (JS J6), The Under Secretary of Defense for Research and Engineering, abbreviated USD(R&E), and the Services. Particular attention is paid to ensuring that interagency work is collaborative and eliminates duplicative capability. The JTNC enables a common software baseline that is hardware agnostic leading to increased competition for Software Defined Radios (SDR).

Current JTNC directed requirements, outlined by the C3LB, consist of the CTWWG, Joint All-Domain Command and Control (JADC2) support, development/maturation of the DoD IR framework & Cloud migration, and development of the Joint Communications Marketplace (JCM) to meet DoD and Industry requirements in conjunction with DoD Instruction 4630.09. Through collaboration with USD R&E (INSS) and industry partners, JTNC is in the process of capturing information on resilient waveform technologies and portfolio products. The ultimate goal is to expedite market research activities by collecting, analyzing, and making data available in support of emerging Government waveform acquisitions. The JTNC and JITC co-chair the High-Frequency Interoperability and Architecture Sub-Working Group (HF I&A SWG) to resolve HF 3G and 4G interoperability issues, thus facilitating next-generation HF systems. The JTNC HF team is also pathfinding for a new tactical MIL-STD to provide more resilient communications. Additionally, the JTNC is engaged in the analysis of software artifacts involving high assurance devices, such as software defined radios ported with specific waveforms to support National Security Agency (NSA) efforts. The JTNC participates in Standards-related activities such as the Interface Control

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605030F / <i>Joint Tactical Network Center (JTNC)</i> |
|---|---|

Working Group (ICWG) and has been collaborating with the Army on the development of C4ISR/Electronic Warfare Modular Open Suite of Standards (CMOSS) specifications. Finally, the JTNC continues evolving its Waveform Assessment and Milestone Review (WASMR) and Capability Characterization processes.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

| <b>B. Program Change Summary (\$ in Millions)</b>                                 | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget   | 0.000          | 2.222          | 8.521               | 0.000              | 8.521                |
| Current President's Budget  | 0.000          | 2.222          | 2.256               | 0.000              | 2.256                |
| Total Adjustments   | 0.000          | 0.000          | -6.265              | 0.000              | -6.265               |
| • Congressional General Reductions  | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions   | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions   | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds  | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers  | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer  | 0.000          | 0.000          |                     |                    |                      |
| • Funds transferred to Army PE 0605030A in accordance with Joint funding strategy | 0.000          | 0.000          | -6.265              | 0.000              | -6.265               |

**Change Summary Explanation**

Not a new start program. Balance in FY22 through FY24 is attributed to a realignment from Air Force (PE 0605030F) to Army (0605030A) as per the Joint Budget Strategy outlined in the JTNC Tri-Military Department Resource Plan. FY24 and beyond reflects the Air Force one-third share of program funding.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <b>Title:</b> Joint Tactical Networking Center (JTNC)  | 0.000          | 2.222          | 2.256          |
| <b>Description:</b> Joint Tactical Networking Center (JTNC) aligns with the Communications, Command, and Control Leadership Board (C3LB), DoD Chief Information Officer (CIO), Joint Staff, the Services, and other key stakeholders for those JTNC chartered processes that ensure secure, interoperable, and resilient tactical communications. The JTNC provides technical expertise to facilitate tactical communications management, innovation, and standardization. The JTNC: (1) maintains a cyber-hardened DoD Information Repository (IR), (2) provides Technical Analyses/Capability Characterizations on tactical communications products, (3) provides Open Systems Architecture Standards, (4) provides exportability analysis and licensing reviews, and (5) serves as Technical Advisor to the Communications, Command, and Control Leadership Board (C3LB) and Tactical Communications Senior Steering Group (TCSSG). |                |                |                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605030F / <i>Joint Tactical Network Center (JTNC)</i> |
|---|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p><b><i>FY 2023 Plans:</i></b><br/>                     JTNC continued to serve as Chair of the Communications Waveforms and Technologies Working Group (CTWWG), supporting both TCSSG and C3LB efforts towards managing Joint warfighter challenges and fielding tactical communications solutions. JTNC continued technical analysis efforts for C3LB approved waveforms, in accordance with Service priorities and the FY 2023 JTNC Management Plan. The JTNC continued to support both the Services and Principal Staff Assistant (DoD CIO) in oversight of Lead Service activities as Technical Advisor, assisting in the identification and resolution of cross-service networking disconnects. The JTNC remained engaged in Joint All Domain Command and Control (JADC2) Operational Planning Teams/ systems engineering support across the Services. The JTNC, through the efforts of the CTWWG's Resiliency Sub-Working Group, coordinated and socialized resiliency terminology, processes, and support resources to design, test, compare, and field tactical radio products most capable of mitigating adversary detection, interception, geolocation, and jamming threats. The JTNC continued managing and maintaining the DoD Information Repository (IR), providing controlled access for proprietary and nonproprietary waveforms and associated tactical communications products. The JTNC enhanced DoD IR capabilities by evolving framework compliance and Cloud migration.</p> <p>The JTNC continued Joint Communications Marketplace (JCM) development to meet DoD and Industry requirements in conjunction with DoD Instruction 4630.09. The JTNC managed evolution of the JCM to provide value-added collaborative environment tools, enabling Government and Industry to share information on innovative technologies and DoD capability gaps leading to rapid acquisition efforts to meet warfighter needs. JCM capabilities/communities continued to support PEO C3T and Network Cross-Functional Team (N-CFT) requirements for Industry engagement, TEMs, whitepaper submission and evaluation, and follow-on contract efforts. The JTNC continued development of tactical communications vendor product capability characterizations for commercial off-the-shelf (COTS) and non-developmental item (NDI) tactical communication products. The JTNC continued to evolve DoD Waveform Standards to facilitate common development, interoperability and re-use, reducing product development time and facilitating faster delivery of capabilities to warfighters. Focused efforts leveraged emerging Spectrum activities and facilitated deployment of the Modular Radio Architecture (MRA). Finally, the JTNC continued to support export requests and analyses of products for exportability.</p> <p><b><i>FY 2024 Plans:</i></b><br/>                     JTNC will continue to serve as Chair of the Communications Waveforms and Technologies Working Group (CTWWG), supporting both TCSSG and C3LB efforts towards managing Joint warfighter challenges and fielding tactical communications solutions. JTNC will continue technical analysis efforts for C3LB approved waveforms, in accordance with Service priorities and the FY 2024 JTNC Management Plan. The JTNC will continue to support both the Services and Principal Staff Assistant (DoD CIO) in oversight of Lead Service activities as Technical Advisor, assisting in the identification and resolution of cross-service networking disconnects. The JTNC will remain engaged in Joint All Domain Command and Control (JADC2) Operational Planning Teams/ systems engineering support across the Services. The JTNC, through the efforts of the CTWWG's Resiliency Sub-Working Group, will</p> |                |                |                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605030F / <i>Joint Tactical Network Center (JTNC)</i> |
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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p>coordinate and socialize resiliency terminology, processes, and support resources to design, test, compare, and field tactical radio products most capable of mitigating adversary detection, interception, geolocation, and jamming threats. The JTNC will continue managing and maintaining the DoD Information Repository (IR), providing controlled access for proprietary and nonproprietary waveforms and associated tactical communications products. The JTNC will enhance DoD IR capabilities by evolving framework compliance and Cloud migration.</p> <p>The JTNC will continue Joint Communications Marketplace (JCM) development to meet DoD and Industry requirements in conjunction with DoD Instruction 4630.09. The JTNC will manage evolution of the JCM to provide value-added collaborative environment tools, enabling Government and Industry to share information on innovative technologies and DoD capability gaps leading to rapid acquisition efforts to meet warfighter needs. JCM capabilities/communities will continue to support PEO C3T and Network Cross-Functional Team (N-CFT) requirements for Industry engagement, Technical Exchange Meetings (TEMs), whitepaper submission and evaluation, and contract efforts. The JTNC will continue development of tactical communications vendor product capability characterizations for commercial off-the-shelf (COTS) and non-developmental item (NDI) tactical communication products. The JTNC will continue to evolve DoD Waveform Standards to facilitate common development, interoperability and re-use, reducing product development time and facilitating faster delivery of capabilities to warfighters. Focused efforts will leverage emerging Spectrum activities and facilitate deployment of the Modular Radio Architecture (MRA). Finally, the JTNC will continue to support export requests and analyses of products for exportability.</p> <p><b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br/>FY24 represents the Air Force-only share of JTNC funding. Delta between FY23 and FY24 is due to Joint-funding consolidation from Air Force, (PE 0605030F), and Navy (PE 0605030N) into Army (PE 0605030A).</p> |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 0.000          | 2.222          | 2.256          |

**D. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

The Joint Tactical Networking Center is funded by all the Services. The Joint Funding Strategy requires each of the three Service Military Departments (MILDEPs) to budget for one-third of the total program approved requirement. As per the Joint Budget Strategy outlined in the JTNC Tri-Military Department Resource Plan, FY22 and FY23 Air Force PE 0605030F and Navy PE 0605030N have been realigned to Army PE 0605030A for execution.

**E. Acquisition Strategy**

The Joint Tactical Networking Center (JTNC) is a Joint support program to the Services, the DoD Chief Information Officer (CIO), the Under Secretary of Defense for Acquisition and Sustainment (USD(A&S)), and USD Research and Engineering (USD(R&E)). JTNC core functions as defined in the JTNC Acquisition Decision Memorandum and Charter signed on 20 January 2014 and revalidated on 13 September 2019 include execution in the following areas: Information Repository,



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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605030F / <i>Joint Tactical Network Center (JTNC)</i> |
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Technical Analysis, Open Systems Architecture Standards, Exportability Analysis and Licensing Review, and Technical Advisor to the C3LB. The services derived from these core functions reinforce an acquisition environment which ensures that interoperable, secure, and resilient joint tactical waveforms and wireless communications applications can operate in a variety of hardware transport solutions.

The FY 2024 Budget supports continued development/maturation of the DoD IR, analysis of directed software and artifacts, support of the National Security Agency (NSA) Commercial Communications Security (COMSEC) Evaluation Program (CCEP), JTNC Standards Interface Control Working Group (ICWG), the Capabilities Characterization and Joint Communications Marketplace (CC & JCM). The FY 2024 budget supports the Lead Service Initiative where JTNC will serve as a technical advisor and source of engineering and analytic resources in the conduct of Joint enterprise-level systems engineering and analysis and support DoD CIO. The FY 2024 budget supports the continued management of Joint warfighter challenges and solutions as assigned by the TCSSG. The FY 2024 budget supports Modular Radio Architecture (MRA) work, where JTNC will lead development and promulgation of a framework containing a collection of DoD standards and a description or architecture of how to use these to compose or control a communications system. The MRA defines how to implement a communications system or radio on select platforms.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0605030F / Joint Tactical Network Center (JTNC) | <b>Project (Number/Name)</b><br>655068 / Joint Tactical Radio System (JTRS) |
|--|--|---|

| Product Development (\$ in Millions)   |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| JTNC Engineering/ Technical Support, Test and Evaluation, Product Development Support and Program Management | C/Various              | G2SS, NIWC PAC/ LANT, APG : CA | -           | 0.000   | Dec 2021   | 2.222   | Oct 2022   | 2.256        | Oct 2023   | -           |            | 2.256         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>  |                        |                                | -           | 0.000   |            | 2.222   |            | 2.256        |            | -           |            | 2.256         | Continuing       | Continuing | N/A                      |

**Remarks**  
Not a new start program. FY22 through FY24 funding programmed to Army PE 0605030A via PDM as per the Joint Budget Strategy outlined in the JTNC Tri-Military Department Resource Plan.

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | -           | 0.000   | 2.222   | 2.256        | -           | 2.256         | Continuing       | Continuing | N/A                      |

**Remarks**

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0605030F / Joint Tactical Network Center (JTNC) | <b>Project (Number/Name)</b><br>655068 / Joint Tactical Radio System (JTRS) |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

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| <b>JTNC - Compliance and Certification</b>                 |  |
| Waveform and Wireless Product Compliance and Certification |  |
| <b>JTNC - Information Repository</b>                       |  |
| DoD Waveform Information Repository                        |  |
| <b>JTNC - Standards</b>                                    |  |
| Evolve Waveform Standards and SCA                          |  |
| <b>JTNC - Analysis</b>                                     |  |
| Analyze Waveforms and Associated Artifacts                 |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0605030F / <i>Joint Tactical Network Center (JTNC)</i> | <b>Project (Number/Name)</b><br>655068 / <i>Joint Tactical Radio System (JTRS)</i> |

Schedule Details

| Events by Sub Project                                      | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>JTNC - Compliance and Certification</i></b>          |         |      |         |      |
| Waveform and Wireless Product Compliance and Certification | 1       | 2022 | 4       | 2028 |
| <b><i>JTNC - Information Repository</i></b>                |         |      |         |      |
| DoD Waveform Information Repository                        | 1       | 2022 | 4       | 2028 |
| <b><i>JTNC - Standards</i></b>                             |         |      |         |      |
| Evolve Waveform Standards and SCA                          | 1       | 2022 | 4       | 2028 |
| <b><i>JTNC - Analysis</i></b>                              |         |      |         |      |
| Analyze Waveforms and Associated Artifacts                 | 1       | 2022 | 4       | 2028 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605031F / <i>Joint Tactical Network (JTN)</i> |
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| COST (\$ in Millions)                             | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                             | -           | 0.000   | 0.000   | 0.452        | 0.000       | 0.452         | 3.595   | 3.684   | 3.760   | 3.896   | 0.000            | 15.387     |
| 655068: <i>Joint Tactical Radio System (JTRS)</i> | -           | 0.000   | 0.000   | 0.452        | 0.000       | 0.452         | 3.595   | 3.684   | 3.760   | 3.896   | 0.000            | 15.387     |
| Quantity of RDT&E Articles                        | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**Note**

All continuing JTN efforts are funded in Army Program Element (PE) 0605031A (JTN), Navy PE 0605031N (shared), Air Force PE 0605031F (shared) and United States Marine Corps (USMC) Marine Corps Communications Systems MCPC 112107. As part of the Joint Enterprise Network Manager (JENM) Joint Program budget strategy, the Air Force and Army budget for approximately one-third each of the total Program funds for JENM efforts. The Navy and USMC combined funding equals the other one-third of the JENM Program funding. Prior to the year of execution, Navy and Air Force funding is consolidated in the Army PE (0605031A) and software sustainment funds are realigned between Research, Development, Test and Evaluation (RDT&E) (EF5) and Other Procurement Army (OPA) (B99318) to support the Joint Program acquisition strategy. USMC funding will be provided on an annual basis via Military Interdepartmental Purchase Request (MIPR).

**A. Mission Description and Budget Item Justification**

The Joint Program Executive Office JPEO Joint Tactical Radio System JTRS Acquisition Decision Memorandum ADM of 11 Jul 2012 authorized the JPEO JTRS to transition to the Joint Tactical Network JTN program, which transferred JTRS MDAP programs of record to the Services, and renamed the JTRS Network Enterprise Domain NED program to the JTN program, which transitioned to the Army. The Joint Tactical Networking Center JTNC ADM of 20 Jan 2014 officially chartered the JTNC, assigned responsibility for the development and sustainment of JENM to the Program Manager PM JTN under PdM JENM, and transitioned waveform development and sustainment to the Services. The Army Program Executive Office PEO Command Control Communications Tactical C3T Memos of 25 Jun 2015 transferred all program, development, and configuration control of JENM from Product Manager PdM JENM under PM JTN to PdM WIN-T INC 3 which became PdM Tactical Cyber Network Operations TCNO under PM Tactical Network formally PM WIN-T. PdM TCNO now falls under PM Integration, Interoperability & Services I2S , within PEO C3T.

The Joint Enterprise Network Manager JENM software provides a single, converged network management tool allowing the Warfighter to plan, configure, load, and manage the Joint Services' Tactical Radios and their networks in the field - a capability not available in legacy planning systems. JENM funding supports several types of tactical radios, such as the Manpack and Rifleman, enabling them to utilize Mobile Ad Hoc Networking MANET and other waveforms to include: Mobile User Objective System MUOS waveform, Demand Assigned Multiple Access DAMA Satellite Communications SATCOM , Integrated Waveform IW , and Single Channel Ground and Airborne Radio System SINCGARS waveform. Using its Over-the-Air-Management OTAM functionality, JENM provides the Commander the ability to quickly reconfigure critical networks. JENM enhances the S6's ability to conduct Course of Action COA Analysis and the Military Decision Making Process MDMP , providing commanders critical information regarding their ability to communicate.

FY 2024 funding will continue radio planner development efforts to design, engineer, integrate, and test planning and management capabilities for the Tactical Radio network in support of the Advanced Networking Waveform ANWf. Continued development provides further integration of the Integrated Tactical Network ITN and

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605031F <i>I Joint Tactical Network (JTN)</i> |
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Network Management of its emerging systems to enable Soldiers the ability to effectively manage the ITN. Radio planner development efforts will also support MUOS Waveform Planning Continuing System Improvements and rapid provisioning of MUOS end-user terminals.

Planning applications are deployed on, and critically tied to, the Ruggedized Application Platform - Tactical Radios RAP-TR hardware from the Division to Company level.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 0.000          | 0.000          | 3.509               | 0.000              | 3.509                |
| Current President's Budget                        | 0.000          | 0.000          | 0.452               | 0.000              | 0.452                |
| Total Adjustments                                 | 0.000          | 0.000          | -3.057              | 0.000              | -3.057               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | -3.057              | 0.000              | -3.057               |

**Change Summary Explanation**

FY2024 funds \$3.057M have been realigned to the Army (PE 0605031A), per the Joint Service Agreement prior to PB submission, the remaining \$0.452M funding in this line will also be realigned according to the Joint Service Agreement

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>                                    | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| <b>Title:</b> Joint Tactical Networks JTN - Product Development                                | 0.000          | 0.000          | 0.452               | 0.000              | 0.452                |
| <b>Description:</b> Product Development Efforts  |                |                |                     |                    |                      |
| <b>FY 2023 Plans:</b><br>FY2023 funds have been realigned to the Army funding line PE 0605031A |                |                |                     |                    |                      |
| <b>FY 2024 Base Plans:</b>   |                |                |                     |                    |                      |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605031F <i>I Joint Tactical Network (JTN)</i> |
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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|---|---------|---------|--------------|-------------|---------------|
| <p>The funding will continue support to JENM design, engineering, integration, and test of planning and management application for the Tactical Radio network. Support to align with Army Network Modernization to provide further integration of the lower and mid-tier Network Management for Integrated Tactical Network ITN to enable Soldiers the ability to manage the entire consolidated tactical network in conjunction with network elements managed by Sailors, Marines, and Airmen. Development funding will also support completion of MUOS waveform planning simplification and rapid provisioning of MUOS end-user terminals for joint service requirements.</p> <p>JENM planning applications are deployed on, and critically tied to the RAP-TR hardware from Division to the Company level.</p> <p>FY2024 funds have been realigned to the Army (PE 0605031A), per the Joint Service Agreement, any remaining funding in this line will also be realigned according to the Joint Service Agreement.</p> <p><b>FY 2024 OCO Plans:</b><br/>N/A</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>FY2024 funds have been realigned to the Army (PE 0605031A), per the Joint Service Agreement, remaining funding in this line will also be realigned according to the Joint Service Agreement.</p> |         |         |              |             |               |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 0.000   | 0.000   | 0.452        | 0.000       | 0.452         |

**D. Other Program Funding Summary (\$ in Millions)**  
N/A

**Remarks**  
PE 0605031A contains only the JTN Product Manager (PdM) Waveforms and PdM Tactical Cyber Network Operations (TCNO) JENM RDT&E funding.

JENM is funded using a Joint budget strategy. Each Military Department (MILDEP) budgets for approximately one-third of the total program RDT&E requirements for joint efforts. Out-year funding is programmed in PE 0605031A by the Army, PE 0605031N by the Navy, and PE 0605031F by the Air Force. USMC funding will be provided on an annual basis via Military Interdepartmental Purchase Request (MIPR). Prior to submission of the President's Budget, the funding from Navy (PE 0605031N) and Air Force (PE 0605031F) is consolidated with Army (PE 0605031A) for execution per the Office of the Secretary of Defense (OSD) direction. Funds are realigned from Navy (PE 0605031N) and Air Force (PE 0605031F) to Army (PE 0605031A) as per the JTN (JENM) Acquisition Program Baseline (APB) and Tri-Service Funding agreement.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force Date: March 2023

**Appropriation/Budget Activity**  
3600: *Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)*

**R-1 Program Element (Number/Name)**  
PE 0605031F *I Joint Tactical Network (JTN)*

**D. Other Program Funding Summary (\$ in Millions)**

JENM and baseline planning applications are deployed on the RAP-TR hardware from the Division to Company level. JENM Logistics & Training capabilities are captured under the Joint Network Management System OPA-2 line (JNMS B99318).

**E. Acquisition Strategy**

Joint Tactical Network Center (JTNC) Acquisition Decision Memorandum (ADM) (July 2012) (JENM Supporting Role). Per the December 2014 Joint Tactical Network (JTN) Select Acquisition Report (SAR), JTN was 90% expended and changed to inactive. Defense Acquisition Management Information Retrieval (DAMIR) reflected the inactive status on 3 June 2015 JTN APB (13 October 2015) (JENM Supporting Role).

Product Manager for TCNO manages a Government Owned, Government Operated (GOGO) Software Development and Integration Facility which employs competitive contracting strategies for software development and sustainment of the network manager components to ensure warfighter access to the best technology and innovative capabilities while addressing emerging threats and future requirements via an affordable, operationally effective, and timely framework.

The Army will continue a radio planner effort that will plan, manage, and provision capabilities for simplified workflow based on planning solutions to rapidly meet emerging capability requirements stemming from Network Cross Functional Team (CFT) initiatives and directed requirements.

JENM will continue system improvements for JENM v3.5.X development, which includes upgrades of MUOS, upgrades to JENM Public Key Infrastructure (PKI) certificate management, and cyber enhancements.







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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0605031F / <i>Joint Tactical Network (JTN)</i> | <b>Project (Number/Name)</b><br>655068 / <i>Joint Tactical Radio System (JTRS)</i> |

Schedule Details

| Events by Sub Project                  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>Joint Tactical Network</i></b>   |         |      |         |      |
| JENM v3.4 Logistics & Training Support | 4       | 2022 | 1       | 2023 |
| JENM v3.4 Sunset                       | 1       | 2023 | 1       | 2023 |
| JENM v3.5 Sunset                       | 4       | 2026 | 4       | 2026 |
| APB Expiration                         | 4       | 2026 | 4       | 2026 |
| JENM v3.5 Logistics & Training Support | 4       | 2022 | 4       | 2026 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605056F / <i>Open Architecture Management</i> |
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| COST (\$ in Millions)               | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|-------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element               | -           | 36.157  | 38.201  | 36.582       | 0.000       | 36.582        | 44.028  | 45.000  | 45.919  | 47.580  | Continuing       | Continuing |
| 656060: <i>Standards Management</i> | -           | 36.157  | 38.201  | 36.582       | 0.000       | 36.582        | 44.028  | 45.000  | 45.919  | 47.580  | Continuing       | Continuing |
| Quantity of RDT&E Articles          | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

The Open Architecture Management (OAM) Office (OAMO) at the Air Force Life Cycle Management Center is responsible for developing, evolving, and managing open standards. Open standards permit Department of Defense programs to reduce acquisition and life-cycle costs as well as the risks associated with development, sustainment, technology refresh, and capability upgrades of mission systems on weapon systems. The OAMO continues to manage the Open Mission Systems (OMS) and the Universal Command and Control (C2) Interface (UCI) Standards. Additionally, the OAMO will continue executing efforts to mature various open standards and government reference architectures (GRAs) to ensure compatibility and interoperability to meet program needs. Finally, OAMO will continue to enable application of open standards in weapon system designs, and to enable open standards and GRAs to transition to OAMO management.

OAMO provides funding to multiple entities, including but not limited to the Air Force Research Laboratory (AFRL), the 76th Software Engineering Group (76 SWEG), defense contractors, Federally Funded Research and Development Centers, and University Affiliated Research Centers in support of standards management activities. AFRL is responsible for executing science and technology initiatives to further develop the OMS/UCI Standards. The 76 SWEG is responsible for key activities and deliverables for the OMS and UCI standards including: managing a collaborative tools environment, updating tools in the OMS/UCI Starter Kit, updating the Government critical abstraction layer, maintaining the Reference Implementation, integrating and testing the Mission Package, completing Change Package Development and Sponsorship, supporting the OMS and UCI management activities, providing support to adopting programs, and providing training and associated documentation. These entities will also be funded to support activities for other open standards and GRA initiatives.

The OAMO will continue development/maintenance of the Government Avionics Reference Architecture (GARA), an architectural framework that includes open architecture standards and Model Based Systems Engineering (MBSE) tools to guide and aid the development or modification of avionics/mission systems to enable Modular Open Systems Approach (MOSA).

The OAMO will execute P3I initiatives as required and include activities such as specifically targeted improvements to open standards and open architecture initiatives (e.g., Sensor Open Systems Architecture), coordination with other standardization efforts, enhancements (including cybersecurity, as required), and widening the relevancy and applicability of the standards the OAMO is involved with.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver open standards capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605056F / <i>Open Architecture Management</i> |
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This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 37.109         | 38.222         | 42.548              | 0.000              | 42.548               |
| Current President's Budget                        | 36.157         | 38.201         | 36.582              | 0.000              | 36.582               |
| Total Adjustments                                 | -0.952         | -0.021         | -5.966              | 0.000              | -5.966               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -0.952         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | -0.021         | -5.966              | 0.000              | -5.966               |

**Change Summary Explanation**

Funding decreased by \$1.619M in FY24 due to other Air Force priorities.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Open Architecture Management Office   | 36.157         | 38.201         | 36.582         |
| <b>Description:</b> Accomplish all industry activities that result in the annual release of the OMS and UCI standards along with the associated documentation, including training materials. Manage government activities to support the OMS and UCI Standards. Accomplish industry and government activities to support other open standards and open architecture initiatives and Government Avionics Reference Architecture (GARA) managed by the OAMO. Conduct activities to add capability and evolve standards and open architecture initiatives managed and supported by the OAMO to existing open standards and/or initiate new open standards to meet acquisition needs. |                |                |                |
| <b>FY 2023 Plans:</b><br>Continue to modify and update the existing OMS and UCI Standards to increase and widen the pool of OMS/UCI applicability, account for emerging technologies, adjust for program specific needs, and conduct targeted training. In coordination with industry partners and government agencies, complete all activities (including quarterly common governance boards) to develop annual releases of the OMS/UCI Standards. Provide government expertise to support open standards and open architecture  |                |                |                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

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|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605056F / <i>Open Architecture Management</i> |
|---|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| development efforts. Continue development of GARA. Execute activities to enhance the applicability of open standards and GRAs, and to enable open standards and GRAs to transition to OAMO management.<br><br><b>FY 2024 Plans:</b><br>Continue to modify and update the existing OMS and UCI Standards to increase and widen the pool of OMS/UCI applicability, account for emerging technologies, adjust for program specific needs, and conduct targeted training. In coordination with industry partners and government agencies, complete all activities (including quarterly common governance boards) to develop annual releases of the OMS/UCI Standards. Provide government expertise to support open standards and open architecture development efforts. Continue development of GARA. Execute activities to enhance the applicability of open standards and GRAs, and to enable open standards and GRAs to transition to OAMO management.<br><br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funding decreased by \$1.619M in FY24 due to other Air Force priorities. |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 36.157         | 38.201         | 36.582         |

**D. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**E. Acquisition Strategy**

The Air Force Life Cycle Management Center's OAMO awarded a follow-on contract to continue the standards management activities conducted under a previously classified Air Force RDT&E Program Element. The contract is a cost plus fixed fee (CPFF) indefinite delivery/indefinite quantity (ID/IQ) that was awarded in December 2018. The first delivery order has a period of performance of 3 years beginning 1 January 2019. A second delivery order with a one-year period of performance was awarded in first quarter of FY2021 to cover the period 1 January 2022 through 31 December 2022. A period of performance extension will be exercised for January 2023 through 31 December 2023. A follow on contract is being worked to continue execution of OAMO requirements/activities once the existing ID/IQ contract ends.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0605056F / <i>Open Architecture Management</i> | <b>Project (Number/Name)</b><br>656060 / <i>Standards Management</i> |
|--|---|--|

| <b>Product Development (\$ in Millions)</b>                         |                        |                                  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|----------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location   | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Open Architecture Collaborative Working Group - BAE Systems         | C/CPFF                 | BAE Systems : Nashua, NH         | -           | 1.135   | Dec 2021   | 1.250   | Dec 2022   | 1.793        | Dec 2023   | -           |            | 1.793         | Continuing       | Continuing | -                        |
| Open Architecture Collaborative Working Group - Boeing              | C/CPFF                 | Boeing : St. Louis, MO           | -           | 4.178   | Dec 2021   | 2.966   | Dec 2022   | 3.374        | Dec 2023   | -           |            | 3.374         | Continuing       | Continuing | -                        |
| Open Architecture Collaborative Working Group - General Atomics ASI | C/CPFF                 | General Atomics ASI : Poway, CA  | -           | 1.081   | Dec 2021   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Open Architecture Collaborative Working Group - Collins Aerospace   | C/CPFF                 | Collins Aerospace : Westford, MA | -           | 1.075   | Dec 2021   | 0.000   | Dec 2022   | 0.000        | Dec 2023   | -           |            | 0.000         | Continuing       | Continuing | -                        |
| Open Architecture Collaborative Working Group - Harris Corporation  | C/CPFF                 | Harris Corp : Clifton, NY        | -           | 1.254   | Dec 2021   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Open Architecture Collaborative Working Group - Lockheed Martin     | C/CPFF                 | Lockheed Martin : Fort Worth, TX | -           | 6.428   | Dec 2021   | 5.935   | Dec 2022   | 6.634        | Dec 2023   | -           |            | 6.634         | Continuing       | Continuing | -                        |
| Open Architecture Collaborative Working Group - Northrop Grumman    | C/CPFF                 | Northrop Grumman : Melbourne, FL | -           | 5.239   | Dec 2021   | 8.781   | Dec 2022   | 8.130        | Dec 2023   | -           |            | 8.130         | Continuing       | Continuing | -                        |
| Open Architecture Collaborative Working Group - Raytheon            | C/CPFF                 | Raytheon : El Segundo, CA        | -           | 1.912   | Dec 2021   | 2.942   | Dec 2022   | 2.360        | Dec 2023   | -           |            | 2.360         | Continuing       | Continuing | -                        |
| Open Architecture Collaborative Working Group - General Dynamics    | C/CPFF                 | General Dynamics : Reston, VA    | -           | -       |            | 1.935   | Dec 2022   | 1.312        | Dec 2023   | -           |            | 1.312         | Continuing       | Continuing | -                        |
| 76th Software Maintenance Group (76 SMXG) Development               | PO                     | 76 SWEG : Tinker AFB, OK         | -           | 4.506   | Dec 2021   | 4.600   | Dec 2022   | 4.514        | Dec 2023   | -           |            | 4.514         | Continuing       | Continuing | -                        |
| Air Force Research Laboratory (AFRL)                                | MIPR                   | AFRL : Various                   | -           | 2.334   | Dec 2021   | 1.195   | Dec 2022   | 2.228        | Dec 2023   | -           |            | 2.228         | Continuing       | Continuing | -                        |



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0605056F / <i>Open Architecture Management</i> | <b>Project (Number/Name)</b><br>656060 / <i>Standards Management</i> |
|--|---|--|

| <b>Product Development (\$ in Millions)</b>       |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                                | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Science and Technology Initiatives                |                        |                                |             |         |            |         |            |              |            |             |            |               |                  |            |                          |
| Engineering Studies (1)                           | PO                     | MITRE: : Bedford, MA           | -           | -       |            | 1.107   | Dec 2022   | 1.243        | Dec 2023   | -           |            | 1.243         | Continuing       | Continuing | -                        |
| Engineering Studies (2)                           | PO                     | MIT-LL : Lexington, MA         | -           | 0.395   | Jan 2022   | 0.451   | Dec 2022   | 0.451        | Dec 2023   | -           |            | 0.451         | Continuing       | Continuing | -                        |
| SOSA Initiatives                                  | Various                | Existing IDIQ: : Various       | -           | 1.806   | Jan 2022   | 3.521   | Dec 2022   | 0.972        | Dec 2023   | -           |            | 0.972         | Continuing       | Continuing | -                        |
| Government Avionics Reference Architecture (GARA) | SS/CPFF                | GTRI UARC : Atlanta, GA        | -           | 4.375   | Mar 2022   | 1.828   | Dec 2022   | 2.232        | Dec 2023   | -           |            | 2.232         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                                   |                        |                                | -           | 35.718  |            | 36.511  |            | 35.243       |            | -           |            | 35.243        | Continuing       | Continuing | N/A                      |

| <b>Management Services (\$ in Millions)</b> |                        |   |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|---|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location                | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Program Management Administration           | Various                | OAM Program Office : Wright-Patterson AFB, OH | -           | 0.439   | Jan 2022   | 1.690   |            | 1.339        | Jan 2024   | -           |            | 1.339         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |   | -           | 0.439   |            | 1.690   |            | 1.339        |            | -           |            | 1.339         | Continuing       | Continuing | N/A                      |

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |     |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|-----|
| <b>Project Cost Totals</b> |             | -       | 36.157  | 38.201       | 36.582      | -             | 36.582           | Continuing | Continuing               | N/A |

**Remarks**

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0605056F / <i>Open Architecture Management</i> | <b>Project (Number/Name)</b><br>656060 / <i>Standards Management</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   |  |
|---|--|
| <b><i>Develop and Evolve Standards</i></b>  |  |
| Quarterly Governance Boards                 |  |
| FY 2022 Annual Release of OMS/UCI Standards |  |
| FY 2023 Annual Release of OMS/UCI Standards |  |
| FY 2024 Annual Release of OMS/UCI Standards |  |
| FY 2025 Annual Release of OMS/UCI Standards |  |
| FY 2026 Annual Release of OMS/UCI Standards |  |
| FY 2027 Annual Release of OMS/UCI Standards |  |
| FY 2028 Annual Release of OMS/UCI Standards |  |
| FY 2022 Annual Integration Event            |  |
| FY 2023 Annual Integration Event            |  |
| FY 2024 Annual Integration Event            |  |
| FY 2025 Annual Integration Event            |  |
| FY 2026 Annual Integration Event            |  |
| FY 2027 Annual Integration Event            |  |
| FY 2028 Annual Integration Event            |  |
| FY 2022 GARA Quarterly Model Update         |  |
| FY 2023 GARA Quarterly Model Update         |  |
| FY 2024 GARA Quarterly Model Update         |  |

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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |   |  |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0605056F / <i>Open Architecture Management</i> | <b>Project (Number/Name)</b><br>656060 / <i>Standards Management</i> |
|--|---|--|

|  | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|  | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |
| FY 2025 GARA Quarterly Model Update                          |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| FY 2026 GARA Quarterly Model Update                          |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| FY 2027 GARA Quarterly Model Update                          |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| FY 2028 GARA Quarterly Model Update                          |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| FY 2022 GARA Quarterly Configuration Management Plan Updates |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| FY 2023 GARA Quarterly Configuration Management Plan Updates |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| FY 2024 GARA Quarterly Configuration Management Plan Updates |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| FY 2025 GARA Quarterly Configuration Management Plan Updates |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| FY 2026 GARA Quarterly Configuration Management Plan Updates |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| FY 2027 GARA Quarterly Configuration Management Plan Updates |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| FY 2028 GARA Quarterly Configuration Management Plan Updates |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| FY 2022 GARA Quarterly Conformance Plan Updates              |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| FY 2023 GARA Quarterly Conformance Plan Updates              |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| FY 2024 GARA Quarterly Conformance Plan Updates              |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| FY 2025 GARA Quarterly Conformance Plan Updates              |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| FY 2026 GARA Quarterly Conformance Plan Updates              |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |



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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0605056F / <i>Open Architecture Management</i> | <b>Project (Number/Name)</b><br>656060 / <i>Standards Management</i> |

Schedule Details

| Events by Sub Project                       | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Develop and Evolve Standards</i></b>  |         |      |         |      |
| Quarterly Governance Boards                 | 1       | 2022 | 4       | 2028 |
| FY 2022 Annual Release of OMS/UCI Standards | 1       | 2022 | 1       | 2022 |
| FY 2023 Annual Release of OMS/UCI Standards | 1       | 2023 | 1       | 2023 |
| FY 2024 Annual Release of OMS/UCI Standards | 1       | 2024 | 1       | 2024 |
| FY 2025 Annual Release of OMS/UCI Standards | 1       | 2025 | 1       | 2025 |
| FY 2026 Annual Release of OMS/UCI Standards | 1       | 2026 | 1       | 2026 |
| FY 2027 Annual Release of OMS/UCI Standards | 1       | 2027 | 1       | 2027 |
| FY 2028 Annual Release of OMS/UCI Standards | 1       | 2028 | 1       | 2028 |
| FY 2022 Annual Integration Event            | 4       | 2022 | 4       | 2022 |
| FY 2023 Annual Integration Event            | 4       | 2023 | 4       | 2023 |
| FY 2024 Annual Integration Event            | 4       | 2024 | 4       | 2024 |
| FY 2025 Annual Integration Event            | 4       | 2025 | 4       | 2025 |
| FY 2026 Annual Integration Event            | 4       | 2026 | 4       | 2026 |
| FY 2027 Annual Integration Event            | 4       | 2027 | 4       | 2027 |
| FY 2028 Annual Integration Event            | 4       | 2028 | 4       | 2028 |
| FY 2022 GARA Quarterly Model Update         | 1       | 2022 | 4       | 2022 |
| FY 2023 GARA Quarterly Model Update         | 1       | 2023 | 4       | 2023 |
| FY 2024 GARA Quarterly Model Update         | 1       | 2024 | 4       | 2024 |
| FY 2025 GARA Quarterly Model Update         | 1       | 2025 | 4       | 2025 |
| FY 2026 GARA Quarterly Model Update         | 1       | 2026 | 4       | 2026 |
| FY 2027 GARA Quarterly Model Update         | 1       | 2027 | 4       | 2027 |

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2024 Air Force **Date:** March 2023

|  |   |  |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0605056F / <i>Open Architecture Management</i> | <b>Project (Number/Name)</b><br>656060 / <i>Standards Management</i> |
|--|---|--|

| <b>Events by Sub Project</b>                                 | <b>Start</b>   |             | <b>End</b>     |             |
|--|----------------|-------------|----------------|-------------|
|  | <b>Quarter</b> | <b>Year</b> | <b>Quarter</b> | <b>Year</b> |
| FY 2028 GARA Quarterly Model Update                          | 1              | 2028        | 4              | 2028        |
| FY 2022 GARA Quarterly Configuration Management Plan Updates | 1              | 2022        | 4              | 2022        |
| FY 2023 GARA Quarterly Configuration Management Plan Updates | 1              | 2023        | 4              | 2023        |
| FY 2024 GARA Quarterly Configuration Management Plan Updates | 1              | 2024        | 4              | 2024        |
| FY 2025 GARA Quarterly Configuration Management Plan Updates | 1              | 2025        | 4              | 2025        |
| FY 2026 GARA Quarterly Configuration Management Plan Updates | 1              | 2026        | 4              | 2026        |
| FY 2027 GARA Quarterly Configuration Management Plan Updates | 1              | 2027        | 4              | 2027        |
| FY 2028 GARA Quarterly Configuration Management Plan Updates | 1              | 2028        | 4              | 2028        |
| FY 2022 GARA Quarterly Conformance Plan Updates              | 1              | 2022        | 4              | 2022        |
| FY 2023 GARA Quarterly Conformance Plan Updates              | 1              | 2023        | 4              | 2023        |
| FY 2024 GARA Quarterly Conformance Plan Updates              | 1              | 2024        | 4              | 2024        |
| FY 2025 GARA Quarterly Conformance Plan Updates              | 1              | 2025        | 4              | 2025        |
| FY 2026 GARA Quarterly Conformance Plan Updates              | 1              | 2026        | 4              | 2026        |
| FY 2027 GARA Quarterly Conformance Plan Updates              | 1              | 2027        | 4              | 2027        |
| FY 2028 GARA Quarterly Conformance Plan Updates              | 1              | 2028        | 4              | 2028        |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605057F / <i>Next Generation Air-refueling System</i> |
|---|---|

| COST (\$ in Millions)                             | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                             | -           | 0.000   | 0.000   | 7.928        | 0.000       | 7.928         | 0.000   | 0.000   | 0.000   | 0.000   | Continuing       | Continuing |
| 652430: <i>Next Generation Tanker Development</i> | -           | 0.000   | 0.000   | 7.928        | 0.000       | 7.928         | 0.000   | 0.000   | 0.000   | 0.000   | Continuing       | Continuing |
| Quantity of RDT&E Articles                        | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**Program MDAP/MAIS Code:** 387

**Note**

In FY 2024, PE 0401221F, KC-46A Tanker Squadrons, Project 655271, KC-46 RDT&E, future tanker support efforts were transferred to PE 0605057F, Next Generation Air-Refueling System, Project 652430, Next Generation Tanker Development, in order to provide transparency to the pre-MDAP NGAS program. NGAS Pre-Analysis of Alternatives (AoA) activities began in FY 2023, and anticipate completion in FY 2024.

**A. Mission Description and Budget Item Justification**

In FY 2024, the Department of the Air Force will break from its previous recapitalization approaches (KC-X, KC-Y, KC-Z) in favor of more agile methods, prioritizing and accelerating the right capabilities to deliver fuel to the fight. This new approach replaces KC-Z with an accelerated Next Generation Air-refueling System (NGAS) (PE 0605057F) and continues Tanker Recapitalization (PE 0605164F) between KC-46A and NGAS.

NGAS is an accelerated, advanced air refueling system that meets the future needs of the joint force. NGAS delivers upgraded capabilities in multiple types of tankers (increments) by leveraging benefits of full and open competition. NGAS is a clean sheet, purpose-built design effort that will garner advanced technologies to ensure air refueling in a contested environment to address projected future threats and needed capabilities. In FY 2024, AMC-led Analysis of Alternatives (AoA) efforts will shape requirements and determine the technology development timeline. Delivery of the first NGAS tanker increment is expected in the mid-to-late 2030s.

NGAS will provide the refueling capability to U.S. and coalition receivers via a boom or drogue system on every mission and projected to augment the airlift fleet with cargo, passenger, and aeromedical evacuation capabilities.

NGAS will operate in day/night and adverse weather conditions to enable deployment, employment, sustainment, and redeployment of U.S. and coalition forces. NGAS will have communication, navigation, and surveillance equipment for worldwide operations; the capability to perform missions in chemical and biological environments; the ability to operate in contested environments with self-defense/protection (both active and passive) capabilities; and the necessary battlespace awareness to mitigate threats (survivability).

NGAS will identify, design, develop, integrate and sustain a comprehensive range of recurring and non-recurring post-production and air vehicle enhancements to include but not limited to programmed Mobility Air Force (MAF) requirements, Combatant Commander Joint or Urgent Operational Needs (JUON/UON), non-

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force  |   | <b>Date:</b> March 2023 |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>   | <b>R-1 Program Element (Number/Name)</b><br>PE 0605057F / <i>Next Generation Air-refueling System</i> |                         |
| <p>programmed Federal Aviation Administration (FAA) directives, requirements identified and supported by HHQ Enterprise Capability Collaboration Teams (i.e., High Value Airborne Asset [HVAA], Air Superiority 2030, and Multi-Domain Command and Control [MDC2]), or correction of field deficiencies.</p> <p>The dynamics and mission urgency of the post-production (post-DD-250) environment require the program to maintain a flexible and responsive posture to support a broad range of mission support needs. NGAS will continue to identify, design, develop, integrate, verify, certify, produce, install, field, and sustain a comprehensive range of non-recurring and recurring post-production, air vehicle enhancements and field support needs to include but not limited to programmed Mobility Air Force (MAF) requirements, Combatant Commander Joint or Urgent Operational Needs (JUON/UON), non-programmed Federal Aviation Administration (FAA) directives, requirements identified and supported by HHQ Enterprise Capability Collaboration Teams (i.e., High Value Airborne Asset [HVAA], Air Superiority 2030, and Multi-Domain Command and Control [MDC2]), or correction of field deficiencies.</p> <p>NGAS will develop, field, and sustain warfighter refueling capabilities to meet evolving threats and mission support requirements through Block or discrete modification or modernization programs depending on mission urgency, available funding, and programmatic and technical risks. Post-production requirements may include but not be limited to avionics and structural systems/architecture and subsystem updates, general mission equipment updates and procurement, general sustainment support, diminishing manufacturing sources and material shortages (DMSMS) studies and analyses, future tanker requirements, simulation and training, and correction of field deficiencies.</p> <p>NGAS budget supports Program Support Costs (PSC) activities to include but not limited to market research, acquisition planning, pre-milestone activities, Request for Proposal (RFP) development, test planning, mission planning capability development, future tanker development and various studies and analyses.</p> <p>This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2022, \$0.000 million was expended for civilian pay expenses in this program element, and in FY 2023 \$0.000 million is forecast for civilian pay expenses in this program element.</p> <p>The program element currently resides in the incorrect Budget Activity (BA) 5. The Air Force is processing a technical adjustment to transfer the NGAS program element from BA 5 to BA 04 to align with the correct budget activity scope. The program is currently in pre-Milestone A and is awaiting an Analysis of Alternatives to be completed.</p> <p>This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.</p> |   |                         |



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605057F / <i>Next Generation Air-refueling System</i> |
|---|---|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 0.000          | 0.000          | 0.000               | 0.000              | 0.000                |
| Current President's Budget                        | 0.000          | 0.000          | 7.928               | 0.000              | 7.928                |
| Total Adjustments                                 | 0.000          | 0.000          | 7.928               | 0.000              | 7.928                |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 7.928               | 0.000              | 7.928                |

**Change Summary Explanation**

FY 2024 funding increase of \$7.928 million to support the Analysis of Alternatives efforts and associated studies. In FY 2023, pre-AoA efforts were funded under Project 655271, KC-46 RDT&E. FY 2024 funding is a continuation of FY 2023 efforts.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| <p><b>Title:</b> Support</p> <p><b>Description:</b> NGAS Mission Support/Program Standup - Studies and analyses to support NGAS planning activities for future initiatives, future tanker replacement planning, and other Program Office support to include but not limited to an Analysis of Alternatives (AoA), market research, acquisition planning, pre-milestone activities, RFP development, test planning, and various studies and analyses.</p> <p><b>FY 2023 Plans:</b><br/>N/A</p> <p><b>FY 2024 Base Plans:</b><br/>Continuation of AoA activities to include but not limited to market research, acquisition planning, pre-milestone activities, RFP development, RFP release, test planning, and various studies and analyses for new NGAS tanker development.</p> <p><b>FY 2024 OCO Plans:</b><br/>N/A</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b></p> | -              | 0.000          | 7.928               | 0.000              | 7.928                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605057F / <i>Next Generation Air-refueling System</i> |
|---|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>                                   | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total |
|---|---------|---------|--------------|-------------|---------------|
| Funding increased due to ramp up of program office activities to support acquisition efforts. |         |         |              |             |               |
| <b>Accomplishments/Planned Programs Subtotals</b>   | -       | 0.000   | 7.928        | 0.000       | 7.928         |

**D. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**E. Acquisition Strategy**

NGAS will be a clean sheet, purpose-built design to address projected threats and capabilities. It leverages benefits of full and open competition. The yet-to-be determined NGAS acquisition strategy will be based on a future approved CDD requirements and FAR/DFARS compliance. However, the notional acquisition approach is to award Technology Maturation Risk Reduction contracts that mature and develop key future technologies with multiple vendors. In addition, Science and Technology efforts will be funded to develop critical path technologies needed to meet attributes defined in the Advanced Air Refueling ICD to a Technology Readiness Level greater than 5.

The first NGAS delivery is expected in the mid to late 2030s.



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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0605057F / Next Generation Air-refueling System | <b>Project (Number/Name)</b><br>652430 / Next Generation Tanker Development |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|                          |                      |
|--------------------------|----------------------|
| <b>NGAS</b>              |                      |
| Analysis of Alternatives | ████████████████████ |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0605057F / <i>Next Generation Air-refueling System</i> | <b>Project (Number/Name)</b><br>652430 / <i>Next Generation Tanker Development</i> |

Schedule Details

| Events by Sub Project    | Start   |      | End     |      |
|--------------------------|---------|------|---------|------|
|                          | Quarter | Year | Quarter | Year |
| <b>NGAS</b>              |         |      |         |      |
| Analysis of Alternatives | 1       | 2024 | 4       | 2024 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605223F / <i>Advanced Pilot Training</i> |
|---|--|

| COST (\$ in Millions)                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                            | 878.601     | 182.330 | 33.621  | 77.252       | 0.000       | 77.252        | 81.778  | 28.706  | 5.245   | 5.356   | 32.530           | 1,325.419  |
| 655340: <i>Advanced Trainer Replacement T-7A</i> | 878.601     | 182.330 | 33.621  | 77.252       | 0.000       | 77.252        | 81.778  | 28.706  | 5.245   | 5.356   | 32.530           | 1,325.419  |
| Quantity of RDT&E Articles                       | 5           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**Program MDAP/MAIS Code:** 436

**Note**  
 Prior Years Funding \$4.994M was executed in PE 0604233F.

**A. Mission Description and Budget Item Justification**

The Advanced Pilot Training (APT)/T-7A Red Hawk program will replace the Air Education Training Command's (AETC) aging T-38C fleet with new aircraft, Ground Based Training System (simulators, training devices, computer based training systems, academics, etc.), Maintenance Training System, and support infrastructure currently used in the fighter/bomber advanced Specialized Undergraduate Pilot Training track as well as in the Introduction to Fighter Fundamentals program. The APT/T-7A Red Hawk program acquisition strategy was approved by OSD (AT&L) in early FY 2017 (December 2016). At the same time, the APT/T-7A Red Hawk Team completed their Development Request for Proposal (RFP) Release Defense Acquisition Board and subsequently released the RFP to industry on 30 December 2016. The Program completed source selection evaluations and Milestone B in September 2018, and awarded a Fixed Price Incentive Firm (FPIF) Indefinite Delivery/Indefinite Quantity contract to The Boeing Company on 27 September 2018.

The Maintenance Training System (MTS) contract will be awarded through a competitive process and will be awarded in FY 2024. The MTS acquisition focuses on designing, developing, testing, producing, and fielding an optimized training system for APT/T-7A Red Hawk maintainers by integrating various forms of training media and Maintenance Training Devices (MTDs) into a blended solution. This blended solution includes the appropriate mix of hardware and software, Augmented Hardware Training Devices (AHTDs), part task trainers (PTTs), Interactive Multimedia Instruction (IMI), and emerging technologies to meet validated Air Education and Training Command (AETC) APT/T-7A Red Hawk maintenance training requirements. Funding contained in this platform's documentation directly aids AETC flying training enterprise to continue its overall Future Years Defense Program pilot production increase starting in FY 2020, thus reducing the USAF Pilot Shortage. This requirement supports performance of a full financial audit as required by title 10 U.S.C. Chapter 9A, Sec 240-D.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver APT/T-7A Red Hawk system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2022 \$1.506 million was expended for civilian pay expenses in this program element, and in FY 2023 \$1.900 million is forecasted for civilian pay expenses in this program element.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> / BA 5: <i>System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605223F / <i>Advanced Pilot Training</i> |
|--|--|

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 188.898        | 37.121         | 70.043              | 0.000              | 70.043               |
| Current President's Budget                        | 182.330        | 33.621         | 77.252              | 0.000              | 77.252               |
| Total Adjustments                                 | -6.568         | -3.500         | 7.209               | 0.000              | 7.209                |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | -3.500         |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -6.568         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 7.209               | 0.000              | 7.209                |

**Change Summary Explanation**

FY 2022 funding was reduced by \$6.568 million for Small Business Innovation Research (SBIR).

FY 2023 funding request was decreased by \$3.500 million for Congressional Mark "Government test ahead of need".

FY 2024 Funding request was increased \$7.209 million due to ramp up of test and evaluation, development of the MTS and development of an engineering change proposal for an Automatic Ground Collision Avoidance System (GCAS), the Daily Use Ladder, and an updated On-Board Oxygen Generating System (OBOGS).

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Advanced Pilot Training (APT) Program   | 182.330        | 33.621         | 77.252         |
| <b>Description:</b> The Advanced Pilot Training (APT) / T-7A Red Hawk program has an approved acquisition strategy, completed Milestone B, and has progressed into the Engineering and Manufacturing Development (EMD) phase. In FY 2020, the APT/T-7A Red Hawk program concluded the Critical Design Review for the Aircraft and Ground Based Training System. This effort includes studies, analysis, acquisition documentation, market research activities, and engineering changes to reduce risk and support the acquisition strategy and engineering and manufacturing development. It also includes Program Support Costs (PSC) such as travel, Other Government Costs (OGC), and Advisory and Assistance Services (A&AS). |                |                |                |
| <b>FY 2023 Plans:</b>   |                |                |                |



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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force  |  | <b>Date:</b> March 2023 |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605223F / <i>Advanced Pilot Training</i> |                         |

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| The Program plans to continue developmental test & evaluation, accept delivery of engineering manufacturing test aircrafts and multiple ground training devices. Plans also include PSC such as travel, OGC's and A&AS.  |                |                |                |
| <b>FY 2024 Plans:</b><br>The APT/T-7A Red Hawk Program plans to continue and complete developmental test & evaluation, award the Maintenance Training System (MTS) development contract, and execute an engineering change for a Ground Collision Avoidance System (GCAS), a Daily Use Ladder, and an updated On-Board Oxygen Generation System (OBOGS). |                |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funding increased due to ramp up of initial operational test and evaluation, development of the MTS and development of an engineering change proposal for GCAS, a Daily Use Ladder, and updated OBOGS.   |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 182.330        | 33.621         | 77.252         |

| <b>D. Other Program Funding Summary (\$ in Millions)</b>                  |                |                |                               |                              |                                |                |                |                |                |                                   |                   |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| <u>Line Item</u>  | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
| • APAF 03 APT000:<br><i>Advanced Pilot Training T-7A</i>                  | 0.000          | 10.507         | 0.000                         | -                            | 0.000                          | 330.597        | 516.860        | 524.060        | 834.237        | 5,431.377                         | 7,647.638         |
| • APAF 06 APT000: <i>Advanced Trainer Replacement T-7A</i>                | 0.000          | 0.000          | 0.000                         | -                            | 0.000                          | 28.604         | 37.379         | 37.478         | 54.886         | 370.491                           | 528.838           |
| • APAF 07 Line Item 000075:<br><i>Other Production Charges</i>            | 0.000          | 5.160          | 44.409                        | -                            | 44.409                         | 30.739         | 95.408         | 154.182        | 7.641          | 16.724                            | 354.263           |
| • OPAF 02 822990:<br><i>Cargo and Utility Vehicles</i>                    | 0.000          | 0.000          | 1.104                         | -                            | 1.104                          | 0.000          | 0.000          | 0.000          | 1.114          | 0.000                             | 2.218             |
| • OPAF 02 825990:<br><i>Materials Handling Vehicles</i>                   | 0.000          | 0.000          | 0.401                         | -                            | 0.401                          | 0.304          | 0.000          | 0.116          | 0.000          | 0.000                             | 0.821             |
| • OPAF 03 Line Item 837300:<br><i>Base Comm Infrastructure</i>            | 0.000          | 0.700          | 0.000                         | -                            | 0.000                          | 0.000          | 0.000          | 0.000          | 0.000          | 0.000                             | 0.700             |
| • OPAF 04 845010: <i>Base Procured Equipment</i>                          | 0.000          | 0.000          | 11.444                        | -                            | 11.444                         | 13.033         | 12.491         | 14.771         | 11.190         | 0.000                             | 62.929            |
| • MILCON PE 0804701F:<br><i>T-7A (Advanced Pilot Trainer) Procurement</i> | 18.590         | 4.938          | 39.543                        | -                            | 39.543                         | 309.585        | 135.497        | 129.570        | 0.000          | 34.500                            | 672.223           |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605223F / <i>Advanced Pilot Training</i> |
|---|--|

**D. Other Program Funding Summary (\$ in Millions)**

| <u>Line Item</u> | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|

**Remarks**  
Total MILCON Cost Excludes \$31.600M of FY 2020 MILCON funds and \$23.400M of FY 2021 MILCON funds. MILCON Total Cost=\$727.223M

**E. Acquisition Strategy**

The APT/T-7A Red Hawk Program will develop, test, acquire, and sustain an affordable, agile, and integrated APT System consisting of 351 aircraft, Ground Based Training System, Maintenance Training System, support, infrastructure, and personnel to meet Air Education and Training Command's initial need date of FY 2024.

The APT/T-7A Red Hawk program's acquisition strategy leveraged market conditions by competing and awarding development, production, and initial sustainment in a single contract award. The Program completed source selection evaluations and Milestone B in September 2018, and awarded a Fixed Price Incentive Firm Indefinite Delivery/Indefinite Quantity contract to The Boeing Company on 27 September 2018 to provide for development, integration, and testing needed to meet existing APT requirements.

Additional contract options are available for Low Rate Initial Production, Full Rate Production and initial sustainment transition. The Maintenance Training System will be procured under a separate contractual vehicle.

The Maintenance Training System (MTS) acquisition strategy is to acquire Maintenance Training Devices (MTDs), and associated support structure, for an AETC Centralized Training Facility (CTF). The MTS contract will be conducted via a full and open competition per FAR Part 16. The MTS EMD phase will develop and operationalize MTDs for the CTF; and will be supported with courseware, Training System Support Center (TSSC), the technical data package, and support equipment to ensure system availability and concurrency with the aircraft. The MTS Production phase will develop and operationalize a subset of MTDs for each of the four Unit Maintenance Training Facilities (UMTFs). The Contractor Logistics Support (CLS) will encompass sustainment support of the MTDs at the CTF and UMTFs until two years post Production completion.

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| Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force |                        |                                |             |                                       |            |         |            |  |            |             |            | Date: March 2023 |                  |            |                          |  |
|---|------------------------|--------------------------------|-------------|---------------------------------------|------------|---------|------------|--|------------|-------------|------------|------------------|------------------|------------|--------------------------|--|
| Appropriation/Budget Activity                               |                        |                                |             | R-1 Program Element (Number/Name)     |            |         |            | Project (Number/Name)                      |            |             |            |                  |                  |            |                          |  |
| 3600 / 5  |                        |                                |             | PE 0605223F / Advanced Pilot Training |            |         |            | 655340 / Advanced Trainer Replacement T-7A |            |             |            |                  |                  |            |                          |  |
| <b>Product Development (\$ in Millions)</b>                 |                        |                                |             | FY 2022                               |            | FY 2023 |            | FY 2024 Base                               |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |  |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost                                  | Award Date | Cost    | Award Date | Cost                                       | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |  |
| Advanced Pilot Training Contracts                           | Various                | Various : TBD                  | 789.566     | 125.797                               | Nov 2021   | 8.261   | Feb 2023   | 36.940                                     | Apr 2024   | -           |            | 36.940           | 96.751           | 1,057.315  | 1,057.316                |  |
| <b>Subtotal</b>   |                        |                                | 789.566     | 125.797                               |            | 8.261   |            | 36.940                                     |            | -           |            | 36.940           | 96.751           | 1,057.315  | N/A                      |  |
| <b>Support (\$ in Millions)</b>                             |                        |                                |             | FY 2022                               |            | FY 2023 |            | FY 2024 Base                               |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |  |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost                                  | Award Date | Cost    | Award Date | Cost                                       | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |  |
| Advanced Pilot Training Mission Support                     | Various                | Various : Various              | 10.665      | 5.221                                 | Nov 2021   | 5.068   | Nov 2022   | 5.466                                      | Nov 2023   | -           |            | 5.466            | 9.113            | 35.533     | -                        |  |
| Advanced Pilot Training Direct Cite Authority Civilian Pay  | Various                | AFLCMC : Dayton, OH            | 2.387       | 1.506                                 | Nov 2021   | 1.900   | Oct 2022   | 2.575                                      | Oct 2023   | -           |            | 2.575            | 5.544            | 13.912     | -                        |  |
| <b>Subtotal</b>   |                        |                                | 13.052      | 6.727                                 |            | 6.968   |            | 8.041                                      |            | -           |            | 8.041            | 14.657           | 49.445     | N/A                      |  |
| <b>Test and Evaluation (\$ in Millions)</b>                 |                        |                                |             | FY 2022                               |            | FY 2023 |            | FY 2024 Base                               |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |  |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost                                  | Award Date | Cost    | Award Date | Cost                                       | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |  |
| Advanced Pilot Training Test Support                        | Various                | Edwards AFB : Edwards AFB, CA  | 24.860      | 16.341                                | Mar 2022   | 9.732   | Jan 2023   | 19.616                                     | Jan 2024   | -           |            | 19.616           | 34.180           | 104.729    | -                        |  |
| <b>Subtotal</b>   |                        |                                | 24.860      | 16.341                                |            | 9.732   |            | 19.616                                     |            | -           |            | 19.616           | 34.180           | 104.729    | N/A                      |  |
| <b>Management Services (\$ in Millions)</b>                 |                        |                                |             | FY 2022                               |            | FY 2023 |            | FY 2024 Base                               |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |  |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location | Prior Years | Cost                                  | Award Date | Cost    | Award Date | Cost                                       | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |  |
| Advanced Pilot Training A&AS                                | Various                | AFLCMC : Dayton, OH            | 33.928      | 13.175                                | Feb 2022   | 7.030   | Feb 2023   | 10.016                                     | Feb 2024   | -           |            | 10.016           | 6.765            | 70.914     | -                        |  |

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| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2024 Air Force</b> |  |  |  |  |  |  |  |  |  |  | <b>Date: March 2023</b>   |  |  |  |  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                       |  |  |  |  |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0605223F / <i>Advanced Pilot Training</i> |  |  |  |  | <b>Project (Number/Name)</b><br>655340 / <i>Advanced Trainer Replacement T-7A</i> |  |  |  |  |

| <b>Management Services (\$ in Millions)</b>         |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                           | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| Advanced Pilot Training PSC, Other Government Costs | Various                           | AFLCMC : Dayton, OH                       | 17.195             | 20.290         | Oct 2021          | 1.630          | Nov 2022          | 2.639               | Jan 2024          | -                  |                   | 2.639                | 1.262                   | 43.016            | -                               |
| <b>Subtotal</b>                                     |                                   |   | 51.123             | 33.465         |                   | 8.660          |                   | 12.655              |                   | -                  |                   | 12.655               | 8.027                   | 113.930           | N/A                             |
| <b>Project Cost Totals</b>                          |                                   |   | 878.601            | 182.330        |                   | 33.621         |                   | 77.252              |                   | -                  |                   | 77.252               | 153.615                 | 1,325.419         | N/A                             |

**Remarks**  
 Prior years amounts under Program 0604233F, Specialized Undergraduate Flight Training.  
 Advanced Pilot Training Studies and Analysis: \$0.935M  
 Advanced Pilot Training PMA Government Costs: \$1.383M  
 Advanced Pilot Training A&AS: \$2.676M

FINANCIAL PERFORMANCE: Advanced Pilot Training (APT) T-7A Red Hawk Contracts is evaluated against traditional Research and Development (R&D) program expenditure benchmarks. Unlike many traditional R&D programs, however, the Advanced Pilot Training (APT) T-7A Red Hawk EMD contract is a FPIF contract with progress payments. Ten percent (10%) of incurred costs are withheld until the end of the contract, when they are liquidated. Mandatory funding obligations and progress payment withholds will cause the program to lag traditional expenditure benchmarks, painting an inaccurate portrait of overall program health.

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0605223F / <i>Advanced Pilot Training</i> | <b>Project (Number/Name)</b><br>655340 / <i>Advanced Trainer Replacement T-7A</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

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| <b>Advanced Pilot Training</b>                            |  |
| Engineering and Manufacturing Development (EMD) Phase     |  |
| Development, Test and Evaluation                          |  |
| Milestone C   |  |
| Operational Test Readiness Review (OTRR)                  |  |
| Initial Operational Test & Evaluation (IOT&E)             |  |
| Maintenance Training System Development                   |  |
| Full Rate Production Decision (FRPD)                      |  |
| Initial Operational Capability (IOC)                      |  |
| Aircraft / Ground Based Training System (GBTS) Production |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0605223F / <i>Advanced Pilot Training</i> | <b>Project (Number/Name)</b><br>655340 / <i>Advanced Trainer Replacement T-7A</i> |

Schedule Details

| Events by Sub Project                                     | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Advanced Pilot Training</i></b>                     |         |      |         |      |
| Engineering and Manufacturing Development (EMD) Phase     | 1       | 2022 | 2       | 2025 |
| Development, Test and Evaluation                          | 1       | 2022 | 2       | 2025 |
| Milestone C   | 2       | 2025 | 2       | 2025 |
| Operational Test Readiness Review (OTRR)                  | 1       | 2026 | 1       | 2026 |
| Initial Operational Test & Evaluation (IOT&E)             | 2       | 2026 | 4       | 2026 |
| Maintenance Training System Development                   | 4       | 2024 | 4       | 2028 |
| Full Rate Production Decision (FRPD)                      | 2       | 2027 | 2       | 2027 |
| Initial Operational Capability (IOC)                      | 2       | 2027 | 2       | 2027 |
| Aircraft / Ground Based Training System (GBTS) Production | 2       | 2025 | 4       | 2028 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605229F / HH-60W |
|---|--|

| COST (\$ in Millions)                   | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                   | 1,929.356   | 53.363  | 58.974  | 48.268       | 0.000       | 48.268        | 42.220  | 33.219  | 99.325  | 85.939  | 69.600           | 2,420.264  |
| 654364: <i>Combat Rescue Helicopter</i> | 1,929.356   | 53.363  | 58.974  | 48.268       | 0.000       | 48.268        | 42.220  | 33.219  | 99.325  | 85.939  | 69.600           | 2,420.264  |
| Quantity of RDT&E Articles              | 10          | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**Program MDAP/MAIS Code:** 479

**A. Mission Description and Budget Item Justification**

The HH-60W program will replace the aging HH-60G. The HH-60G currently supports the Air Force's core function of Personnel Recovery. The primary mission of the HH-60G is to conduct day / night / marginal weather Combat Search and Rescue (CSAR) in order to recover downed aircrew or other isolated personnel in hostile or non-permissive environments.

The HH-60W will be capable of employment day or night, in adverse weather, and across the full spectrum of threats to include chemical, biological, radiological, and nuclear. On-board defensive capabilities will permit the HH-60W system to operate with less risk than legacy systems in an increased threat environment. An in-flight air refueling capability will provide an airborne alert capability and extend its combat mission range. The HH-60W system is capable of conducting combat search and rescue airborne mission commander duties. The aircraft will be self-supporting to the maximum extent practical. The HH-60W system may also conduct other collateral missions inherent in their capabilities to conduct Personnel Recovery, such as non-conventional assisted recovery, non-conventional evacuation operations, defense support to civil authorities, civil search and rescue, international aid, emergency aeromedical evacuation, disaster/humanitarian relief, counter-drug activities, support for National Aeronautics and Space Administration flight operations, and insertion/extraction of combat forces.

The HH-60W development program procured a total of ten aircraft as follows: four Engineering, Manufacturing, and Development (EMD) aircraft, five System Demonstration Test Article (SDTA) aircraft, and one modernization flight test aircraft. The FY20 PB added the modernization flight test aircraft. The HH-60W program office will procure necessary ground and flight assets required for both Development Test (DT) and Initial Operational Test & Evaluation (IOT&E). The HH-60W EMD program includes development of the complete HH-60W training system to include HH-60W Weapon System Trainer (WST), Operational Flight Trainer (OFT), Airframe Systems Trainer (AST), Avionics Desktop Trainer (AVDTT), other training devices, with associated spares and support equipment, as well as courseware required to perform flight, aircrew and maintenance training. Other development efforts include a systems integration laboratory, an avionics integration support facility, procurement of data rights and licenses, spares, aircraft, Government test, product support and program support costs (PSC). The HH-60W program will also pursue modernization efforts to develop and integrate enhancements in mission/defensive systems and additional system upgrades to address critical capability gaps. The program office will utilize the additional flight test aircraft in support of modernization efforts to address emerging threats and evolving mission needs.

The Delta Training Device (DTD) effort will procure additional training assets, including but not limited to, maintenance and aircrew Crew Chief Part Task Trainers (CCPTT), aircrew Hoist Procedural Trainers (HPT), Virtual Reality (VR)/Mixed Reality (MR) maintenance aircrew trainers, associated spares and support equipment, as well as Type 1 training.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605229F / HH-60W |
|---|--|

Capability upgrades and modernization development efforts for the HH-60W may include, but are not limited to, the following priorities: Situational Awareness Data Link/ Automatic Direction Finder (SADL/ADF) Removal, Directional Infrared Countermeasures (DIRCM), Electro Optical/Infrared (EO/IR) Tactical Overlay, Global Positioning System Anti-Jam/Anti-Spoof (GPS-AJ), Degraded Visual Environment (DVE) system, Integrated Vehicle Health Monitoring System Control (IVHMS), Video Data Link (VDL), Radio Frequency Jammer (RF-Jammer), Mobile User Objective System (MUOS), Electronic Flight Bags, and Automated Dependent Surveillance Broadcast - In Device. Capability upgrades and modernization also supports inclusion for mandates, system enhancements, hardware and software changes for diminishing manufacturing sources and material shortages as well as Deficiency Report Resolutions. In addition, studies, development, prototyping, testing and integration of emerging technology and support equipment opportunities to increase the effectiveness of the platform are considered in capability upgrades and modernization initiatives.

The HH-60W program funding also supports innovation activities to include studies, analyses, requirements definition, and quick-reaction capability prototypes/ demonstrations to accelerate planning for technology transition, technology insertion and future acquisition programs.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver HH-60W weapon system capability. The use of such program's funds would be in addition to the civilian pay expenses budgeted in program elements 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2022 \$2.961M was expended for civilian pay expenses in this program element, and in FY 2023, \$5.492M is forecasted for civilian pay expenses in this program element.

This requirement supports performance of a full financial audit as required by title 10 U.S.C. Chapter 9A, Sec 240-D.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 62.255         | 58.974         | 26.368              | 0.000              | 26.368               |
| Current President's Budget                        | 53.363         | 58.974         | 48.268              | 0.000              | 48.268               |
| Total Adjustments                                 | -8.892         | 0.000          | 21.900              | 0.000              | 21.900               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | -7.000         | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -1.892         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 21.900              | 0.000              | 21.900               |



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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605229F / HH-60W |
|---|--|

**Change Summary Explanation**

FY 2022 funding was reduced by \$7.0 million due to capability upgrades/modernization schedule changes and other Air Force priorities and reduced by \$1.892 million for Small Business Innovation Research (SBIR).

FY 2024 funding increased by \$21.9 million due to program re-phase for Capability Upgrades/Modernization schedule changes.

**C. Accomplishments/Planned Programs (\$ in Millions)**

|   | FY 2022 | FY 2023 | FY 2024 |
|---|---------|---------|---------|
| <p><b>Title:</b> HH-60W Development</p> <p><b>Description:</b> Develop a new helicopter, associated training system and support elements that leverage fielded, non-developmental technologies to recapitalize the HH-60G fleet.</p> <p><b>FY 2023 Plans:</b><br/>Final award for tactical cross domain solution and modern air combat environment to include but not limited to developing and integrating mission/defensive systems and conduct required testing, training and integration and engineering, product support data analysis efforts and program support costs. Lab and flight testing of software baseline was designed and developed in FY2022 and FY2023.</p> <p>Continue funding for Civilian Pay and SBIR support in FY23.</p> <p><b>FY 2024 Plans:</b><br/>Costs have mostly transitioned to capability upgrades. Development costs include continued funding for Civilian Pay and SBIR Support</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding decreased due to final award of tactical cross-domain solution and modern air combat environment in FY 2023. Only Civilian Pay and SBIR are included in FY 2024 Development Costs.</p> | 12.911  | 17.132  | 7.159   |
| <p><b>Title:</b> HH-60W Government Test and Evaluation</p> <p><b>Description:</b> Conduct test and evaluation on the HH-60W and associated training systems to support DT&amp;E, IOT&amp;E, Live Fire Test and Evaluation (LFT&amp;E), and other test planning and organizational support.</p> <p><b>FY 2023 Plans:</b><br/>Continue developmental and operational test for Capability Upgrades program and Cybersecurity.</p> <p><b>FY 2024 Plans:</b><br/>Continue developmental and operational test for Capability Upgrades program.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b></p>  | 1.044   | 4.000   | 3.117   |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605229F / HH-60W |
|---|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| Funding decreased due to reduced Cybersecurity testing efforts.  |                |                |                |
| <b>Title:</b> Capability Upgrades & Modernization<br><br><b>Description:</b> Modernize the HH-60W fleet by studying, prototyping, testing and integrating developmental and non-developmental technologies into the platform, including electro-optical infrared technology imaging system.<br><br><b>FY 2023 Plans:</b><br>Continue modernization efforts to include prioritized capabilities, software release process, mandates, diminishing manufacturing sources and material shortages, Deficiency Report Resolutions, Operational Flight Programs, studies, prototyping testing and integration of emerging technologies, carry-on equipment, EO/IR, DVE test equipment, DIRCM capabilities and support equipment opportunities.<br><br><b>FY 2024 Plans:</b><br>Continue modernization efforts to include prioritized capabilities, mandates, diminishing manufacturing sources and material shortages, Deficiency Report Resolutions, Operational Flight Programs, studies, prototyping testing and integration of emerging technologies, carry-on equipment, GPS-Antijam, DAIRCM T-1 capabilities and support equipment opportunities.<br><br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funding increased due to increased GPS-Antijam efforts and economic adjustments. | 39.408         | 37.842         | 37.992         |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 53.363         | 58.974         | 48.268         |

| <b>D. Other Program Funding Summary (\$ in Millions)</b>        |                |                |                               |                              |                                |                |                |                |                |                                   |                   |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| <u>Line Item</u>  | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
| • MILCON Line Item 0207229F:<br><i>Combat Rescue Helicopter</i> | 0.000          | 24.395         | 0.000                         | -                            | 0.000                          | 0.000          | 0.000          | 0.000          | 0.000          | 0.000                             | 24.395            |
| • APAF 04 Line Item H060WH:<br><i>Combat Rescue Helicopter</i>  | 711.777        | 1,205.995      | 282.533                       | -                            | 282.533                        | 162.385        | 54.570         | 0.000          | 0.000          | 0.000                             | 2,417.260         |
| • APAF 06 Line Item H060WH:<br><i>Combat Rescue Helicopter</i>  | 76.937         | 119.768        | 0.000                         | -                            | 0.000                          | 1.855          | 2.334          | 2.393          | 2.430          | 0.000                             | 205.717           |
| • APAF 05 Line Item H060WM:<br><i>HH60W Modifications</i>       | 0.000          | 3.083          | 0.000                         | -                            | 0.000                          | 51.863         | 68.326         | 67.174         | 68.368         | 0.000                             | 258.814           |

**Remarks**

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force Date: March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605229F / HH-60W |
|---|--|

**E. Acquisition Strategy**

Procure a new helicopter and associated training systems, and support elements that leverage fielded non-developmental technologies to recapitalize the HH-60G fleet.

Under the development effort, the HH-60W program procured a total of ten aircraft as follows: four Engineering, Manufacturing, and Development (EMD) aircraft, five System Demonstration Test Article (SDTA) aircraft, and one modernization flight test aircraft. The FY20 PB added the modernization flight test aircraft. The HH-60W program office will procure necessary ground and flight assets required for both Development Test (DT) and Initial Operational Test & Evaluation (IOT&E).

The main HH-60W program includes development of the complete HH-60W system to include delivery of ten aircraft, associated training systems to include WST, OFT, AVDTT, AST, other Part Task Trainers, associated spares and support elements/equipment, as well as Type 1 training and courseware required to perform flight, aircrew and maintenance training. An additional prime contract was awarded to develop and acquire additional training devices. Other efforts include, but are not limited to development of a systems integration laboratory and an avionics integration support facility, as well as procurement of data rights and licenses, spares, product support and program support costs for the EMD effort. The HH-60W modernization effort will maximize, where possible, opportunities for production line cut-in to minimize the amount of future post-production modifications needed.

The current contract types for this effort are predominantly Fixed Price. As originally planned following source selection, a formal HH-60W Training System Requirements Analysis (TSRA) was completed in Sep 2015. This analysis identified additional training requirements not accounted for in the original contract. A subsequent TSRA review incorporating the latest annual Ready Aircrew Program (RAP) Tasking Memorandum (RTM) clarified the additional training requirements to increase the research and development of training devices and courseware. These additional training devices, associated spares, support equipment, Type 1 Training and initial contractor support were competitively awarded in Aug 18.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0605229F / HH-60W | <b>Project (Number/Name)</b><br>654364 / Combat Rescue Helicopter |
|--|--|---|

| <b>Product Development (\$ in Millions)</b>  |                        |   |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|---|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location                | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| HH-60W aircraft development, integration, test articles, trainers, support and contractor test | C/FPIF                 | Sikorsky Aircraft Corporation : Stratford, CT | 1,692.926   | 6.525   | Mar 2023   | 4.674   | Jan 2024   | -            |            | -           |            | -             | 0.000            | 1,704.125  | -                        |
| Acquisition of additional HH-60W training devices  | C/FFP                  | Various : TBD                                 | 33.622      | 1.734   | Jul 2022   | 4.000   | May 2023   | -            |            | -           |            | -             | 0.000            | 39.356     | -                        |
| HH-60W Capability Upgrades and Modernization- New IDIQ Contract                                | C/FPIF                 | Sikorsky Aircraft Corp : Stratford, CT        | 58.545      | 39.408  | Oct 2022   | 37.842  | Jun 2023   | 37.992       | Jun 2024   | -           |            | 37.992        | 222.791          | 396.578    | -                        |
| <b>Subtotal</b>  |                        |   | 1,785.093   | 47.667  |            | 46.516  |            | 37.992       |            | -           |            | 37.992        | 222.791          | 2,140.059  | N/A                      |

| <b>Support (\$ in Millions)</b>  |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| HH-60W product support related to aircraft development, integration, test articles, trainers and contractor test | Various                | Various : TBD                  | 55.495      | 1.691   | Nov 2022   | 2.966   | Mar 2023   | 1.767        | Jan 2024   | -           |            | 1.767         | 9.542            | 71.461     | -                        |
| Direct Cite Civ Pay  | Various                | AFLCMC : TBD                   | 0.000       | 2.961   | Oct 2022   | 5.492   | May 2023   | 5.392        | May 2024   | -           |            | 5.392         | 6.500            | 20.345     | -                        |
| <b>Subtotal</b>  |                        |                                | 55.495      | 4.652   |            | 8.458   |            | 7.159        |            | -           |            | 7.159         | 16.042           | 91.806     | N/A                      |

| <b>Test and Evaluation (\$ in Millions)</b>   |                        |                                     |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|-------------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location      | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| HH-60W planning and testing to support developmental and operational test, live fire test and other weapon system testing and support | PO                     | 413th Test Squadron : Eglin AFB, FL | 49.842      | 1.044   | Jun 2022   | 4.000   | Mar 2023   | 3.117        | Jan 2024   | -           |            | 3.117         | 21.870           | 79.873     | -                        |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0605229F / HH-60W | <b>Project (Number/Name)</b><br>654364 / Combat Rescue Helicopter |
|--|--|---|

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| <b>Subtotal</b>                             |                        |                                | 49.842      | 1.044   |            | 4.000   |            | 3.117        |            | -           |            | 3.117         | 21.870           | 79.873     | N/A                      |

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| HH-60W A&AS Support                         | C/CPFF                 | EPASS : Dayton, OH             | 28.761      | -       |            | -       |            | -            |            | -           |            | -             | 0.000            | 28.761     | -                        |
| HH-60W Other Program Support Costs          | Various                | Various : Various              | 10.165      | -       |            | -       |            | -            |            | -           |            | -             | 0.000            | 10.165     | -                        |
| <b>Subtotal</b>                             |                        |                                | 38.926      | -       |            | -       |            | -            |            | -           |            | -             | 0.000            | 38.926     | N/A                      |

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | 1,929.356   | 53.363  | 58.974  | 48.268       | -           | 48.268        | 260.703          | 2,350.664  | N/A                      |

**Remarks**  
 FINANCIAL PERFORMANCE: HH-60W is evaluated against traditional Research and Development (R&D) program expenditure benchmarks. Unlike many traditional R&D programs, however, the HH-60W EMD contract is primarily a FPIF contract with progress payments. Ten percent (10%) of incurred costs are withheld until the end of the contract, when they are liquidated. Mandatory funding obligations, progress payment restrictions and DFAS withholds will cause the program to lag traditional expenditure benchmarks, painting an inaccurate portrait of overall program health.

FY20+: Transitioned Management Services to APAF.

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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0605229F / HH-60W | <b>Project (Number/Name)</b><br>654364 / Combat Rescue Helicopter |
|--|--|---|

|  | FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |  |  |  |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|--|--|--|
|  | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |  |  |  |
| <b>HH-60W</b>  |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |  |  |  |
| HH-60W EMD Development                                       |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |  |  |  |
| HH-60W CRH Training System EMD Development                   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |  |  |  |
| HH-60W Test and Evaluation                                   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |  |  |  |
| Developmental Test and Evaluation                            |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |  |  |  |
| Capability Upgrades and Modernization                        |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |  |  |  |
| Required Assets Available for Initial Operational Capability |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |  |  |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0605229F / HH-60W | <b>Project (Number/Name)</b><br>654364 / Combat Rescue Helicopter |

Schedule Details

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b>HH-60W</b>  |         |      |         |      |
| HH-60W EMD Development                                       | 1       | 2022 | 2       | 2024 |
| HH-60W CRH Training System EMD Development                   | 1       | 2022 | 3       | 2023 |
| HH-60W Test and Evaluation                                   | 1       | 2022 | 4       | 2028 |
| Developmental Test and Evaluation                            | 1       | 2022 | 4       | 2022 |
| Capability Upgrades and Modernization                        | 1       | 2022 | 4       | 2028 |
| Required Assets Available for Initial Operational Capability | 2       | 2022 | 2       | 2022 |

**Note**  
Capability Upgrades end date projected into FY 2029.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605238F / <i>Ground Based Strategic Deterrent EMD</i> |
|---|---|

| COST (\$ in Millions)                                  | Prior Years | FY 2022 | FY 2023   | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025   | FY 2026   | FY 2027   | FY 2028   | Cost To Complete | Total Cost |
|--|-------------|---------|-----------|--------------|-------------|---------------|-----------|-----------|-----------|-----------|------------------|------------|
| Total Program Element                                  | 0.000       | 0.000   | 3,614.290 | 3,746.935    | 0.000       | 3,746.935     | 3,401.679 | 3,246.870 | 2,610.928 | 1,855.302 | 2,168.865        | 20,644.869 |
| 655238: <i>GROUND BASED STRATEGIC DETERRENT (GBSD)</i> | 0.000       | 0.000   | 3,614.290 | 3,746.935    | 0.000       | 3,746.935     | 3,401.679 | 3,246.870 | 2,610.928 | 1,855.302 | 2,168.865        | 20,644.869 |
| Quantity of RDT&E Articles                             | -           | -       | 5         | 3            | -           | 3             | 6         | 7         | -         | -         |                  |            |

**Program MDAP/MAIS Code:** 493

**Note**

In FY 2023, Program 0605230F, Ground Based Strategic Deterrent, Project 641025, Ground Based Strategic Deterrent, efforts were transferred to Program 0605238F, Ground Based Strategic Deterrent EMD, Project 655238, Ground Based Strategic Deterrent, in order to account for program transition to System Development and demonstration. (Budget Activity 5).

**A. Mission Description and Budget Item Justification**

The Sentinel (GBSD) program has been designated as LGM-35A Sentinel. The Sentinel (GBSD) program will design, develop, produce and deploy a replacement for the current Minuteman III (MM III) Intercontinental Ballistic Missile (ICBM) weapon system in order to maintain a safe, secure, reliable, and effective nuclear deterrent. The Sentinel (GBSD) program will deliver a fully integrated weapon system beginning in Fiscal Year 2029 that will lower lifecycle costs and close key capability gaps and vulnerabilities identified in the Sentinel (GBSD) Capabilities Based Assessment, Sentinel (GBSD) Capabilities Development Document, and the Sentinel (GBSD) Analysis of Alternatives. Sentinel (GBSD) will also mitigate ground-based deterrent degradation due to MM III component age-out and attrition.

The Sentinel (GBSD) program will include prime contractor development of applicable support equipment, data, flight test hardware and infrastructure, and training systems while examining and mitigating risk during the MM III to Sentinel (GBSD) transition. The Sentinel (GBSD) program office has partnered with MM III program office to facilitate communication and integration of the weapon system recapitalization during the MM III to Sentinel (GBSD) transition. This program includes any needed nuclear surety and certification and system vulnerability assessments.

During the Engineering and Manufacturing Development (EMD) phase, the Sentinel (GBSD) program will execute 1) government system engineering, analytics, and test capability development; 2) air vehicle equipment development; 3) command & launch systems development; 4) infrastructure and deployment development; 5) support systems development; and 6) weapon system integration.

Government systems engineering investments include development in model-based systems engineering (MBSE), integration, test software, product life-cycle management framework, and modernization of existing system engineering/integration labs and infrastructure. Air vehicle equipment is an integrated missile stack including the propulsion, post-boost, guidance, and re-entry systems sub-components. Command & launch encompasses all command and control components and interfaces, associated ground hardware, ground control equipment and associated software directly related to the survivability, monitoring, and launch of the

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force Date: March 2023

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605238F / <i>Ground Based Strategic Deterrent EMD</i> |
|---|---|

replacement flight system. Launch systems include launch centers, launch facilities, and associated structures and ground mechanical systems. Support systems include operator and maintainer training systems hardware and software, security system architecture, transport support equipment, program office and weapon system facilities, and peculiar/common support equipment. Weapon system integration risk reduction includes non-proprietary open systems architecture with well-defined interfaces and a modular design at the weapon system level to allow future modification and technology insertion. As Sentinel (GBSD) progresses toward Critical Design Review (CDR), the Sentinel (GBSD) weapon system design will dictate the parameters for the MILCON real property requirements and their integration with the weapon system component requirements as these are inextricably linked.

The funding required for Fiscal Year 2024 will be used to continue the execution of the EMD contract to advance Sentinel (GBSD) program major activities to include systems engineering , information technology, data management, analytical capabilities and to deliver a flexible, integrated weapon system critical design. The program will modify, modernize, and expand the analytic environment and labs to support EMD activities to enable full execution of the program's capability to own the technical baseline throughout the program life cycle. This involves establishing a digital engineering system including a supporting environment / infrastructure to perform digital activities, to collaborate with, and to communicate across stakeholders. The Sentinel (GBSD) program will continue to examine and mature air vehicle equipment, command and launch, cybersecurity, operator and maintenance training systems hardware and software, security system architecture, transport sub-systems, Peculiar/Common Support Equipment and associated ground technologies. The program will also continue to mature and refine weapon system and non-operational software, software integration and development, modular system architecture requirements, and product life-cycle management. This will continue to require execution and improvement to the unified certification strategy facilitating system validation and verification for nuclear surety, cyber security, and nuclear safety requirements. The program will also expand and mature the analytical, information technology, test, and data management capabilities to ensure access to weapon system design information is properly controlled and securely transmitted between government and contractors. The program will continue to develop Vandenberg Space Force Base (VSFB) test capabilities and provision Western Range Test capabilities for the Flight Test Program. Additionally, the Sentinel (GBSD) program funds all required developmental and operational test and evaluation activities to meet initial and full operational capability milestones including, but not limited to, developing, improving and modernizing test capabilities essential to reaching those milestones when existing test capabilities are inadequate or non-existent. The program will also continue integrating the capability to meet the requirement for dual-capable, air based, survivable launch . Finally, the program will establish a government-owned and government-operated DevSecOps / software stack within a cloud environment.

FY24 PE 0605238F is submitting a Technical Adjustment to realign \$7.650 million to MGBSD1 Aircraft Procurement, Air Force for SLP-A kit procurement. MGBSD1 will be a new start in FY24.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605833F or 0605831F. In FY2022 0.000M was expended for civilian pay expenses in this program element, and in FY2023 50.000M is forecasted for civilian pay expenses in this program element.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605238F / <i>Ground Based Strategic Deterrent EMD</i> |
|---|---|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 0.000          | 3,614.290      | 3,614.629           | 0.000              | 3,614.629            |
| Current President's Budget                        | 0.000          | 3,614.290      | 3,746.935           | 0.000              | 3,746.935            |
| Total Adjustments                                 | 0.000          | 0.000          | 132.306             | 0.000              | 132.306              |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 132.306             | 0.000              | 132.306              |

**Change Summary Explanation**

FY 2024 increase due to the Sentinel (GBSD) program continuing to advance its EMD Development as well as identifying and reducing program transition risks. The program continues to advance its test series for Development Test & Evaluation (DT&E) and Operational Test & Evaluation (OT&E) for the air vehicle, launch facility, launch center, and all other test support assets.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
|---|----------------|----------------|----------------|

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| <p><b>Title:</b> Engineering &amp; Manufacturing Development (EMD) Product Development</p> <p><b>Description:</b> The EMD Product Development major thrust captures the planned events and activities of the EMD prime contractor in the design, development and test activities of the Sentinel (GBSD) weapon system. The primary objectives on contract are to develop, manufacture, test, and deliver an affordable, integrated WS that meets the WSS requirements; incorporate modularity in the WS design to ensure Sentinel (GBSD) can adapt to meet the challenges of a dynamic threat environment, technological changes, and budget uncertainty, and reduce technical, engineering, integration, test, and lifecycle cost risk. The EMD Product Development includes the completion of detailed design for all hardware and software, the build and test of prototypes and first articles to verify compliance with capability requirements, and preparations for production and deployment. It also includes the execution of engineering design reviews, development test &amp; evaluation, audits, and readiness reviews at the system and subsystem levels. These reviews include subsystem and system Critical Design Reviews (CDR), Full Functional Test, System Qualification and Verification Review, Functional Configuration Audits, Physical Configuration Audits, and Test Readiness Reviews. The EMD Product Development major thrust activities are linked with the corresponding EMD Government Support major thrust activities to ensure the government owns the technical baseline for the system acquisition. The objectives are: 1) advance Sentinel (GBSD) major activities, systems engineering activities, information technology, data management, analytical capabilities and deliver a flexible, integrated weapon system critical design, 2) prototype and test mature technologies related to</p> | 0.000 | 3,048.121 | 3,042.691 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605238F / <i>Ground Based Strategic Deterrent EMD</i> |
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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
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| <p>the major activities and demonstrate performance of sub-system and system capabilities through prototyping and testing and 3) engage in rapid prototyping events to mature future design increments.</p> <p><b><i>FY 2023 Plans:</i></b></p> <ul style="list-style-type: none"> <li>• Conduct sub-system critical design reviews (CDRs) for multiple elements of the weapon system including all three stages of the booster stack, guidance computer, and payload shroud.</li> <li>• Continue to execute the EMD Contract to advance Sentinel (GBSD) major activities to include systems engineering activities, information technology, data management, analytical capabilities and deliver a flexible, integrated weapon system critical design.</li> <li>• Continue to examine and mature air vehicle equipment, command and launch, cybersecurity, operator and maintenance training systems hardware and software, security system architecture, transport sub-systems, and associated ground technologies. Refine requirements and modular architectures through trade studies, prototyping, demonstration, and analysis.</li> <li>• Continue to build and refine Mission Modeling Framework (MMF) by incorporating higher-fidelity weapon system designs and updates to threat landscape to facilitate ongoing assessment of weapon system performance against the authoritative threat.</li> <li>• Continue to mature the assessment of the current MM III infrastructure to determine, through onsite assessments and analysis, the extent of degradation and evaluate for future upgrade, replacement, preparation, and modernization of operational and test facilities.</li> <li>• Continue to mature the weapon system by conducting trade studies, system engineering, test activities, and system modeling and simulation.</li> <li>• Continue to assess fielding requirements for air vehicle equipment, command &amp; launch, and infrastructure and appropriate timelines to transition from MM III to Sentinel (GBSD) solution.</li> <li>• Conduct planning for the use of MBSE tools during Operations and Sustainment phase in order to transform ICBM sustainment and supply chain management.</li> <li>• Continue to mature and refine weapon system and non-operational software, software integration and development, modular system architecture requirements, and product life-cycle management.</li> <li>• Continue to further develop analytical, information technology, and data management capabilities.</li> <li>• Continue to procure, design, expand, and prepare information technology equipment and network access for new Sentinel (GBSD) facilities to support program personnel.</li> <li>• Continue to implement information systems and information technology design to support EMD execution; onboard program personnel into all Sentinel (GBSD) cloud networks, and provide applications needed in the cloud to execute the program.</li> <li>• Continue to plan and execute critical software risk reduction activities.</li> <li>• Continue to expand and mature the analytical, information technology, test, and data management capabilities to ensure access to weapon system design information is properly controlled and securely transmitted between government and contractors.</li> <li>• Continue to expand large data ingest capabilities to support consumption of flight test and Model Based Architecture and Software Engineering data.</li> </ul> |                |                |                |

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605238F / <i>Ground Based Strategic Deterrent EMD</i> |
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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
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| <ul style="list-style-type: none"> <li>• Continue to execute and improve the unified certification strategy facilitating system validation and verification for nuclear surety, cyber security, and nuclear safety requirements.</li> <li>• Continue to plan, develop, mature capability integration with the Nuclear Command, Control, and Communications (NC3) Center for future command, control, and communication requirements.</li> <li>• Continue to collaborate with the National Nuclear Security Administration to ensure seamless integration of Department of Energy assets into the Sentinel (GBSD) weapon system.</li> <li>• Continue to integrate the Mk21A Reentry Vehicle (Program 0101328F), ICBM Fuze Modernization (Program 0604933F), and Sentinel (GBSD) test programs.</li> <li>• Continue to integrate the capability to meet the requirement for dual-capable, air-based, survivable launch.</li> <li>• Continue to develop and test reentry vehicles to meet joint Department of Energy and Department of Defense specific requirements.</li> <li>• Continue to conduct studies and initiatives to build schedule margin, reduce risk in the MM III to Sentinel (GBSD) transition, and reduce life cycle costs as the program progresses through the EMD phase to the Production phase.</li> <li>• Continue activities necessary to plan, program, and execute weapon system structures needed to support program milestones and test objectives.</li> <li>• Continue facility and infrastructure conversions and fit-out at Vandenberg SFB, Hill AFB, and F.E. Warren to support First Flight developmental test operations and facility prototypes to support Sentinel (GBSD) Operations and Deployment.</li> <li>• RDT&amp;E quantities are built and delivered by the prime contractor to utilize in prototyping and design testing as the prime contractor progresses toward the final design solution and hardware needed for First Flight.</li> <li>• Complete the solid rocket motor development tests (1 per stage).</li> <li>• Complete LF-04 and LF-26 construction and weapon system install.</li> <li>• Continue the design maturation of the Transporter Erector, Payload Transporter, Missile Transporter, Post Boost Attitude Control Module Transporter, and other common / peculiar support equipment via numerous incremental design reviews.</li> <li>• Conduct the critical design reviews for Transporter Erector, Payload Transporter, Missile Transporter, and Post Boost Attitude Control Module Transporter.</li> <li>• Complete the design, manufacturing, and delivery of the Limited Effectivity Test Support Equipment required for Pathfinder and First Flight.</li> <li>• Continued Training development with completion of Sentinel Objectives &amp; Media Analysis Report (OMAR), Training Systems Basis Analysis Report (TSBAR) and final Training Systems Requirement Analysis (TSRA).</li> <li>• Develop courseware for first flight informal training and formal courseware review software.</li> </ul> |                |                |                |

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605238F / <i>Ground Based Strategic Deterrent EMD</i> |
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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
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| <p>• Completion of level 3 specifications for Maintenance Training Facility, Security Forces Tactics Trainer, Collaborative Procedures Trainer, Ground Test Missile (Trainer), Security Systems Controller Trainer, Integrated Command Center Trainer, and Cyber Operations Trainer.</p> <p><b><i>FY 2024 Plans:</i></b></p> <ul style="list-style-type: none"> <li>• Conduct remaining sub-system Critical Design Reviews (CDR) in the lead-up to Weapon System (WS) CDR in 3QFY24.</li> <li>• Continue to execute the EMD Contract to advance Sentinel (GBSD) major activities to include first development flight test milestone, systems engineering activities, test activities, information technology, data management, analytical capabilities and deliver a flexible, integrated weapon system critical design. Establish an initial product baseline at CDR for the weapon system.</li> <li>• Continue to examine and mature air vehicle equipment, command and launch, cybersecurity, operator and maintenance training systems hardware and software, security system architecture, transport sub-systems, and associated ground technologies.</li> <li>• Continue to build and refine Mission Modeling Framework (MMF) by incorporating higher-fidelity weapon system designs and updates to threat landscape to facilitate ongoing assessment of weapon system performance against the authoritative threat.</li> <li>• Continue to mature the assessment of the current MM III infrastructure to determine, through onsite assessments and analysis, the extent of degradation and evaluate for future upgrade, replacement, preparation, and modernization of operational and test facilities.</li> <li>• Continue to mature the weapon system by conducting trade studies, system engineering, test activities, and system modeling and simulation.</li> <li>• Continue to assess fielding requirements for air vehicle equipment, command &amp; launch, and infrastructure and appropriate timelines to transition from MM III to Sentinel (GBSD) solution.</li> <li>• Conduct planning for the use of MBSE tools during Operations and Sustainment phase in order to transform ICBM sustainment and supply chain management.</li> <li>• Continue to mature and refine weapon system and non-operational software, software integration and development, modular system architecture requirements, and product life-cycle management.</li> <li>• Continue to further develop analytical, information technology, and data management capabilities.</li> <li>• Continue to procure, design, expand, and prepare information technology equipment and network access for new Sentinel facilities to support program personnel.</li> <li>• Continue to implement information systems and information technology design to support EMD execution; onboard program personnel into all Sentinel cloud networks, and provide applications needed in the cloud to execute the program.</li> <li>• Continue to plan and execute critical software risk reduction activities.</li> <li>• Continue to expand and mature the analytical, information technology, test, and data management capabilities to ensure access to weapon system design information is properly controlled and securely transmitted between government and contractors.</li> <li>• Continue to expand large data ingest capabilities to support consumption of flight test and Model Based Architecture and Software Engineering data.</li> </ul> |                |                |                |

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605238F / <i>Ground Based Strategic Deterrent EMD</i> |
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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
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| <ul style="list-style-type: none"> <li>• Continue to execute and improve the unified certification strategy facilitating system validation and verification for nuclear surety, cyber security, and nuclear safety requirements.</li> <li>• Continue to plan, develop, mature capability integration with the Nuclear Command, Control, and Communications (NC3) Center for future command, control, and communication requirements.</li> <li>• Continue to collaborate with the National Nuclear Security Administration to ensure seamless integration of Department of Energy assets into the Sentinel (GBSD) weapon system.</li> <li>• Continue to integrate the Mk21A Reentry Vehicle (Program 0101328F), ICBM Fuze Modernization (Program 0604933F), and Sentinel (GBSD) test programs.</li> <li>• Continue to integrate the capability to meet the requirement for dual-capable, air-based, survivable launch.</li> <li>• Continue to develop and test reentry vehicles to meet joint Department of Energy and Department of Defense specific requirements.</li> <li>• Continue to plan, develop, and mature support systems to include Common Support Equipment/Peculiar Support Equipment and all transportation equipment.</li> <li>• Continue to conduct studies and initiatives to build schedule margin, reduce risk in the MM III to Sentinel (GBSD) transition, and reduce life cycle costs as the program progresses through the EMD phase to the Production phase.</li> <li>• Continue facility and infrastructure conversions and fit-out at Vandenberg SFB, Hill AFB, and F.E. Warren to support First Flight developmental test operations and facility prototypes to support Sentinel (GBSD) Operations and Deployment.</li> <li>• Continue facility and infrastructure conversions and fit-out at Vandenberg SFB to support First Flight developmental test operations.</li> <li>• RDT&amp;E quantities are built and delivered by the prime contractor to utilize in prototyping and design testing as the prime contractor progresses toward the final design solution and hardware needed for First Flight.</li> </ul> <p><b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br/>FY 2024 funding remains constant due to the Sentinel (GBSD) program continuing to advance its EMD Development as well as identifying and reducing program transition risks. The program continues to advance its test series for Development Test &amp; Evaluation (DT&amp;E) and Operational Test &amp; Evaluation (OT&amp;E) for the air vehicle, launch facility, launch center, and all other test support assets.</p> |                |                |                |
| <p><b><i>Title:</i></b> EMD Government Support</p> <p><b><i>Description:</i></b> The EMD Government Support major thrust captures planned events and activities for government agencies, Federally Funded Research and Development Centers (FFRDCs), University Affiliated Research Centers (UARCs), and other partners in the support of the EMD prime contractor efforts in design, development, and test of the weapon system. The EMD Government Support major thrust activities are linked with the corresponding EMD Product Development major thrust activities to ensure the government owns the technical baseline for the system acquisition. The objectives are: 1) advance Sentinel (GBSD)</p>  | 0.000          | 566.169        | 704.244        |

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605238F / <i>Ground Based Strategic Deterrent EMD</i> |
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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
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| <p>major activities, systems engineering activities, information technology, data management, analytical capabilities and deliver a flexible, integrated weapon system critical design, 2) prototype and test mature technologies related to the major activities and demonstrate performance of sub-system and system capabilities through prototyping and testing and 3) engage in rapid prototyping events to mature future design increments.</p> <p><b>FY 2023 Plans:</b></p> <ul style="list-style-type: none"> <li>• Continue to modify, modernize, and expand the analytic environment and labs to support EMD activities to enable full execution of the program's capability to own the technical baseline throughout the program life cycle. This involves establishing a digital engineering system including a supporting environment/infrastructure to perform digital activities, collaborate with, and communicate across stakeholders.</li> <li>• Continue to examine and mature air vehicle equipment, command and launch, cybersecurity, operator and maintenance training systems hardware and software, security system architecture, transport sub-systems, and associated ground technologies. Refine requirements and modular architectures through trade studies, prototyping, demonstration, and analysis.</li> <li>• Continue to assess fielding requirements for air vehicle equipment, command and launch, infrastructure and appropriate timelines to transition from MM III to Sentinel (GBSD) solution.</li> <li>• Continue to conduct studies and initiatives to build schedule margin, reduce risk in the Minuteman III to Sentinel (GBSD) transition, and reduce life cycle costs as the program progresses through the EMD phase to the Production phase.</li> <li>• Continue to mature and refine weapon system and non-operational software, software integration and development, modular system architecture requirements, and product life-cycle management.</li> <li>• Continue to mature the assessment of the current MM III infrastructure to determine, through onsite assessments and analysis, the extent of degradation and evaluate for future upgrade, replacement, preparation, and modernization of operational and test facilities.</li> <li>• Continue to execute all government critical path activities to include, but not limited to, Preliminary Draft Environmental Impact Statement (PDEIS), Coordinating Draft Environmental Impact Studies (EIS), Environmental Baseline Surveys, and Section 106 Programmatic Agreement.</li> <li>• Continue to mature the weapon system by conducting trade studies, system engineering, test activities, and system modeling and simulation.</li> <li>• Continue to build and refine Mission Modeling Framework (MMF) by incorporating higher-fidelity weapon system designs and updates to threat landscape to facilitate ongoing assessment of weapon system performance against the authoritative threat.</li> <li>• Continue to expand large data ingest capabilities to support consumption of flight test and Model Based Architecture and Software Engineering data.</li> <li>• Conduct planning for the use of MBSE tools during Operations and Sustainment phase in order to transform ICBM sustainment and supply chain management.</li> <li>• Continue to further develop analytical, information technology, and data management capabilities.</li> </ul> |                |                |                |



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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605238F / <i>Ground Based Strategic Deterrent EMD</i> |
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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
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| <ul style="list-style-type: none"> <li>• Continue to procure, design, expand, and prepare information technology equipment and network access for new Sentinel facilities to support program personnel.</li> <li>• Continue to implement information systems and information technology design to support EMD execution; onboard program personnel into all Sentinel cloud networks, and provide applications needed in the cloud to execute the program.</li> <li>• Continue to expand and mature the analytical, information technology, test, and data management capabilities to ensure access to weapon system design information is properly controlled and securely transmitted between government and contractors.</li> <li>• Continue to build and establish an industrial base for innovation around the Sentinel (GBSD) enterprise to maintain modularity and adaptability for the life cycle of the weapon system.</li> <li>• Continue to plan and execute critical software risk reduction activities.</li> <li>• Continue to expand the Information Systems/Information Technology/Information Assurance infrastructure networks and personnel required to support Top Secret, Special Access Programs, and collateral activities and expand capability at mission partner operating locations and network access points.</li> <li>• Continue to expand government-owned and government-operated DevSecOps/software stack to include data and software artifact transport between classified environments using cross domain solutions.</li> <li>• Continue to implement cloud network infrastructure improvements to increase network reliability, availability, provide continued security and reduce latency across the networks.</li> <li>• Continue to refine Security Classification Guide, update impacts, and implement updates and changes through all Government and contractor programmatic activities.</li> <li>• Continue to integrate the Mk21A Reentry Vehicle (Program 0101328F), ICBM Fuze Modernization (Program 0604933F), and Sentinel (GBSD) test programs.</li> <li>• Continue to execute and improve the unified certification strategy which meets nuclear surety, cyber security, and nuclear safety requirements.</li> <li>• Continue to develop a common cryptographic device and supporting equipment for use in multiple subsystems and/or networks throughout the Sentinel (GBSD) weapon system.</li> <li>• Continue to plan, develop, and mature capability integration with the NC3 Center for future command, control, and communication requirements.</li> <li>• Continue to increase FFRDC/UARC support to maintain the ability to own the technical baseline in EMD.</li> <li>• Continue to collaborate with National Nuclear Security Administration to ensure seamless integration of Department of Energy (DoE) assets into Sentinel (GBSD) weapon system.</li> <li>• Continue to develop test re-entry vehicles to meet joint DoE/DoD specific requirements.</li> <li>• Continue to integrate requirement for dual-capable, air-based, survivable launch capability.</li> <li>• Continue to develop, improve &amp; modernize government test capabilities required for successful Developmental Test (DT) and Operational Test (OT) including but not limited to, Vandenberg SFB test capabilities, Western Range Test capabilities, Broad Ocean Area Terminal Area Scoring Test Capability, and various noise, vibration and harshness and nuclear hardness</li> </ul> |                |                |                |

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605238F / <i>Ground Based Strategic Deterrent EMD</i> |
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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
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| <p>and survivability test sites/beds as required. Prepare &amp; verify test capabilities' readiness to support the flight test campaign commencing in FY24. Leverage digital engineering tools &amp; physical test data to mature Modeling &amp; Simulation tools toward authoritative virtualization.</p> <ul style="list-style-type: none"> <li>• Continue activities necessary to plan, program, and execute weapon system structures needed to support program milestones and test objectives.</li> <li>• Continue to modify and expand GBSD workspace at all operating locations to accommodate a growing workforce and provide the tools for the workforce to own the technical baseline.</li> <li>• Complete the solid rocket motor development tests (1 per stage).</li> <li>• Complete LF-04 and LF-26 construction and weapon system install.</li> <li>• Continue the development, manufacturing, and qualification of the first end units for the Transporter Erector, Payload Transporter, Missile Transporter, Post Boost Attitude Control Module Transporter, and all other common and peculiar support equipment.</li> <li>• Continue Limited Effectivity Test Support Equipment gap analysis and verification process; and continue to transition Limited Effectivity Test Support Equipment to Operational-level support equipment.</li> <li>• Special Contractor/Type 1 courseware and training development, to include Secondary Launch Platform - Airborne Operators Airborne Procedures Trainer delivery.</li> </ul> <p><b><i>FY 2024 Plans:</i></b></p> <ul style="list-style-type: none"> <li>• Continue to modify, modernize, and expand the analytic environment and labs to support EMD activities to enable full execution of the program's capability to own the technical baseline throughout the program life cycle. This involves establishing a digital engineering system including a supporting environment/infrastructure to perform digital activities, collaborate with, and communicate across stakeholders.</li> <li>• Continue to examine and mature air vehicle equipment, command and launch, cybersecurity, operator and maintenance training systems hardware and software, security system architecture, transport sub-systems, and associated ground technologies. Refine requirements and modular architectures through trade studies, prototyping, demonstration, and analysis.</li> <li>• Continue to assess fielding requirements for air vehicle equipment, command and launch, infrastructure and appropriate timelines to transition from MM III to Sentinel (GBSD) solution.</li> <li>• Continue to conduct studies and initiatives to build schedule margin, reduce risk in the Minuteman III to Sentinel (GBSD) transition, and reduce life cycle costs as the program progresses through the EMD phase to the Production phase.</li> <li>• Continue to mature and refine weapon system and non-operational software, software integration and development, modular system architecture requirements, and product life-cycle management.</li> <li>• Continue to mature the assessment of the current MM III infrastructure to determine, through onsite assessments and analysis, the extent of degradation and evaluate for future upgrade, replacement, preparation, and modernization of operational and test facilities.</li> </ul> |                |                |                |

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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
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| <ul style="list-style-type: none"> <li>• Continue to execute all government critical path activities to include, but not limited to, Environmental Impact Statement (EIS), Environmental Baseline Surveys, and Section 106 Programmatic Agreement.</li> <li>• Continue to mature the weapon system by conducting trade studies, system engineering, test activities, and system modeling and simulation.</li> <li>• Continue to build and refine MMF by incorporating higher-fidelity weapon system designs and updates to threat landscape to facilitate ongoing assessment of weapon system performance against the authoritative threat.</li> <li>• Continue to expand large data ingest capabilities to support consumption of flight test and Model Based Architecture and Software Engineering data.</li> <li>• Conduct planning for the use of MBSE tools during Operations and Sustainment phase in order to transform ICBM sustainment and supply chain management.</li> <li>• Continue to further develop analytical, information technology, and data management capabilities.</li> <li>• Continue to procure, design, expand, and prepare information technology equipment and network access for new Sentinel facilities to support program personnel.</li> <li>• Continue to implement information systems and information technology design to support EMD execution; onboard program personnel into all Sentinel cloud networks, and provide applications needed in the cloud to execute the program.</li> <li>• Continue to expand and mature the analytical, information technology, test, and data management capabilities to ensure access to weapon system design information is properly controlled and securely transmitted between government and contractors.</li> <li>• Continue to build and establish an industrial base for innovation around the Sentinel (GBSD) enterprise to maintain modularity and adaptability for the life cycle of the weapon system as well as to continue the digital transformation to support the Sentinel (GBSD) program.</li> <li>• Continue to plan and execute critical software risk reduction activities.</li> <li>• Continue to expand the Information Systems/Information Technology/Information Assurance infrastructure networks and personnel required to support Top Secret, Special Access Programs, and collateral activities and maintain and expand capability at mission partner operating locations and network access points.</li> <li>• Continue to expand government-owned and government-operated DevSecOps/software stack to include data and software artifact transport between classified environments using cross domain solutions.</li> <li>• Continue to implement cloud network infrastructure improvements to increase network reliability, availability, provide continued security, begin implementing cloud agnostic approach, and reduce latency across the networks.</li> <li>• Continue to refine Security Classification Guide, update impacts, and implement updates and changes through all Government and contractor programmatic activities.</li> <li>• Continue to integrate the Mk21A Reentry Vehicle (Program 0101328F), ICBM Fuze Modernization (Program 0604933F), and Sentinel (GBSD) test programs.</li> <li>• Continue to execute and improve the unified certification strategy which meets nuclear surety, cyber security, and nuclear safety requirements.</li> </ul> |                |                |                |

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| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <ul style="list-style-type: none"> <li>• Continue to develop a common cryptographic device and supporting equipment for use in multiple subsystems and/or networks throughout the Sentinel (GBSD) weapon system.</li> <li>• Continue to plan, develop, and mature capability integration with the NC3 Center for future command, control, and communication requirements.</li> <li>• Continue to increase FFRDC/UARC support to maintain the ability to own the technical baseline in EMD.</li> <li>• Continue to increase Government Sustainment organizational support to maintain the ability to own and sustain the Hardware and Software technical baseline.</li> <li>• Continue to plan, develop, and mature the sustainment strategies including Digital sustainment, Software Sustainment, and Hardware Sustainment.</li> <li>• Continue to collaborate with National Nuclear Security Administration to ensure seamless integration of Department of Energy (DoE) assets into Sentinel (GBSD) weapon system.</li> <li>• Continue to develop test re-entry vehicles to meet joint DoE/DoD specific requirements.</li> <li>• Continue to integrate requirement for dual-capable, air-based, survivable launch capability.</li> <li>• Continue to develop, improve &amp; modernize government test capabilities required for successful Developmental Test (DT) and Operational Test (OT) including but not limited to, Vandenberg SFB test capabilities, Western Range Test capabilities, Broad Ocean Area Terminal Area Scoring Test Capability, and various noise, vibration and harshness and nuclear hardness and survivability test sites/beds as required. Prepare &amp; verify test capabilities' readiness to support the flight test campaign commencing in FY24. Leverage digital engineering tools &amp; physical test data to mature Modeling &amp; Simulation tools toward authoritative virtualization.</li> <li>• Continue activities necessary to plan, program, and execute weapon system structures needed to support program milestones and test objectives.</li> <li>• Continue to plan, develop, and mature support systems to include Common Support Equipment/Peculiar Support Equipment and all transportation equipment.</li> <li>• Continue to modify and expand Sentinel (GBSD) workspace at all operating locations to accommodate a growing workforce and provide the tools for the workforce to own the technical baseline.</li> </ul> <p><b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br/> FY 2024 increase due to the Sentinel (GBSD) program continuing to advance its EMD Development with government agencies, FFRDC, UARCs, and other partners to support the EMD prime contractor efforts. The program continues to advance its test series for Development Test &amp; Evaluation (DT&amp;E) and Operational Test &amp; Evaluation (OT&amp;E) for the air vehicle, launch facility, launch center, and all other test support assets.</p> |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 0.000          | 3,614.290      | 3,746.935      |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0605238F <i>I Ground Based Strategic Deterrent EMD</i> |
|---|---|

**D. Other Program Funding Summary (\$ in Millions)**

| Line Item  | FY 2022   | FY 2023 | FY 2024<br>Base | FY 2024<br>OCO | FY 2024<br>Total | FY 2025 | FY 2026   | FY 2027   | FY 2028   | Cost To<br>Complete | Total Cost |
|--|-----------|---------|-----------------|----------------|------------------|---------|-----------|-----------|-----------|---------------------|------------|
| • RDTE 04 PE 0605230F: <i>Ground Based Strategic Deterrent</i>             | 2,464.875 | -       | -               | -              | -                | -       | -         | -         | -         | 0.000               | 2,464.875  |
| • RDTE 04 PE 0603851F: <i>Intercontinental Ballistic Missile - Dem/Val</i> | 73.897    | 46.100  | 45.319          | -              | 45.319           | 56.756  | -         | -         | -         | Continuing          | Continuing |
| • MPAF 01 Line Item MGBSD0: <i>Ground Based Strategic Deterrent</i>        | 10.895    | 0.000   | 539.300         | -              | 539.300          | 502.720 | 5,735.106 | 6,456.735 | 6,172.571 | 42,175.778          | 61,593.105 |
| • MILCON PE 0101233F: <i>GBSD SQUADRONS</i>                                | 168.099   | 457.920 | 198.040         | -              | 198.040          | 601.000 | 699.387   | 722.469   | 736.919   | 5,568.503           | 9,152.337  |
| • OPAF 03 WSC 834130: <i>AF Physical Security System</i>                   | 0.000     | 2.839   | 4.172           | -              | 4.172            | 5.685   | 0.000     | 0.000     | 0.000     | 0.000               | 12.696     |

**Remarks**

**E. Acquisition Strategy**

The objective of the Sentinel (GBSD) program acquisition strategy is to deliver a full, integrated weapon system capability that meets Air Force Global Strike Command's Capability Development Document requirements beginning in Fiscal Year 2029. For the Engineering and Manufacturing Development (EMD) phase of this strategy, the Program Office awarded an EMD contract in the 4th quarter of Fiscal Year 2020. The objectives of EMD for Sentinel (GBSD) are as follows: 1) to deliver low-risk, technologically mature, integrated weapon system baseline design; 2) develop flexible system architecture with options for future on-ramps and off-ramps to mitigate program risks; 3) embrace MBSE/digital engineering to streamline system development activities and timelines; 4) align contract incentives to mitigate schedule and performance risk; 5) utilize MBSE processes and tools to create schedule margin and accelerate surety, safety, cyber, and test activities for time certain delivery; 6) ensure government owns key interfaces and data rights; and 7) pursue "smart commonality" with U.S. Navy, U.S. Space Force, and Missile Defense Agency. The EMD phase includes an EMD Baseline Review, Critical Design Review, First Flight Test, Full Functional System Test, System Qualification/System Verification Review, Nuclear Certification, Developmental Test, Operational Test, and culminates with early production and weapon system deployment. The program will also assess the cost and schedule risks associated with every requirement. The EMD contract includes 5 options for early production and deployment. The period of performance, to include the production and deployment options, is fourth quarter of Fiscal Year 2020 to the second quarter of Fiscal Year 2028. These efforts will ultimately extend the capabilities of the ground-based leg of the nuclear triad through 2075.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0605238F / <i>Ground Based Strategic Det<br/>errent EMD</i> | <b>Project (Number/Name)</b><br>655238 / <i>GROUND BASED STRATEGIC<br/>DETERRENT (GBSD)</i> |
|--|--|---|

| <b>Product Development (\$ in Millions)</b> |                        |  |             | FY 2022 |            | FY 2023   |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--|-------------|---------|------------|-----------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location             | Prior Years | Cost    | Award Date | Cost      | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| GBSD EMD Contract                           | C/CPIF                 | Northrop Grumman Sys Corp : El Segundo, CA | 0.000       | -       |            | 3,048.121 | Oct 2022   | 3,042.691    | Oct 2023   | -           |            | 3,042.691     | 3,773.430        | 9,864.242  | 13,293.563               |
| <b>Subtotal</b>                             |                        |  | 0.000       | -       |            | 3,048.121 |            | 3,042.691    |            | -           |            | 3,042.691     | 3,773.430        | 9,864.242  | N/A                      |

**Remarks**  
 Prior to Fiscal Year 2023, funding for these efforts was included under Program 0605230F, Ground Based Strategic Deterrent.  
 GBSD EMD Contract Total Cost is anticipated to be \$13,293.563 million. Funding is split between programs 0605230F, Ground Based Strategic Deterrent and 0605238F, Ground Based Strategic Deterrent EMD.

| <b>Support (\$ in Millions)</b>                         |                        |  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                                      | Contract Method & Type | Performing Activity & Location                 | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Integration Support Contract                            | C/FFP                  | TBD : Hill AFB, UT                             | 0.000       | -       |            | 112.700 | Oct 2022   | 112.700      | Oct 2023   | -           |            | 112.700       | 427.993          | 653.393    | 519.735                  |
| Naval Surface Warfare Center Crane Support              | MIPR                   | Naval Surface Warfare Center Crane : Crane, IN | 0.000       | -       |            | 7.600   | Nov 2022   | 7.800        | Nov 2023   | -           |            | 7.800         | 24.170           | 39.570     | -                        |
| Aerospace FFRDC Support                                 | MIPR                   | Aerospace Corporation : El Segundo, CA         | 0.000       | -       |            | 24.656  | Nov 2022   | 25.126       | Nov 2023   | -           |            | 25.126        | 83.315           | 133.097    | -                        |
| MITRE FFRDC Support                                     | MIPR                   | MITRE : Bedford, MA                            | 0.000       | -       |            | 16.200  | Nov 2022   | 16.200       | Nov 2023   | -           |            | 16.200        | 75.800           | 108.200    | -                        |
| Carnegie Mellon Software Engineering Institute Support  | MIPR                   | Carnegie Mellon : Pittsburgh, PA               | 0.000       | -       |            | 2.000   | Nov 2022   | 5.353        | Nov 2023   | -           |            | 5.353         | 8.153            | 15.506     | -                        |
| Sandia FFRDC Reentry Systems Analysis Support           | MIPR                   | Sandia National Laboratories : Various         | 0.000       | -       |            | 4.000   | Oct 2022   | 3.750        | Oct 2023   | -           |            | 3.750         | 51.089           | 58.839     | -                        |
| MIT Lincoln Labs FFRDC Reentry Systems Analysis Support | MIPR                   | MIT Lincoln Labs : Lexington, MA               | 0.000       | -       |            | 1.600   | Oct 2022   | 1.300        | Oct 2023   | -           |            | 1.300         | 8.110            | 11.010     | -                        |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0605238F / Ground Based Strategic Det<br>errent EMD | <b>Project (Number/Name)</b><br>655238 / GROUND BASED STRATEGIC<br>DETERRENT (GBSD) |
|--|--|---|

| <b>Support (\$ in Millions)</b>        |                        |  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                     | Contract Method & Type | Performing Activity & Location                 | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Nuclear Surety & Certification Support | MIPR                   | Various : Various                              | 0.000       | -       |            | 5.300   | Nov 2022   | 8.000        | Nov 2023   | -           |            | 8.000         | 12.332           | 25.632     | -                        |
| Operations Research Analyst Support    | C/FFP                  | TBD : Hill AFB, UT                             | 0.000       | -       |            | 4.020   | Oct 2022   | 7.840        | Oct 2023   | -           |            | 7.840         | 16.112           | 27.972     | 35.487                   |
| Common Cryptographic Equipment         | MIPR                   | Sandia National Labs : Various                 | 0.000       | -       |            | 4.200   | Nov 2022   | 3.075        | Nov 2023   | -           |            | 3.075         | 41.697           | 48.972     | -                        |
| Mantech Support                        | RO                     | Man Tech International : Herndon, VA           | 0.000       | -       |            | 12.440  | Dec 2022   | 12.742       | Dec 2023   | -           |            | 12.742        | 52.287           | 77.469     | -                        |
| GBSD Direct Cite Civilian Pay          | Various                | US Gov Civilians : Hill AFB, UT                | 0.000       | -       |            | 50.000  | Oct 2022   | 49.200       | Oct 2023   | -           |            | 49.200        | 125.367          | 224.567    | -                        |
| NEPA Analysis Support                  | MIPR                   | Various : Various                              | 0.000       | -       |            | 3.000   | Nov 2022   | 7.749        | Nov 2023   | -           |            | 7.749         | 0.000            | 10.749     | -                        |
| Reentry Vehicle Sustainment Support    | C/CPAF                 | Lockheed Martin Corp : Bethesda, MD            | 0.000       | -       |            | 2.000   | Dec 2022   | 3.000        | Dec 2023   | -           |            | 3.000         | 9.444            | 14.444     | -                        |
| Sandia Integration Support             | MIPR                   | Sandia National Labs : Various                 | 0.000       | -       |            | 2.000   | Jan 2023   | 2.000        | Jan 2024   | -           |            | 2.000         | 2.000            | 6.000      | -                        |
| GBSD Facility Execution Support        | MIPR                   | Various : Various                              | 0.000       | -       |            | 2.500   | Jan 2023   | 5.081        | Jan 2024   | -           |            | 5.081         | 5.081            | 12.662     | -                        |
| Space Dynamics Lab Support             | C/CPFF                 | USU Space Dynamics Lab : Logan, UT             | 0.000       | -       |            | 2.000   | Nov 2022   | 12.800       | Nov 2023   | -           |            | 12.800        | 7.000            | 21.800     | -                        |
| NC3 Terrestrial Integration Support    | Various                | Various : Various                              | 0.000       | -       |            | 0.000   |            | 3.239        | Nov 2023   | -           |            | 3.239         | 4.620            | 7.859      | -                        |
| Secondary Launch Platform - Airborne   | MIPR                   | Naval Air Systems Command : Patuxent River, MD | 0.000       | -       |            | 0.000   |            | 1.783        | Dec 2023   | -           |            | 1.783         | 3.217            | 5.000      | -                        |
| Test Range Support                     | Various                | Various : Various                              | 0.000       | -       |            | 0.000   |            | 15.062       | Dec 2023   | -           |            | 15.062        | 4.938            | 20.000     | -                        |
| GBSD Enterprise Support                | C/Various              | Various : Various                              | 0.000       | -       |            | 1.434   | Dec 2022   | 1.494        | Dec 2023   | -           |            | 1.494         | 887.993          | 890.921    | -                        |
| <b>Subtotal</b>                        |                        |  | 0.000       | -       |            | 257.650 |            | 305.294      |            | -           |            | 305.294       | 1,850.718        | 2,413.662  | N/A                      |

**Remarks**  
Prior year's funding included under Program 0605230F, Ground Based Strategic Deterrent.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
|--|---|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0605238F / <i>Ground Based Strategic Deterrant EMD</i> | <b>Project (Number/Name)</b><br>655238 / <i>GROUND BASED STRATEGIC DETERRENT (GBSD)</i> |
|--|---|---|

| <b>Support (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item              | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |

GBSD is spearheading the Owning The Technical Baseline (OTTB) approach for system acquisition. This approach utilizes additional support efforts that would typically be performed by a Prime Contractor thus increasing costs within Cost Category Items. Integration Support Contractor will be defined upon follow-on contract award. Operations Research Analyst Support will be defined upon follow-on contract award 4th Qtr FY23. Additional Items:  
 - Secondary Launch Platform-Airborne  
 - Test Range Support

| <b>Test and Evaluation (\$ in Millions)</b>  |                        |  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location                                   | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Johns Hopkins - Applied Physics Lab Support  | MIPR                   | Johns Hopkins University-Applied Physics Lab : Laurel, MD        | 0.000       | -       |            | 25.000  | Oct 2022   | 33.000       | Oct 2023   | -           |            | 33.000        | 113.390          | 171.390    | -                        |
| Arnold Engineering Development Complex - Integrated Test Team                                      | PO                     | Arnold Engineering Development Complex : Arnold AFB, TN          | 0.000       | -       |            | 20.340  | Oct 2022   | 21.562       | Oct 2023   | -           |            | 21.562        | 197.524          | 239.426    | -                        |
| Air Force Operational Test and Evaluation Center - Integrated Test Team                            | PO                     | Air Force Operational Test and Evaluation Center : Hill AFB, UT  | 0.000       | -       |            | 3.500   | Oct 2022   | 7.108        | Oct 2023   | -           |            | 7.108         | 192.419          | 203.027    | -                        |
| Missile & Intelligence Center - Integrated Threat Analysis and Simulation Environment              | MIPR                   | DIA-Missile and Space Intelligence Center : Redstone Arsenal, AL | 0.000       | -       |            | 5.000   | Nov 2022   | 4.000        | Nov 2023   | -           |            | 4.000         | 22.259           | 31.259     | -                        |
| National Air and Space Intelligence Center - Integrated Threat Analysis and Simulation Environment | MIPR                   | National Air and Space Intelligence Center : Fairborn, OH        | 0.000       | -       |            | 1.000   | Nov 2022   | 1.000        | Nov 2023   | -           |            | 1.000         | 3.260            | 5.260      | -                        |
| 309th SMXG Software Engineering Support  | PO                     | 309th / 517th SWEG : Hill AFB, UT                                | 0.000       | -       |            | 29.282  | Oct 2022   | 29.282       | Oct 2023   | -           |            | 29.282        | 246.608          | 305.172    | -                        |



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0605238F / Ground Based Strategic Det<br>errent EMD | <b>Project (Number/Name)</b><br>655238 / GROUND BASED STRATEGIC<br>DETERRENT (GBSD) |
|--|--|---|

| <b>Test and Evaluation (\$ in Millions)</b>            |                              |   |                | FY 2022 |               | FY 2023 |               | FY 2024<br>Base |               | FY 2024<br>OCO |               | FY 2024<br>Total | Cost To<br>Complete | Total<br>Cost | Target<br>Value of<br>Contract |
|--|------------------------------|---|----------------|---------|---------------|---------|---------------|-----------------|---------------|----------------|---------------|------------------|---------------------|---------------|--------------------------------|
| Cost Category Item                                     | Contract<br>Method<br>& Type | Performing<br>Activity & Location         | Prior<br>Years | Cost    | Award<br>Date | Cost    | Award<br>Date | Cost            | Award<br>Date | Cost           | Award<br>Date | Cost             |                     |               |                                |
| 309th SMXG Nuclear Safety Cross Check Analysis         | PO                           | 309th / 516th SWES : Hill AFB, UT         | 0.000          | -       |               | 13.500  | Oct 2022      | 23.733          | Oct 2023      | -              |               | 23.733           | 51.092              | 88.325        | -                              |
| Silo Fly-out Modeling and Simulation                   | MIPR                         | Various : Various                         | 0.000          | -       |               | 5.500   | Nov 2022      | 5.500           | Nov 2023      | -              |               | 5.500            | 11.764              | 22.764        | -                              |
| Rapid Assessment Technology                            | MIPR                         | Various : Various                         | 0.000          | -       |               | 5.115   | Mar 2023      | 10.564          | Mar 2024      | -              |               | 10.564           | 20.000              | 35.679        | -                              |
| Sandia Flight Test Vehicle Development                 | MIPR                         | Sandia National Labs : Various            | 0.000          | -       |               | 16.200  | Dec 2022      | 13.000          | Dec 2023      | -              |               | 13.000           | 11.483              | 40.683        | -                              |
| Naval Surface Warfare Center Corona Support            | MIPR                         | Naval Surface Warfare Center : Corona, CA | 0.000          | -       |               | 1.255   | Dec 2022      | 1.294           | Dec 2023      | -              |               | 1.294            | 7.108               | 9.657         | -                              |
| Combined Test Facility Support                         | MIPR                         | Various : Various                         | 0.000          | -       |               | 1.500   | Nov 2022      | 3.670           | Nov 2023      | -              |               | 3.670            | 3.670               | 8.840         | -                              |
| Broad Ocean Area Terminal Area Scoring Test Capability | MIPR                         | Navy Strat. Sys. Programs : Various       | 0.000          | -       |               | 52.310  | Nov 2022      | 52.509          | Nov 2023      | -              |               | 52.509           | 34.355              | 139.174       | -                              |
| Little Mountain Test Facility Radiation Lab Upgrades   | C/CPFF                       | The Boeing Company : Layton, UT           | 0.000          | -       |               | 0.000   |               | 5.950           | Nov 2023      | -              |               | 5.950            | 9.050               | 15.000        | -                              |
| GBSD Enterprise Test and Assessments                   | C/Various                    | Various : Various                         | 0.000          | -       |               | 2.815   | Nov 2022      | 3.330           | Nov 2023      | -              |               | 3.330            | 5,447.209           | 5,453.354     | -                              |
| <b>Subtotal</b>  |                              |   | 0.000          | -       |               | 182.317 |               | 215.502         |               | -              |               | 215.502          | 6,371.191           | 6,769.010     | N/A                            |

**Remarks**  
 Prior year's funding included under Program 0605230F, Ground Based Strategic Deterrent.  
 Additional Item: Little Mountain Test Facility Radiation Lab Upgrades

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0605238F / Ground Based Strategic Det<br>errent EMD | <b>Project (Number/Name)</b><br>655238 / GROUND BASED STRATEGIC<br>DETERRENT (GBSD) |
|--|--|---|

| <b>Management Services (\$ in Millions)</b>               |                        |  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item  | Contract Method & Type | Performing Activity & Location               | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| GBSD Administrative Support                               | C/FFP                  | Delta Solutions, Inc. : Colorado Springs, CO | 0.000       | -       |            | 0.887   | Nov 2022   | 1.138        | Nov 2023   | -           |            | 1.138         | 150.925          | 152.950    | 277.170                  |
| GBSD Enterprise Process Improvement Support               | C/FFP                  | Booz Allen Hamilton : McLean, VA             | 0.000       | -       |            | 11.000  | Nov 2022   | 17.961       | Nov 2023   | -           |            | 17.961        | 44.000           | 72.961     | -                        |
| Hardware, Software, IT Resources                          | C/Various              | Various : Various                            | 0.000       | -       |            | 43.378  | Oct 2022   | 103.199      | Oct 2023   | -           |            | 103.199       | 104.000          | 250.577    | -                        |
| GBSD DevSecOps, Software Factory, Cloud, & Infrastructure | Various                | Various : Various                            | 0.000       | -       |            | 57.947  | Nov 2022   | 50.032       | Nov 2023   | -           |            | 50.032        | 186.255          | 294.234    | -                        |
| Operating Location Support                                | Various                | Various : Various                            | 0.000       | -       |            | 7.500   | Jan 2023   | 6.391        | Jan 2024   | -           |            | 6.391         | 14.000           | 27.891     | -                        |
| Enterprise PMA  | Various                | Various : Various                            | 0.000       | -       |            | 5.490   | Oct 2022   | 4.727        | Oct 2023   | 0.000       |            | 4.727         | 201.778          | 211.995    | -                        |
| <b>Subtotal</b>   |                        |  | 0.000       | -       |            | 126.202 |            | 183.448      |            | 0.000       |            | 183.448       | 700.958          | 1,010.608  | N/A                      |

**Remarks**  
Prior year's funding included under Program 0605230F, Ground Based Strategic Deterrent.

|                            | Prior Years | FY 2022 | FY 2023   | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|-----------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | 0.000       | -       | 3,614.290 | 3,746.935    | 0.000       | 3,746.935     | 12,696.297       | 20,057.522 | N/A                      |

**Remarks**  
In FY23, GBSD program transitioned from Budget Activity 04 to Budget Activity 05 and EMD efforts transitioned to PE 0605238F, Ground Based Strategic Deterrent EMD, Project 655238, Ground Based Strategic Deterrent from PE 0605230F, Ground Based Strategic Deterrent.

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0605238F / <i>Ground Based Strategic Det<br/>errent EMD</i> | <b>Project (Number/Name)</b><br>655238 / <i>GROUND BASED STRATEGIC<br/>DETERRENT (GBSD)</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |  |
|--|--|
| <b>Sentinel (GBSD)</b>                                   |  |
| EMD Phase  |  |
| Payload Shroud Critical Design Review (Dec 2022)         |  |
| Solid Rocket Motor Development Tests (Jan 2023)          |  |
| Boosters Critical Design Review (Jan 2023)               |  |
| LF-04 Construction Complete (Feb 2023)                   |  |
| Guidance and Control Critical Design Review (April 2023) |  |
| LF-26 Construction Complete (April 2023)                 |  |
| SLP-A Critical Design Review (July 2023)                 |  |
| First Developmental Flight Test (Dec 2023)               |  |
| Critical Design Review (May 2024)                        |  |
| Full System Functional Test (Mar 2025)                   |  |
| System Qualification/Verification Review (Oct 2025)      |  |
| SLP-A Capability (Jan 2026)                              |  |
| Milestone C (May 2026)                                   |  |
| Production and Deployment Phase                          |  |
| Operational Weapon System Article (Sep 2027)             |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0605238F / <i>Ground Based Strategic Deterrent EMD</i> | <b>Project (Number/Name)</b><br>655238 / <i>GROUND BASED STRATEGIC DETERRENT (GBSD)</i> |

Schedule Details

| Events by Sub Project                                    | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b>Sentinel (GBSD)</b>                                   |         |      |         |      |
| EMD Phase  | 1       | 2022 | 3       | 2026 |
| Payload Shroud Critical Design Review (Dec 2022)         | 1       | 2023 | 1       | 2023 |
| Solid Rocket Motor Development Tests (Jan 2023)          | 2       | 2023 | 2       | 2023 |
| Boosters Critical Design Review (Jan 2023)               | 2       | 2023 | 2       | 2023 |
| LF-04 Construction Complete (Feb 2023)                   | 2       | 2023 | 2       | 2023 |
| Guidance and Control Critical Design Review (April 2023) | 3       | 2023 | 3       | 2023 |
| LF-26 Construction Complete (April 2023)                 | 3       | 2023 | 3       | 2023 |
| SLP-A Critical Design Review (July 2023)                 | 3       | 2023 | 3       | 2023 |
| First Developmental Flight Test (Dec 2023)               | 1       | 2024 | 1       | 2024 |
| Critical Design Review (May 2024)                        | 3       | 2024 | 3       | 2024 |
| Full System Functional Test (Mar 2025)                   | 2       | 2025 | 2       | 2025 |
| System Qualification/Verification Review (Oct 2025)      | 1       | 2026 | 1       | 2026 |
| SLP-A Capability (Jan 2026)                              | 2       | 2026 | 2       | 2026 |
| Milestone C (May 2026)                                   | 3       | 2026 | 3       | 2026 |
| Production and Deployment Phase                          | 4       | 2026 | 4       | 2028 |
| Operational Weapon System Article (Sep 2027)             | 4       | 2027 | 4       | 2027 |

**Note**

The R-4 event schedule remains unchanged from the FY23 PB submission. Program schedule events are under review due to acquisition strategy revisions. The event schedule updates will be provided once the revisions are completed.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |  |
|---|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0207171F / <i>F-15 EPAWSS</i> |
|---|--|

| COST (\$ in Millions)             | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|-----------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element             | 1,005.231   | 100.232 | 67.956  | 13.982       | 0.000       | 13.982        | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 1,187.401  |
| 657108: <i>EPAWSS DEVELOPMENT</i> | 1,005.231   | 100.232 | 67.956  | 13.982       | 0.000       | 13.982        | 0.000   | 0.000   | 0.000   | 0.000   | 0.000            | 1,187.401  |
| Quantity of RDT&E Articles        | 8           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**Program MDAP/MAIS Code:** 485

**A. Mission Description and Budget Item Justification**

The legacy F-15 Tactical Electronic Warfare System (TEWS) is functionally obsolete. It uses 1970's analog technology to combat 1980s-era radar-based ground and air threats. In addition, this aging system is becoming more difficult and expensive to sustain. As a result, the Air Force is replacing TEWS with the F-15 Eagle Passive/Active Warning and Survivability System (EPAWSS). F-15 EPAWSS is an advanced digital electronic warfare system capable of detecting, identifying, locating, denying, degrading, disrupting, and defeating modern and emerging threat systems in contested airspace with dense radio-frequency (RF) background environments. F-15 EPAWSS will provide indication, type, and position of ground-based RF threats as well as the indication, type, and bearing of airborne threats with the situational awareness needed to avoid, engage, or negate the threat. It will also prevent RF threat systems from detecting or acquiring accurate targeting information to complicate and/or negate an enemy threat targeting solution. Finally, EPAWSS will counter RF and infrared threat systems at end-game via electronic countermeasures (jamming), chaff, and/or flares.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY2022 \$2.370M was expended for civilian pay expenses in this program element, and in FY2023 \$0.997M is forecasted for civilian pay expenses in this program element.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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|--|-------------------------|
| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0207171F / F-15 EPAWSS |
|---|---|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 112.012        | 67.956         | 13.950              | 0.000              | 13.950               |
| Current President's Budget                        | 100.232        | 67.956         | 13.982              | 0.000              | 13.982               |
| Total Adjustments                                 | -11.780        | 0.000          | 0.032               | 0.000              | 0.032                |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | -8.500         | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -3.280         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 0.032               | 0.000              | 0.032                |

**Change Summary Explanation**

FY22 funding decreased due to SBIR reduction of \$3.280M and a BTR of \$8.5M

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
|---|----------------|----------------|----------------|

|  |         |        |        |
|--|---------|--------|--------|
| <b>Title:</b> Eagle Passive/Active Warning Survivability System (EPAWSS) | 100.232 | 67.956 | 13.982 |
|--|---------|--------|--------|

**Description:** Planned replacement of the existing F-15 Tactical Electronic Warfare System (TEWS).

***FY 2023 Plans:***

Complete software integration, flight test, cybersecurity verifications, and logistics support planning efforts, such as development of Technical Publications. These efforts enable the program to meet the Acquisition Program Baseline Objective for completion of Initial Operational Test & Evaluation. To that end, funds may be used to address operational effectiveness/suitability/survivability anomalies or enhancements identified in developmental testing; conduct studies related to future modernization and technical insertion opportunities; assess new and emerging threat systems, and/or resolve emerging safety of flight issues.

***FY 2024 Plans:***

Complete EMD and Contractor closeout activities in order to proceed to a full rate production decision. Finalize software integration, resolve remaining performance deficiencies, support laboratory equipment upgrades, incorporate additional technical publications, and complete the development phase of the program. Funds may be used to execute and support cyber testing on aircraft hardware, conduct studies, address emerging threats, and leverage potential system enhancement opportunities that improve pilot situational awareness/overall system effectiveness.

***FY 2023 to FY 2024 Increase/Decrease Statement:***

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0207171F / F-15 EPAWSS |
|---|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>              | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| Funding decreased because EPAWSS plans to complete the development phase |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>                        | 100.232        | 67.956         | 13.982         |

| <b>D. Other Program Funding Summary (\$ in Millions)</b> |                |                |                         |                        |                          |                |                |                |                |                             |                   |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| <b>Line Item</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024<br/>Base</b> | <b>FY 2024<br/>OCO</b> | <b>FY 2024<br/>Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b> | <b>FY 2028</b> | <b>Cost To<br/>Complete</b> | <b>Total Cost</b> |
| • APAF 05 Line Item                                      | 163.816        | 259.837        | 280.658                 | -                      | 280.658                  | 321.252        | 234.825        | 118.415        | 120.857        | 0.000                       | 1,499.660         |
| <i>F15EWS: Aircraft Modification</i>                     |                |                |                         |                        |                          |                |                |                |                |                             |                   |
| • APAF 07 Line Item 000999:                              | 28.005         | 19.796         | 0.000                   | -                      | 0.000                    | 13.531         | 27.947         | 25.582         | 29.176         | 0.000                       | 144.037           |
| <i>Aircraft Spares and Repair Parts</i>                  |                |                |                         |                        |                          |                |                |                |                |                             |                   |
| • APAF 07 000075:  | 24.823         | -              | 11.953                  | -                      | 11.953                   | 2.037          | -              | -              | -              | 0.000                       | 38.813            |
| <i>OTHER PRODUCTION CHARGES (OVERVIEW)</i>               |                |                |                         |                        |                          |                |                |                |                |                             |                   |

**Remarks**

**E. Acquisition Strategy**

F-15 EPAWSS replaces the existing radar warning receiver, internal countermeasure system and countermeasure dispenser system. The F-15 EPAWSS technical approach is to leverage mature and proven hardware to field a critically-needed capability as soon as possible. In addition, the program tailored the Milestone C production decision into two decisions: Decision Point #1 was approved 1 Dec 20, constituting entry into the program's production phase, as well as initiating hardware procurement and modification line stand-up. Decision Point #2, approved on 23 Jun 22, allowed for hardware installation on operational F-15E aircraft and approved the full rate production (FRP) decision criteria. This tailoring provides the Milestone Decision Authority the ability to accelerate Initial Operational Capability by taking long-lead hardware procurement off the program critical path, reducing the schedule impact of kit lead times.

The prime integrator for this program is Boeing, responsible for selecting its suppliers and accountable for full aircraft-level installed performance. The prime integrator has subcontractor support from BAE Systems whose responsibilities include development of the onboard electronic warfare subsystem (hardware and software).

The EPAWSS EMD contract initially employed a mix of contract types, the largest being Cost Plus Incentive Fee (CPIF) for development and testing. In 2020, the program office restructured the EMD contract to Firm Fixed Price.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
|--|---|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207171F / F-15 EPAWSS | <b>Project (Number/Name)</b><br>657108 / EPAWSS DEVELOPMENT |
|--|---|---|

| <b>Product Development (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| F-15 EPAWSS TMRR                            | SS/<br>Various                    | Boeing : St. Louis, MO                    | 233.738            | -              |                   | -              |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 233.738           | 176.450                         |
| F-15 EPAWSS EMD                             | SS/<br>Various                    | Boeing : St. Louis, MO                    | 663.030            | 74.479         | Nov 2021          | 53.182         | Jan 2023          | 13.552              | Oct 2023          | -                  |                   | 13.552               | 0.000                   | 804.243           | 765.308                         |
| F-15 EPAWSS                                 | Various                           | Various : Various                         | 30.958             | 7.252          |                   | 4.446          |                   | 0.430               |                   | -                  |                   | 0.430                | 0.000                   | 43.086            | 115.854                         |
| <b>Subtotal</b>                             |                                   |   | 927.726            | 81.731         |                   | 57.628         |                   | 13.982              |                   | -                  |                   | 13.982               | 0.000                   | 1,081.067         | N/A                             |

**Remarks**  
The final line item reference to "various" contract methods and performing activity/location address other government costs for various EMD-specific hardware, equipment modification/installation/shipping efforts, special studies, travel and support personnel that are required to meet program objectives. The specific execution vehicles vary by effort.

| <b>Support (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---------------------------------|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>       | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| Direct Cite Authority           | Allot                             | Various : Various                         | 2.065              | 2.370          |                   | 0.997          |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 5.432             | -                               |
| <b>Subtotal</b>                 |                                   |   | 2.065              | 2.370          |                   | 0.997          |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 5.432             | N/A                             |

| <b>Test and Evaluation (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| Test and Evaluation                         | Various                           | Not specified. : TBD                      | 51.680             | 7.437          |                   | 0.497          |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 59.614            | -                               |
| Government Flight Test                      | Various                           | Various : Various                         | 20.681             | 7.755          |                   | 8.268          |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 36.704            | 72.735                          |
| <b>Subtotal</b>                             |                                   |   | 72.361             | 15.192         |                   | 8.765          |                   | -                   |                   | -                  |                   | -                    | 0.000                   | 96.318            | N/A                             |

**Remarks**  
The final line item reference to "various" contract methods and performing activity/location addresses other government costs for T&E (both DT&E & IOT&E) specific test equipment/hardware, test event support, test-related special studies, travel and support personnel that are required to meet program objectives. The specific execution vehicles vary by effort.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
|--|---|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207171F / F-15 EPAWSS | <b>Project (Number/Name)</b><br>657108 / EPAWSS DEVELOPMENT |
|--|---|---|

| Management Services (\$ in Millions) |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--------------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                   | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Program Management Support Costs     | Various                | Various : Various              | 3.079       | 0.939   |            | 0.566   |            | -            |            | -           |            | -             | 0.000            | 4.584      | 44.399                   |
| <b>Subtotal</b>                      |                        |                                | 3.079       | 0.939   |            | 0.566   |            | -            |            | -           |            | -             | 0.000            | 4.584      | N/A                      |

**Remarks**  
The final line item reference to "various" contract methods and performing activity/location addresses other government costs for management support of EMD & T&E related activities, creation of special studies documentation, travel, and support personnel that are required to meet program objectives. The execution vehicles vary by effort.

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | 1,005.231   | 100.232 | 67.956  | 13.982       | -           | 13.982        | 0.000            | 1,187.401  | N/A                      |

**Remarks**  
FINANCIAL PERFORMANCE: F-15 EPAWSS is evaluated against traditional Research and Development (R&D) program expenditure benchmarks. Unlike many traditional R&D programs, however, the F-15 EPAWSS Development contract is a Fixed Price contract with progress payments. 10 percent of incurred costs are withheld until the end of the contract, when they are liquidated. Mandatory funding obligations and progress payment withholds will cause the program to lag traditional expenditure benchmarks, painting an inaccurate portrait of overall program health.

Prior Years funding in FY 2013 and FY 2014 of \$15.100M was executed in PE 0207134F.

Prior Years funding in FY 2015 of \$37.726M was executed in PE 0207171F, Project 676038.

In FY 2016, EPAWSS efforts were transferred from Budget Activity 7, Operational Systems Development, PE 0207171F, Project Number 676038 to Budget Activity 5, Engineering and Manufacturing Development, PE 0207171F, Project Number 657108 per OSD direction.

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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |   |   |
|--|---|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207171F / F-15 EPAWSS | <b>Project (Number/Name)</b><br>657108 / EPAWSS DEVELOPMENT |
|--|---|---|

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   | FY 2022 |  |  |  | FY 2023 |  |  |  | FY 2024 |  |  |  | FY 2025 |  |  |  | FY 2026 |  |  |  | FY 2027 |  |  |  | FY 2028 |  |  |  |  |  |
|---|---------|--|--|--|---------|--|--|--|---------|--|--|--|---------|--|--|--|---------|--|--|--|---------|--|--|--|---------|--|--|--|--|--|
| <b>F-15 EPAWSS</b>                                  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |  |  |
| Hardware Qualification Testing                      |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |  |  |
| Software Integration                                |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |  |  |
| Maintenance/Tech Pubs                               |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |  |  |
| Integrated Test and Evaluation                      |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |  |  |
| Configuration Audits & System Verification          |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |  |  |
| EPAWSS Milestone C - Decision Point 2               |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |  |  |
| Initial Operational Test & Evaluation               |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |  |  |
| Hardware Test Support Cyber Controls and IT Refresh |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |         |  |  |  |  |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0207171F / <i>F-15 EPAWSS</i> | <b>Project (Number/Name)</b><br>657108 / <i>EPAWSS DEVELOPMENT</i> |

Schedule Details

| Events by Sub Project                               | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>F-15 EPAWSS</i></b>                           |         |      |         |      |
| Hardware Qualification Testing                      | 1       | 2022 | 3       | 2022 |
| Software Integration                                | 1       | 2022 | 1       | 2024 |
| Maintenance/Tech Pubs                               | 1       | 2022 | 1       | 2024 |
| Integrated Test and Evaluation                      | 1       | 2022 | 2       | 2023 |
| Configuration Audits & System Verification          | 3       | 2022 | 1       | 2024 |
| EPAWSS Milestone C - Decision Point 2               | 3       | 2022 | 3       | 2022 |
| Initial Operational Test & Evaluation               | 3       | 2023 | 1       | 2024 |
| Hardware Test Support Cyber Controls and IT Refresh | 2       | 2023 | 4       | 2024 |

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0207279F / <i>Isolated Personnel Survivability and Recovery</i> |
|---|--|

| COST (\$ in Millions)              | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element              | -           | 0.000   | 27.881  | 56.225       | 0.000       | 56.225        | 0.000   | 30.200  | 0.000   | 25.493  | 0.000            | 139.799    |
| 65412B: <i>Isolated Personnel*</i> | -           | 0.000   | 0.000   | 0.000        | 0.000       | 0.000         | 0.000   | 0.000   | 0.000   | 25.493  | 0.000            | 25.493     |
| 654522: <i>CSAR EMD</i>            | -           | 0.000   | 27.881  | 56.225       | 0.000       | 56.225        | 0.000   | 30.200  | 0.000   | 0.000   | 0.000            | 114.306    |

\*This project's R-2a exhibit has been suppressed due to funding not beginning until after FY 2024

**A. Mission Description and Budget Item Justification**

This Program Element contains two projects tasked to provide Air Force aircrew updated survival equipment to assist in their recovery in the event they become Isolated Personnel (IP).

Project 65412B (Isolated Personnel): The Isolated Personnel Survival and Flight Equipment (IPSAFE) program develops, and fields updates to aircrew survival kits to support climate specific equipment and aims to increase the ability for an IP to evade and survive in operational environments where rapid extraction is not possible.

Project 654522 (CSAR EMD): The Next Generation Survival Radio (NGSR) program is an Air Force led development effort to replace the aging legacy Combat Survivor Evader Locator (CSEL) handheld radio for the entire Joint Force. NGSR plans to deliver communications capability supporting the Joint Personnel Recovery Agency (JPRA) Combat Search and Rescue (CSAR) mission to locate, authenticate, and communicate with Joint forces who become isolated. The NGSR program plans to become the primary Department of Defense (DoD) Program of Record (POR) to deliver secured end-to-end communication and locate and recover downed aircrew/ special operations personnel.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 0.000          | 27.881         | 56.098              | 0.000              | 56.098               |
| Current President's Budget                        | 0.000          | 27.881         | 56.225              | 0.000              | 56.225               |
| Total Adjustments                                 | 0.000          | 0.000          | 0.127               | 0.000              | 0.127                |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 0.127               | 0.000              | 0.127                |

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force Date: March 2023

**Appropriation/Budget Activity**  
3600: *Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)*

**R-1 Program Element (Number/Name)**  
PE 0207279F *I Isolated Personnel Survivability and Recovery*

**Change Summary Explanation**

FY2024 - Program increase by 0.127M to support NGSR device development.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207279F / <i>Isolated Personnel Survivability and Recovery</i> | <b>Project (Number/Name)</b><br>654522 / CSAR EMD |
|--|--|---|

| COST (\$ in Millions)      | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 654522: CSAR EMD           | -           | 0.000   | 27.881  | 56.225       | 0.000       | 56.225        | 0.000   | 30.200  | 0.000   | 0.000   | 0.000            | 114.306    |
| Quantity of RDT&E Articles | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**A. Mission Description and Budget Item Justification**

The Next Generation Survival Radio (NGSR) program is an Air Force led effort to replace the aging Combat, Survivor, Evader, Locator (CSEL) Radio supporting the entire Joint force. The Department of Defense (DoD) plans for the NGSR Handheld Radio (HHR) to serve as the primary communications link for all DoD aircrew who become isolated personnel. NGSR replaces the existing CSEL program as the DoD Program of Record (PoR) for delivering a communications capability in support of the Joint Personnel Recovery Agency (JPRA) Combat Search and Rescue (CSAR) mission to locate, authenticate, and communicate with Joint forces who become Isolated Personnel (IP).

NGSR provides secure, over-the-horizon, two-way data communications and precise geo-positioning information to rescue forces. Additionally, NGSR is able to operate in anti-access/area denial (A2/AD) environments by providing a low probability of intercept/low probability of detection communication pathway for isolated personnel. NGSR is one node of an overall personnel recovery network which includes multiple on-orbit satellite constellations, geographically dispersed satellite ground stations, joint service CSAR communication devices, and a Joint Personnel Recovery Center (JPRC) web application. NGSR plans to incorporate modern encryption technology to comply with current National Security Agency (NSA) cryptographic standards.

The Air Force will meet system objectives by executing a competitive Rapid Prototyping effort to design and build a production-ready NGSR artifact. Once prototyped, the Air Force, Army, Navy, and Marine Corps will field the NGSR prototype to their respective services via a follow-on sole-source Rapid Fielding production contract.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22, \$0.251M was expended for civilian pay expenses in this program element, and in FY23, \$0.340M is forecasted for civilian pay expenses in this program element

NGSR is not fully funded across the Future Years Defense Program. The Department of the Air Force is assessing all options to address the funding shortfalls for MTA programs, including additional funding in a future budget request, performance trades based on technical maturity, or transition to alternative pathways.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | FY 2022 | FY 2023 | FY 2024 |
|---|---------|---------|---------|
| <b>Title:</b> Next Generation Survival Radio (NGSR)   | -       | 27.881  | 56.225  |
| <b>Description:</b> The Research and Development (R&D) efforts associated with the NGSR effort aim to Rapidly Prototype a production-ready -- multi-function -- handheld radio in advance of planned future production and fielding efforts. The radio serves |         |         |         |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023                                  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0207279F / <i>Isolated Personnel Survivability and Recovery</i> | <b>Project (Number/Name)</b><br>654522 / <i>CSAR EMD</i> |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p>as the prime communications pathway for Army, Navy, Marine, and Air Force pilots in the event they become isolated personnel. R&amp;D efforts associated with the development of the NGSR prototype include the following:</p> <ul style="list-style-type: none"> <li>- Upgrade and modify the Mobile User Objective System (MUOS) Satellite Communication (SATCOM) Ground infrastructure, allowing for waveform agnostic use of the on-orbit constellation.</li> <li>- Development of a software re-programmable multi-function handheld device capable of Line-of-sight (LOS) and Beyond Line-of-sight (BLOS) communications.</li> <li>- NGSR transition and modernization of the existing Combat Survivor Evader Locator (CSEL) software applications -- used by the Joint Personnel Recovery Center (JPRC) to identify and locate emergency events -- and migration of the applications to a cloud environment.</li> <li>- Selection, development, integration, and testing of an encryption standard that meets NGSR radio, waveform, and transmission capabilities.</li> </ul> <p><b>FY 2023 Plans:</b></p> <ul style="list-style-type: none"> <li>- Will award NGSR Task Order on a MUOS Indefinite Delivery / Indefinite Quantity (ID/IQ) contract to begin digitization of the MUOS ground station.</li> <li>- Will invest in the initial digital infrastructure, software development pipelines, and personnel required for MUOS ground station development and integration.</li> <li>- Will support NGSR waveform selection and testing.</li> <li>- Will support the start of classified development (people, infrastructure, efforts) of an NGSR required communication pathway for use by isolated personnel in highly contested environments.</li> <li>- Will facilitate multi-award contracts to compete vendor designs for NGSR rapid prototyping.</li> <li>- Will provide additional contracted personnel and program management support for the NGSR program office.</li> <li>- Will support the start of test planning at the identified NGSR Developmental Test (DT) and Operational Test (OT) organizations (personnel, technology, and efforts).</li> </ul> |                |                |                |



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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207279F / <i>Isolated Personnel Survivability and Recovery</i> | <b>Project (Number/Name)</b><br>654522 / CSAR EMD |
|--|--|---|

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p>- Will support encryption technology evaluation, selection, and initial compatibility analysis for technical sufficiency for use in the NGSR radio.</p> <p><b>FY 2024 Plans:</b></p> <ul style="list-style-type: none"> <li>- Will deliver vendor initial prototype designs</li> <li>- Will deliver vendor-refined designs for evaluation</li> <li>- Will kick off Vendor prototype builds (software/hardware)</li> <li>- Will build/configure Mobile User Objective System (MUOS) Digitized Earth Terminal Interface (DETI) digital infrastructure</li> <li>- Will build MUOS ground connections with the Joint Personnel Recovery Center (JPRC) interfaces</li> <li>- Will conduct testing on waveform compatibility with MUOS constellation</li> <li>- Will fund test organization support and infrastructure build/configuration</li> <li>- Will fund web migration of JPRC emergency event notification application</li> <li>- Will fund migration/testing of JPRC applications to a cloud environment</li> </ul> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>                     FY24 funding increases ensure a synchronization (time and technology development) of parallel efforts and support the Air Force plan to rapidly field the NGSR radio prior to any degradation of existing CSEL capability. The increase in funding facilitates the ramp-up in Beyond Line of Site (BLOS) ground station modifications and software development, supports multiple vendor competitive development activities for the Handheld Radio (HHR), facilitates the ramp-up of modernization and migration activities for the personnel recovery applications and interfaces and supports the ramp-up of efforts associated with encryption modification and integration.</p> |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | -              | 27.881         | 56.225         |

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207279F / <i>Isolated Personnel Survivability and Recovery</i> | <b>Project (Number/Name)</b><br>654522 / CSAR EMD |
|--|--|---|

**C. Other Program Funding Summary (\$ in Millions)**

| <u>Line Item</u>   | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • OPAF 05 837140:<br><i>0207279F - Next Generation Survival Radio (654522)</i> | 0.000          | 0.000          | 0.000                         | 0.000                        | 0.000                          | 0.000          | 0.000          | 76.750         | 0.000          | Continuing                        | Continuing        |

**Remarks**

**D. Acquisition Strategy**

The NGSR acquisition strategy leverages a Middle Tier Acquisition (MTA) pathway and an Other Transactional Authority (OTA) contracting strategy to Rapidly Prototype and then Rapidly Field a CSEL replacement capability.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207279F / <i>Isolated Personnel Survivability and Recovery</i> | <b>Project (Number/Name)</b><br>654522 / CSAR EMD |
|--|--|---|

| <b>Product Development (\$ in Millions)</b> |                        |                                 |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|---------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location  | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| MUOS Ground Station Upgrade                 | MIPR                   | 1. BLOS Development : TBD       | -           | -       |            | 13.678  | Apr 2023   | 20.200       | Nov 2023   | -           |            | 20.200        | Continuing       | Continuing | -                        |
| LPI/LPD Waveform Upgrade                    | MIPR                   | 1. BLOS Development : TBD       | -           | -       |            | 1.000   | Apr 2023   | 2.000        | Nov 2023   | -           |            | 2.000         | Continuing       | Continuing | -                        |
| NGSR Rapid Prototype (Design/Refine/Build)  | C/CPIF                 | 2. NGSR Rapid Prototyping : TBD | -           | -       |            | 7.891   | Jul 2023   | 22.398       | Jul 2024   | -           |            | 22.398        | Continuing       | Continuing | -                        |
| JPRC Software Modernization and Migration   | Various                | 3. JPRC Software Upgrades : TBD | -           | -       |            | 3.449   | Apr 2023   | 3.552        | Nov 2023   | -           |            | 3.552         | Continuing       | Continuing | -                        |
| Encryption Development                      | PO                     | 4. Encryption Upgrades : TBD    | -           | -       |            | 1.610   | Mar 2023   | 2.575        | Nov 2023   | -           |            | 2.575         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                 | -           | -       |            | 27.628  |            | 50.725       |            | -           |            | 50.725        | Continuing       | Continuing | N/A                      |

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Sys Test & Eval                             | Various                | Not specified. : TBD           | -           | -       |            | 0.200   | Mar 2023   | 2.000        | Nov 2023   | -           |            | 2.000         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | -       |            | 0.200   |            | 2.000        |            | -           |            | 2.000         | Continuing       | Continuing | N/A                      |

| <b>Management Services (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Sys Eng / Prog Management (SEPM)            | TBD                    | Not specified. : TBD           | -           | -       |            | 0.053   | Jul 2023   | 3.500        | Nov 2023   | -           |            | 3.500         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | -       |            | 0.053   |            | 3.500        |            | -           |            | 3.500         | Continuing       | Continuing | N/A                      |

|                            |  |  | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|--|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> |  |  | -           | -       | 27.881  | 56.225       | -           | 56.225        | Continuing       | Continuing | N/A                      |

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|--|--------------------|----------------|--|---------------------|--------------------|--|-------------------------|-------------------|---------------------------------|--|
| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2024 Air Force |                    |                |  |                     |                    |  | <b>Date:</b> March 2023 |                   |                                 |  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                       |                    |                | <b>R-1 Program Element (Number/Name)</b><br>PE 0207279F / <i>Isolated Personnel Survivability and Recovery</i> |                     |                    | <b>Project (Number/Name)</b><br>654522 / <i>CSAR EMD</i> |                         |                   |                                 |  |
|  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b>   | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b>                                     | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |  |

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023                           |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0207279F / <i>Isolated Personnel Survivability and Recovery</i> | <b>Project (Number/Name)</b><br>654522 / CSAR EMD |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   |  |
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| <b>1. Beyond Line of Site Development</b>               |  |
| 1.1. MUOS Ground Station Upgrade - DETI                 |  |
| 1.2. LPI/LPD Waveform Upgrade                           |  |
| <b>2. NGSR Rapid Prototyping</b>                        |  |
| 2.1. Competitive Rapid Prototype Development            |  |
| 2.2. Personnel Recovery Systems Integration and Testing |  |
| 2.3. BLOS Integration and Testing                       |  |
| <b>3. JPRC Software Modernization and Migration</b>     |  |
| 3.1. JPRC Application (Web Transition)                  |  |
| 3.2. JPRC Software Cloud Migration                      |  |
| <b>4. NGSR Message Encryption Development</b>           |  |
| 4.1. Encryption Selection/Tailoring                     |  |
| 4.2. Encryption Integration and Testing                 |  |
| <b>5. Objective System - Rapid Fielding</b>             |  |
| 5.1. Planning   |  |
| 5.2. NGSR Operational Testing                           |  |
| 5.3. NGSR Production                                    |  |
| <b>6. Software Augmentation and Upkeep</b>              |  |
| 6.1. MUOS Ground Station - DETI                         |  |
| 6.2. NGSR Handheld Device                               |  |
| 6.3. JPRC Applications and Cloud                        |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023                           |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0207279F / <i>Isolated Personnel Survivability and Recovery</i> | <b>Project (Number/Name)</b><br>654522 / CSAR EMD |

Schedule Details

| Events by Sub Project                                   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b>1. Beyond Line of Site Development</b>               |         |      |         |      |
| 1.1. MUOS Ground Station Upgrade - DETI                 | 3       | 2023 | 1       | 2026 |
| 1.2. LPI/LPD Waveform Upgrade                           | 3       | 2023 | 2       | 2025 |
| <b>2. NGSR Rapid Prototyping</b>                        |         |      |         |      |
| 2.1. Competitive Rapid Prototype Development            | 4       | 2023 | 1       | 2026 |
| 2.2. Personnel Recovery Systems Integration and Testing | 2       | 2024 | 1       | 2026 |
| 2.3. BLOS Integration and Testing                       | 3       | 2025 | 1       | 2026 |
| <b>3. JPRC Software Modernization and Migration</b>     |         |      |         |      |
| 3.1. JPRC Application (Web Transition)                  | 3       | 2023 | 1       | 2026 |
| 3.2. JPRC Software Cloud Migration                      | 3       | 2023 | 1       | 2026 |
| <b>4. NGSR Message Encryption Development</b>           |         |      |         |      |
| 4.1. Encryption Selection/Tailoring                     | 2       | 2023 | 1       | 2026 |
| 4.2. Encryption Integration and Testing                 | 1       | 2024 | 1       | 2026 |
| <b>5. Objective System - Rapid Fielding</b>             |         |      |         |      |
| 5.1. Planning   | 1       | 2024 | 1       | 2026 |
| 5.2. NGSR Operational Testing                           | 1       | 2026 | 4       | 2027 |
| 5.3. NGSR Production                                    | 1       | 2027 | 4       | 2028 |
| <b>6. Software Augmentation and Upkeep</b>              |         |      |         |      |
| 6.1. MUOS Ground Station - DETI                         | 1       | 2026 | 4       | 2028 |
| 6.2. NGSR Handheld Device                               | 1       | 2026 | 4       | 2028 |
| 6.3. JPRC Applications and Cloud                        | 1       | 2026 | 4       | 2028 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0207328F / <i>Stand In Attack Weapon</i> |
|---|---|

| COST (\$ in Millions)                 | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                 | 0.000       | 161.199 | 263.152 | 298.585      | 0.000       | 298.585       | 381.867 | 407.928 | 386.462 | 305.871 | Continuing       | Continuing |
| 653133: <i>Stand In Attack Weapon</i> | 0.000       | 161.199 | 263.152 | 298.585      | 0.000       | 298.585       | 381.867 | 407.928 | 386.462 | 305.871 | Continuing       | Continuing |
| Quantity of RDT&E Articles            | 10          | 8       | 26      | 7            | -           | 7             | 6       | 25      | 21      | 10      |                  |            |

**A. Mission Description and Budget Item Justification**

The Stand-in Attack Weapon (SiAW) system will provide the capability to strike rapidly re-locatable targets that create the Anti-Access/Area Denial (A2/AD) environment. SiAW targets include Theater Ballistic Missile Launchers, Land Attack and Anti-Ship Cruise Missile Launchers, GPS Jammers, Anti-Satellite Systems, and Integrated Air Defense Systems. The SiAW missile system will be developed under a Digital Acquisition (DA) approach in a competitive environment that will emphasize agility and innovation. Interim combat capability will be pursued through the Navy's Advanced Anti-Radiation Guided Missile-Extended Range (AARGM-ER) program with improved warhead/fuze and F-35 integration (including Universal Armament Interface [UAI] and Mission Planning).

Implements Digital Acquisition tenants of Open, Agile, and Digital; builds and establishes industrial base innovation around the program's enterprise for modularity and adaptability for the life cycle of the weapons system. Leverages common component development, in collaboration with other weapon systems, to reduce redundant costs between systems with similar subsystems requirements. Invests in analytical, data management, digital environments, networks, facilities, and security infrastructure upgrades supporting development of this program's capabilities, while leveraging DoD and DAF enterprise IT solutions. Expands program office staff, facilities, and security infrastructure to support the required classification levels for this program's activities. Engages with DoD, DAF, and industry stakeholders to refine threat analysis, refine inventory requirements, and plan upgrade requirements. Capitalizes on and incorporates successful laboratory research and development efforts applicable to this program's capability.

The total cost of the SiAW RP Middle Tier of Acquisition effort is 1,145.33 million, including RDT&E. The SiAW is fully funded across the Future Years Defense Program.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY2022 4.900M was expended for civilian pay expenses in this program element, and in FY 2023 8.966M is forecasted for civilian pay expenses in this program element.

The FY2024 funding request was reduced by 17.732 million to account for the availability of prior year execution balances.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|--|-------------------------|

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0207328F / <i>Stand In Attack Weapon</i> |
|---|---|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 166.570        | 283.152        | 270.228             | 0.000              | 270.228              |
| Current President's Budget                        | 161.199        | 263.152        | 298.585             | 0.000              | 298.585              |
| Total Adjustments                                 | -5.371         | -20.000        | 28.357              | 0.000              | 28.357               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | -20.000        |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -5.371         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 28.357              | 0.000              | 28.357               |

**Change Summary Explanation**

FY22 adjustment for Small Business Innovative Research (SBIR)  
 FY23 adjustment of -\$20M is Congressional mark for Program delays  
 FY24 increase of \$28.357M for Non-Advocate Cost Assessment

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
|---|----------------|----------------|----------------|

|   |       |       |       |
|---|-------|-------|-------|
| <b>Title:</b> Warhead / Electronic Safe and Arm Fuze (ESAF) Development / System Engineering / Program Management (SEPM)                              | 0.000 | 4.218 | 0.000 |
| <b>Description:</b> Development of a new warhead and ESAF to support AARGM-ER. Will design, test, and certify new warhead/ESAF.                       |       |       |       |
| <b>FY 2023 Plans:</b><br>Complete working with the USN AARGM-ER Program Office on the warhead/ESAF development, test, integration, and qualification. |       |       |       |
| <b>FY 2024 Plans:</b><br>Work will be completed in FY 2023.   |       |       |       |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funding decreased because work is projected to be completed in FY2023.                      |       |       |       |
| <b>Title:</b> Universal Armament Interface (UAI) / Anti-Radiation Homing (ARH) message / SEPM   | 0.000 | 7.118 | 0.000 |
| <b>Description:</b> Develop and test a UAI/ARH message set for the AARGM-ER missile.  |       |       |       |
| <b>FY 2023 Plans:</b>   |       |       |       |



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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force  |  | <b>Date:</b> March 2023   |                |                |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>   |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0207328F / <i>Stand In Attack Weapon</i> |                |                |
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   |  | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| Complete testing, certification and validation of the UAI/ARH for the AARGM-ER missile.<br><b>FY 2024 Plans:</b><br>Work projected to be completed in FY2023.<br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funding decreased because work is projected to be completed in FY2023.   |  |   |                |                |
| <b>Title:</b> F-35 Integration<br><b>Description:</b> Integration of the AARGM-ER and SiAW missiles onto the F-35. Efforts for aircraft integration will address the F-35 aircraft software development, Mission Planning capability, engineering to support weapon integration, testing, and airworthiness certification for the missile carriage and employment efforts.<br><b>FY 2023 Plans:</b><br>Continue integrating the AARGM-ER on the F-35 as an interim combat capability; includes ground testing, F-35 weapon integration, launcher adapter development and mission planning.<br><b>FY 2024 Plans:</b><br>Continue integrating the AARGM-ER on the F-35 as an interim combat capability; includes ground testing, F-35 weapon integration, launcher adapter development and mission planning. Begin integration of the SiAW missiles onto the F-35.<br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funding increased due to ramping up integration efforts, to include SiAW missiles as well as AARGM-ER missiles. |  | 5.133   | 26.574         | 51.791         |
| <b>Title:</b> SiAW Development<br><b>Description:</b> Conduct development and testing of discrete SiAW technologies as well as the integrated SiAW weapons system. This includes the development of an initial SiAW capability via the Middle Tier Acquisition described in Section A, as well as a post-MTA activity that will bring additional capability and integrate the weapon onto the F-35.<br><b>FY 2023 Plans:</b><br>Continue work on Phase 1 that began in FY22 and proceed to a Preliminary Design Review-like event in a Model Based System Engineering environment by late FY23. Complete acquisition planning for Phase 2 and prepare for a competitive selection in late FY23.<br><b>FY 2024 Plans:</b><br>Begin ramp up for Phase 2 competitive selection.<br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b>  |  | 117.962   | 163.886        | 210.031        |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD) | <b>R-1 Program Element (Number/Name)</b><br>PE 0207328F I Stand In Attack Weapon |
|--|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| Funding increased to cover the cost of ramping up for SiAW Phase 2 development efforts.   |                |                |                |
| <b>Title:</b> Target/Test Assets, Testing, & Support<br><br><b>Description:</b> Provides associated government and contract support for F-35 developmental and operational testing for AARGM-ER and SiAW. Includes required test assets and support, flight test equipment, construction and procurement of targets to meet mission requirements, test wing and range support to include both sea and land ranges, and ground/flight test support.<br><br><b>FY 2023 Plans:</b><br>Continue test support, purchasing test equipment, target construction, range/ground support, and test assets. Continue target/threat emitter acquisition to include weapon cybersecurity support and test investments and development of flight telemetry and termination system.<br><br><b>FY 2024 Plans:</b><br>Complete AARGM-ER test efforts. Begin SiAW missile test support, purchasing test equipment, target construction, range/ground support, and test assets. Continue target/threat emitter acquisition to include weapon cybersecurity support and test investments and development of flight telemetry and termination system.<br><br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funding decreased due to completion of AARGM-ER test activities. SiAW funding will be used to purchase long lead items needed for future years test activities. | 38.104         | 61.356         | 36.763         |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 161.199        | 263.152        | 298.585        |

| <b>D. Other Program Funding Summary (\$ in Millions)</b> |                |                |                               |                              |                                |                |                |                |                |                                   |                   |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| <u>Line Item</u>   | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
| • RDTE 07 0205601N:<br>AARGM-ER (Navy)                   | 120.568        | 76.314         | 51.807                        | -                            | 51.807                         | 26.381         | 22.264         | 10.500         | 9.633          | Continuing                        | Continuing        |
| • MPAF 02 0207328F:<br>Stand-In Attack Weapon            | -              | 77.975         | 41.947                        | -                            | 41.947                         | 173.091        | 149.268        | 347.445        | 399.393        | 7,205.703                         | 8,394.822         |

**Remarks**  
 RDTE: US Navy AARGM-ER Program Office, Anti-Radiation Missile Improvement Systems Development US Navy appropriation RDT&E 1319.  
 MPAF: Funding contained in procurement document utilized to procure initial production lot of AARGM-ER weapons.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force Date: March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0207328F / <i>Stand In Attack Weapon</i> |
|---|---|

**E. Acquisition Strategy**

The Stand-in Attack Weapon (SiAW) program will utilize a multi-phase approach to migrate advanced technologies and weapon designs into an Model Based System Engineering (MBSE) environment and then rapidly evolve the designs for an initial capability followed by a more comprehensive capability. The first Phases (1 & 2) have been approved as a Middle Tier of Acquisition (MTA) program, and will focus on the integration of key technologies, the implementation of digital acquisition, a competitive selection, and an initial capability on a surrogate aircraft in less than 5 yrs. In Phase 3, sometimes referred to as the "Post-MTA" phase, the SiAW program plans to transition to a Major Capability Acquisition (MCA) where the capability will be improved and the system will be integrated on the F-35A.

Key tenets of the SiAW program will be the establishment/use of a MBSE environment, implementation of a Weapon Open System Architecture (WOSA), and Agile Software Development.

Air Force plans to continue Navy-led AARGM-ER investments to field an interim combat capability on the F-35.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |   |  |
|--|---|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207328F / <i>Stand In Attack Weapon</i> | <b>Project (Number/Name)</b><br>653133 / <i>Stand In Attack Weapon</i> |
|--|---|--|

| <b>Product Development (\$ in Millions)</b>                            |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Warhead / ESAF Development   | MIPR                   | NGDS : Northridge, CA          | 0.000       | 0.000   | Dec 2021   | 4.218   | Dec 2022   | 0.000        |            | -           |            | 0.000         | Continuing       | Continuing | -                        |
| Universal Armament Interface (UAI) Anti-Radiation Homing message (ARH) | MIPR                   | Various : Various              | 0.000       | 0.000   | Dec 2021   | 7.118   | Apr 2023   | 0.000        |            | -           |            | 0.000         | Continuing       | Continuing | -                        |
| KTR SEPM   | MIPR                   | NGDS : Northridge, CA          | 0.000       | 0.000   | Dec 2021   | 0.000   | Nov 2022   | 0.000        |            | -           |            | 0.000         | Continuing       | Continuing | -                        |
| F-35 Integration   | MIPR                   | Various : Various              | 0.000       | 5.143   | May 2022   | 25.324  | Aug 2023   | 51.791       | Nov 2023   | -           |            | 51.791        | Continuing       | Continuing | -                        |
| Mission Planning   | MIPR                   | Various : Various              | 0.000       | 0.000   | Jun 2022   | 1.250   | Apr 2023   | 0.000        | Jan 2024   | -           |            | 0.000         | Continuing       | Continuing | -                        |
| Advanced Technology Risk Reduction                                     | MIPR                   | Various : Various              | 0.000       | 0.000   | Dec 2021   | 0.000   |            | 0.000        |            | -           |            | 0.000         | Continuing       | Continuing | -                        |
| SiAW Development   | Various                | Various : Various              | 0.000       | 109.609 | May 2022   | 141.168 | Aug 2023   | 179.216      | Aug 2024   | -           |            | 179.216       | Continuing       | Continuing | -                        |
| <b>Subtotal</b>  |                        |                                | 0.000       | 114.752 |            | 179.078 |            | 231.007      |            | -           |            | 231.007       | Continuing       | Continuing | N/A                      |

**Remarks**  
Northrop Grumman Defense Systems (NGDS)

| <b>Support (\$ in Millions)</b>           |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                        | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Civ Pay - Direct Cite Authorization (DCA) | Allot                  | AFLCMC/FZA : Wright Pat, OH    | 0.000       | 4.900   | Nov 2022   | 8.966   | Oct 2023   | 10.569       | Oct 2024   | -           |            | 10.569        | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                           |                        |                                | 0.000       | 4.900   |            | 8.966   |            | 10.569       |            | -           |            | 10.569        | Continuing       | Continuing | N/A                      |

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Test Assets AARGM-ER                        | MIPR                   | NGDS : Northridge, CA          | 0.000       | 27.197  | Feb 2022   | 25.836  | Apr 2023   | 0.000        | Jan 2024   | -           |            | 0.000         | Continuing       | Continuing | -                        |



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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |   |  |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207328F / <i>Stand In Attack Weapon</i> | <b>Project (Number/Name)</b><br>653133 / <i>Stand In Attack Weapon</i> |
|--|---|--|

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   |  |
|---|--|
| <b>Warhead &amp; ESAF Development</b>                                     |  |
| Design Warhead & Electronic Safe and Arm Fuze                             |  |
| <b>UAI / ARH</b>  |  |
| Design, Test and validate UAI / ARH message set                           |  |
| <b>F-35 Integration</b>   |  |
| AARGM-ER and SiAW integration on F-35                                     |  |
| <b>SiAW Development</b>   |  |
| SiAW Development  |  |
| <b>Target &amp; Test Assets, Test, &amp; Support</b>                      |  |
| Flight test support, range modifications, & targets for AARGM-ER and SiAW |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0207328F / <i>Stand In Attack Weapon</i> | <b>Project (Number/Name)</b><br>653133 / <i>Stand In Attack Weapon</i> |

Schedule Details

| Events by Sub Project   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b>Warhead &amp; ESAF Development</b>                                     |         |      |         |      |
| Design Warhead & Electronic Safe and Arm Fuze                             | 1       | 2022 | 4       | 2023 |
| <b>UAI / ARH</b>  |         |      |         |      |
| Design, Test and validate UAI / ARH message set                           | 1       | 2022 | 4       | 2023 |
| <b>F-35 Integration</b>   |         |      |         |      |
| AARGM-ER and SiAW integration on F-35                                     | 1       | 2022 | 4       | 2028 |
| <b>SiAW Development</b>   |         |      |         |      |
| SiAW Development  | 3       | 2022 | 4       | 2028 |
| <b>Target &amp; Test Assets, Test, &amp; Support</b>                      |         |      |         |      |
| Flight test support, range modifications, & targets for AARGM-ER and SiAW | 1       | 2022 | 4       | 2028 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> / BA 5: <i>System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0207701F / <i>Full Combat Mission Training</i> |
|--|---|

| COST (\$ in Millions)                       | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                       | -           | 12.064  | 12.528  | 7.597        | 0.000       | 7.597         | 7.740   | 7.925   | 8.079   | 8.362   | Continuing       | Continuing |
| 655012: <i>Full Combat Mission Training</i> | -           | 12.064  | 12.528  | 7.597        | 0.000       | 7.597         | 7.740   | 7.925   | 8.079   | 8.362   | Continuing       | Continuing |

**A. Mission Description and Budget Item Justification**

Full Combat Mission Training (FCMT) supports Air Force Distributed Mission Operations (DMO), Live-Synthetic Blended and Joint Simulation Environment (JSE) integration. FCMT funding provides research in areas benefiting the DMO/LVC environment and the Air Force JSE enterprise. It also provides research and development to facilitate integration of fielded and newly acquired Air Force owned training devices into DMO/LVC networks and JSE; enhances the quality of training for the systems added to the network; enables aircrews to network with LVC components to form the integrated DMO battlespace; links geographically distributed high-fidelity combat and combat support training devices including Command and Control and Intelligence, Surveillance, and Reconnaissance systems and develops, demonstrates, and inserts Multi-Level Security (MLS) capability. This capability enables warfighters to exercise and train at the operational and strategic levels of war, conduct networked unit-level training at home station and high-end test and training at joint test and training sites.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 0.0M was expended for civilian pay expenses in this program element. FY23 0.0M is forecasted for civilian pay expenses in this program element.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 12.064         | 3.028          | 7.597               | 0.000              | 7.597                |
| Current President's Budget                        | 12.064         | 12.528         | 7.597               | 0.000              | 7.597                |
| Total Adjustments                                 | 0.000          | 9.500          | 0.000               | 0.000              | 0.000                |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 9.500          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 0.000               | 0.000              | 0.000                |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

**Appropriation/Budget Activity**  
 3600: *Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)*

**R-1 Program Element (Number/Name)**  
 PE 0207701F / *Full Combat Mission Training*

**Congressional Add Details (\$ in Millions, and Includes General Reductions)**

**Project:** 655012: *Full Combat Mission Training*  
 Congressional Add: *Airborne Augmented Reality for Pilot Training*

Congressional Add Subtotals for Project: 655012

Congressional Add Totals for all Projects

|   | <b>FY 2022</b> | <b>FY 2023</b> |
|---|----------------|----------------|
|   | 5.000          | 9.500          |
| Congressional Add Subtotals for Project: 655012 | 5.000          | 9.500          |
| Congressional Add Totals for all Projects       | 5.000          | 9.500          |

**Change Summary Explanation**

FY23 Congressional add of \$9.50M supports visual capabilities for live, virtual and constructive air combat training systems.

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|   |                    |                |                |                     |  |                      |                |                |   |                         |                         |                   |
|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |  |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0207701F / Full Combat Mission Training |                      |                |                | <b>Project (Number/Name)</b><br>655012 / Full Combat Mission Training |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>   | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 655012: Full Combat Mission Training                                    | -                  | 12.064         | 12.528         | 7.597               | 0.000  | 7.597                | 7.740          | 7.925          | 8.079   | 8.362                   | Continuing              | Continuing        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -  | -                    | -              | -              | -   | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

Full Combat Mission Training (FCMT) supports Air Force Distributed Mission Operations (DMO), Live-Synthetic, Blended, and Joint Simulation Environment (JSE) integration. FCMT funding provides research in areas benefiting the DMO/LVC environment as a whole; provides research and development to facilitate integration of fielded and newly acquired Air Force owned training devices into DMO/LVC networks; enhances the quality of training for the systems added to the network; enables aircrews to network with LVC components to form the integrated DMO battlespace; links geographically distributed high-fidelity combat and combat support training devices including Command and Control and Intelligence, Surveillance, and Reconnaissance systems and develops, demonstrates, and inserts Multi-Level Security (MLS) capability. This capability enables warfighters to exercise and train at the operational and strategic levels of war as well as conduct networked unit-level training at home station.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 0.0M was expended for civilian pay expenses in this program element. FY23 0.0M is forecasted for civilian pay expenses in this program element.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Cross Domain Solutions (CDS)  | 1.458          | 0.980          | 3.420          |
| <b>Description:</b> Development, demonstration, and insertion of Multi-Level Security (MLS) capability supporting Live Virtual Constructive training for fifth generation platforms.  |                |                |                |
| <b>FY 2023 Plans:</b><br>Deliver F-35 Cross Domain Solutions (CDS) to demonstrate/validate/update 4th to 5th gen integrated secure training. Establish relevant Operational Test and Training Infrastructure efforts supporting DMO/JSE/Blended training test and training fifth generation aircraft. |                |                |                |
| <b>FY 2024 Plans:</b><br>Validate the F-35 CDS. Begin the migration of the CDS to other simulation platforms (F-22 and F-16).   |                |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b>  |                |                |                |

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|---|--|---|----------------|----------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force   |  | <b>Date:</b> March 2023   |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 5  | <b>R-1 Program Element (Number/Name)</b><br>PE 0207701F / Full Combat Mission Training | <b>Project (Number/Name)</b><br>655012 / Full Combat Mission Training |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   |  | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| Funding increase in FY24 due to budget adjustment in FY23 to better meet expenditure rates. In FY24 the program will scale the CDS technology development to original schedule and deliveries.  |  |   |                |                |
| <p><b>Title:</b> Distributed Mission Operations Development</p> <p><b>Description:</b> Development, demonstrations, studies and insertions of Live Virtual Constructive related technologies and proficiency based continuation training strategies.</p> <p><b>FY 2023 Plans:</b><br/>Complete enhanced analytics for local unit and larger distributed events. Demonstrate learning management and scenario capabilities for proficiency-based training with Joint Synthetic Environment/Effects Based Simulation.</p> <p><b>FY 2024 Plans:</b><br/>Begin evaluation of training tools for implementation in the Joint Simulation Environment (JSE).</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding increased to begin integration of applications of the tools into JSE.</p>   |  | 2.980   | 0.803          | 1.899          |
| <p><b>Title:</b> Development and validation of DMO/JSE and Blended training assessments tools.</p> <p><b>Description:</b> Studies to assess and validate Live Virtual Constructive (LVC) training and accreditation of portions of this process; studies to develop objective enhancement and measurement tools DMO/JSE and Blended training environments.</p> <p><b>FY 2023 Plans:</b><br/>Complete validation of training environment assessments for an identified set of ACC blended training environments. Continue readiness metrics and tracking tools refinement to measure training proficiency gained during blended training events. Begin development of secure cloud-based readiness data tracking, storage and retrieval for training.</p> <p><b>FY 2024 Plans:</b><br/>The FY24 plan is to migrate predictive analytic tools into routine operational training readiness assessment and reporting.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding increase is due to broader expansion of operational applications across more operational training environments.</p> |  | 1.525   | 0.620          | 1.139          |
| <p><b>Title:</b> Network Studies</p> <p><b>Description:</b> Research and development to provide for the integration of fielded and newly introduced, Air Force, Joint and Coalition high-fidelity flight and mission trainers.</p> <p><b>FY 2023 Plans:</b></p>   |  | 1.101   | 0.625          | 1.139          |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0207701F / Full Combat Mission Training | <b>Project (Number/Name)</b><br>655012 / Full Combat Mission Training |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <p>Begin integration and evaluation of a proficiency-based learning ecosystem for Combat Air Force (CAF) future training. Begin alignment of CAF proficiency based training capabilities with Air Education and Training Command (AETC) Pilot Training Transformation. Continue development and evaluation of tools to create contested effects in local and distributed training events. Continue creation and evaluation of GOTS/COTS lightweight simulators for deployable training. Complete development and fielding of Augmented Reality Virtual Reality technology and tools repository for maintenance and tactical training.</p> <p><b>FY 2024 Plans:</b><br/>The FY24 plan is to demonstrate seamless training effectiveness and proficiency tracking from AETC to ACC and into operations.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding increased in order to fully create the underlying connections and architectures of the data ecosystem that permits the seamless data and tracking to be possible.</p> |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 7.064          | 3.028          | 7.597          |

|   | <b>FY 2022</b> | <b>FY 2023</b> |
|---|----------------|----------------|
| <b>Congressional Add:</b> Airborne Augmented Reality for Pilot Training   | 5.000          | 9.500          |
| <b>FY 2022 Accomplishments:</b> Develop capability and airborne augmented reality technology for pilot training.            |                |                |
| <b>FY 2023 Plans:</b> Continued funding for visual capabilities for live, virtual and constructair combat training systems. |                |                |
| <b>Congressional Adds Subtotals</b>   | 5.000          | 9.500          |

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

Air Force Research Laboratory (AFRL) will conduct research/studies to develop/implement Cross Domain Solutions (CDS) supporting integrated DMO/JSE and Live-synthetic blended training. Fielded and projected Air Force flight and mission training systems without blended training capability and will be modified to ensure training compatibility.

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| Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force   |                        |  |             |  |            |         |            |                                       |            |             |            | Date: March 2023 |                  |            |                          |
|---|------------------------|--|-------------|--|------------|---------|------------|---------------------------------------|------------|-------------|------------|------------------|------------------|------------|--------------------------|
| Appropriation/Budget Activity   |                        |  |             | R-1 Program Element (Number/Name)          |            |         |            | Project (Number/Name)                 |            |             |            |                  |                  |            |                          |
| 3600 / 5  |                        |  |             | PE 0207701F / Full Combat Mission Training |            |         |            | 655012 / Full Combat Mission Training |            |             |            |                  |                  |            |                          |
| Product Development (\$ in Millions)  |                        |  |             | FY 2022                                    |            | FY 2023 |            | FY 2024 Base                          |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location   | Prior Years | Cost                                       | Award Date | Cost    | Award Date | Cost                                  | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |
| Augmented Reality Development   | TBD                    | Air Force Research Lab : WPAFB, OH                                     | -           | 5.000                                      | Jan 2022   | 9.500   | Jan 2023   | -                                     |            | -           |            | -                | Continuing       | Continuing | -                        |
| <b>Subtotal</b>   |                        |  | -           | 5.000                                      |            | 9.500   |            | -                                     |            | -           |            | -                | Continuing       | Continuing | N/A                      |
| Support (\$ in Millions)  |                        |  |             | FY 2022                                    |            | FY 2023 |            | FY 2024 Base                          |            | FY 2024 OCO |            | FY 2024 Total    |                  |            |                          |
| Cost Category Item  | Contract Method & Type | Performing Activity & Location   | Prior Years | Cost                                       | Award Date | Cost    | Award Date | Cost                                  | Award Date | Cost        | Award Date | Cost             | Cost To Complete | Total Cost | Target Value of Contract |
| Cross Domain Solutions (CDS): Development, Testing and insertion of Multi-Level-Security protocols, Cross Domain rule set development and accreditation | Various                | Air Force Research Lab, 711 Human Performance Wing, Human : Dayton, OH | -           | 1.458                                      | Jan 2022   | 0.980   | Jan 2023   | 3.420                                 | Jan 2024   | -           |            | 3.420            | Continuing       | Continuing | -                        |
| Develop DMO/ JSE Blended training capabilities: demonstration, studies and insertion of distributedmission ops related technologies.                    | Various                | Air Force Research Lab, 711 Human Performance Wing : Dayton, OH        | -           | 2.980                                      | Jan 2022   | 0.803   | Jan 2023   | 1.899                                 | Jan 2024   | -           |            | 1.899            | Continuing       | Continuing | -                        |
| Validation of warfighter seasoning and development of objective performance enhancements for DMO/ JSE/Blended environment.                              | Various                | Air Force Research Lab, 711 Human Performance Wing : Dayton, OH        | -           | 1.525                                      | Jan 2022   | 0.620   | Jan 2023   | 1.139                                 | Jan 2024   | -           |            | 1.139            | Continuing       | Continuing | -                        |
| Other Network Studies: Supporting integration of newly fielded high-fidelity training systems and networks  | Various                | Air Force Research Lab, 711 Human Performance Wing : Dayton, OH        | -           | 1.101                                      | Jan 2022   | 0.625   | Jan 2023   | 1.139                                 | Jan 2024   | -           |            | 1.139            | Continuing       | Continuing | -                        |
| <b>Subtotal</b>   |                        |  | -           | 7.064                                      |            | 3.028   |            | 7.597                                 |            | -           |            | 7.597            | Continuing       | Continuing | N/A                      |







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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207701F / Full Combat Mission Training | <b>Project (Number/Name)</b><br>655012 / Full Combat Mission Training |
|--|--|---|

|  | FY 2022    |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|--|------------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
|  | 1          | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |
| Develop gateways and CDS to integrate high-fidelity trainers with Air Force, joint, and coalition networks | [REDACTED] |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Evaluate compressed DIS network standards for CDS in DMO/Blended training                                  | [REDACTED] |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Integrate and evaluate multi-domain operations and kill-chain training strategies for JSE/Blended training | [REDACTED] |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Evaluate multi-national mission planning and debrief technologies in research training events              | [REDACTED] |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Implement, evaluate, and field technologies aligned with future training strategies for LVC                | [REDACTED] |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Develop specifications for live data harvesting using encrypted systems and tools                          | [REDACTED] |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Update Five Eyes (FVEY) rule sets for full 4th, 5th and autonomous tactical employment training            | [REDACTED] |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Create Secure LVC testbed environment for kill chain and JADC2 ops training via DMO/ JSE                   | [REDACTED] |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| <b>Joint Simulation Environment Phase 2</b>  |            |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Release Request For Proposal (RFP)   | [REDACTED] |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Award Development Contract   | [REDACTED] |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Begin initial design and development efforts   | [REDACTED] |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| <b>Joint simulation environment Phase 3</b>  |            |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |
| Develop Multi-Level Security testbed and support testing on 5th Gen systems                                | [REDACTED] |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |         |   |   |   |





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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0207701F / Full Combat Mission Training | <b>Project (Number/Name)</b><br>655012 / Full Combat Mission Training |

Schedule Details

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b>Joint Simulation Environment phase 1</b>  |         |      |         |      |
| Develop Multi-Level Security testbed and support testing on 5th Gen systems  | 1       | 2022 | 2       | 2022 |
| Develop 4th to 5th generation rule sets for coalition integration  | 1       | 2022 | 2       | 2022 |
| Develop metrics for routine proficiency evaluations and determine standard format for storing/analyzing proficiency data   | 1       | 2022 | 2       | 2022 |
| Create and evaluate alternative data formats for routinely tracking and storing performance and proficiency data   | 1       | 2022 | 2       | 2022 |
| Refine learning managed scenario and integrate with blended training events  | 1       | 2022 | 1       | 2025 |
| Develop and integrate After Action Review tools for Mission Training Centers   | 1       | 2022 | 2       | 2025 |
| Develop metrics and tools to measure training proficiency gained during blended training events/standardized implementation at Distributed training Centers (DTCs)       | 1       | 2022 | 4       | 2023 |
| Conduct interoperability studies to evaluate the training value of 5th generation interoperable coalition training on the Combat Air Forces (CAF) DMO network and in JSE | 1       | 2022 | 4       | 2022 |
| Develop joint and coalition data standards and evaluate data management methods to support a full range of blended training  | 1       | 2022 | 3       | 2023 |
| Demonstrate persistent performance measurement and readiness assessment in fourth to 5th generation training events  | 1       | 2022 | 3       | 2026 |
| Develop gateways and CDS to integrate high-fidelity trainers with Air Force, joint, and coalition networks   | 1       | 2022 | 1       | 2024 |
| Evaluate compressed DIS network standards for CDS in DMO/Blended training  | 1       | 2022 | 3       | 2025 |
| Integrate and evaluate multi-domain operations and kill-chain training strategies for JSE/Blended training   | 1       | 2022 | 2       | 2024 |
| Evaluate multi-national mission planning and debrief technologies in research training events  | 1       | 2022 | 4       | 2024 |

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2024 Air Force **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207701F / Full Combat Mission Training | <b>Project (Number/Name)</b><br>655012 / Full Combat Mission Training |
|--|--|---|

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| Implement, evaluate, and field technologies aligned with future training strategies for LVC  | 1       | 2022 | 2       | 2025 |
| Develop specifications for live data harvesting using encrypted systems and tools  | 2       | 2023 | 4       | 2026 |
| Update Five Eyes (FVEY) rule sets for full 4th, 5th and autonomous tactical employment training  | 4       | 2024 | 4       | 2026 |
| Create Secure LVC testbed environment for kill chain and JADC2 ops training via DMO/JSE  | 3       | 2022 | 2       | 2026 |
| <b>Joint Simulation Environment Phase 2</b>  |         |      |         |      |
| Release Request For Proposal (RFP)   | 3       | 2022 | 3       | 2022 |
| Award Development Contract   | 2       | 2023 | 2       | 2023 |
| Begin initial design and development efforts   | 2       | 2023 | 2       | 2024 |
| <b>Joint simulation environment Phase 3</b>  |         |      |         |      |
| Develop Multi-Level Security testbed and support testing on 5th Gen systems  | 1       | 2022 | 2       | 2022 |
| Develop 4th and 5th Generation rule sets for coalition integration   | 1       | 2022 | 2       | 2022 |
| Develop metrics for routine proficiency evaluations and determine standard format for storing /analyzing proficiency data  | 1       | 2022 | 2       | 2022 |
| Create and evaluate alternative data formats for routinely tracking and storing performance and proficiency data   | 1       | 2022 | 1       | 2025 |
| Refine learning managed scenario and integrate with DMO/JSE/Blended training events  | 1       | 2022 | 2       | 2025 |
| Develop and integrate After Action Review tools for Mission Training Centers   | 1       | 2022 | 4       | 2023 |
| Develop metrics and tools to measure training proficiency gained during blended training events /standardize implementation at Distributed Training Centers (DTCs)       | 1       | 2022 | 4       | 2022 |
| Conduct interoperability studies to evaluate the training value of 5th Gen interoperable coalition training on the Combat Air Forces (CAF) DMO network and in JSE events | 1       | 2022 | 3       | 2023 |
| Develop joint and coalition data standards and evaluate data management methods to support blended training events   | 1       | 2022 | 3       | 2026 |

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2024 Air Force **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0207701F / Full Combat Mission Training | <b>Project (Number/Name)</b><br>655012 / Full Combat Mission Training |
|--|--|---|

| <b>Events by Sub Project</b>  | <b>Start</b>   |             | <b>End</b>     |             |
|---|----------------|-------------|----------------|-------------|
|   | <b>Quarter</b> | <b>Year</b> | <b>Quarter</b> | <b>Year</b> |
| Demonstrate persistent performance measurement and readiness assessment in fourth and 5th Gen JSE and blended training events | 1              | 2022        | 1              | 2024        |
| Develop gateways and CDS to integrate high-fidelity trainers with Air Force, joint and coalition networks                     | 1              | 2022        | 3              | 2025        |
| Evaluate compressed DIS network standards for CDS in DMO; evaluate JSE alternatives   | 1              | 2022        | 2              | 2024        |
| Integrate and evaluate multi-domain operations and kill-chain training scenarios for contested environments                   | 1              | 2022        | 4              | 2024        |
| Evaluate multi-national mission planning and debrief technologies in research training events                                 | 1              | 2022        | 4              | 2024        |
| Implement, evaluate and field technologies aligned with future training strategies for LVC                                    | 1              | 2022        | 2              | 2025        |
| Develop specifications for live data harvesting using encrypted systems and tools   | 2              | 2023        | 4              | 2026        |
| Update Five Eyes (FVEY) rule sets for full 4th, 5th and collaborative combat aircraft tactical employment training            | 4              | 2024        | 4              | 2026        |
| Create Secure testbed environment for kill chain and JADC2 ops training via DMO/JSE and blended training                      | 3              | 2022        | 2              | 2026        |
| <b>Joint Simulation Environment Phase 4</b>   |                |             |                |             |
| Release Request For Proposal (RFP)  | 2              | 2022        | 3              | 2022        |
| Award Development Contract  | 2              | 2023        | 2              | 2023        |
| Begin initial Design and Development efforts  | 2              | 2023        | 2              | 2024        |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0208036F / <i>Medical C-CBRNE Programs</i> |
|---|---|

| COST (\$ in Millions)                | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                | -           | 0.000   | 0.000   | 2.006        | 0.000       | 2.006         | 2.051   | 2.101   | 2.145   | 2.191   | 0.000            | 10.494     |
| 654910: <i>Aeromedical Readiness</i> | -           | 0.000   | 0.000   | 2.006        | 0.000       | 2.006         | 2.051   | 2.101   | 2.145   | 2.191   | 0.000            | 10.494     |
| Quantity of RDT&E Articles           | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**A. Mission Description and Budget Item Justification**

Current projects in this program include Aeromedical Readiness (Project 654910). Aeromedical Readiness projects provide aerospace medical systems and treatment equipment to improve casualty care and meet worldwide warfighter medical operational requirements.

Aeromedical Readiness provides key aeromedical devices, life-saving capabilities and quality of life technologies and equipment. This program enables the critical care of combat casualties by further developing and optimizing existing technologies for ground Expeditionary Medical Systems (EMEDS) and aeromedical evacuation systems. EMEDS and aeromedical evacuation systems provide the urgent care needed to treat deployed injured warfighters and return them to duty while in country, and to treat combat casualties that need to be safely transported to a stateside hospital for follow on treatment. The program also supports critical capabilities development in the multi-disciplinary areas for light-weight, durable, and rapidly deployable medical equipment to ensure the Air Force is poised to meet future medical readiness and operational requirements, to include but not limited to Spinal Immobilization Transport Device (SIT-D), Pathogen Detection Capability, Automated Vision Testing, Whole Blood Transport and other FDA approved medical treatment devices. This program supports projects ranging from research efforts to optimize human physiologic and cognitive performance for Air Combat Command, to development of patient isolation and transportation devices for Air Mobility Command that enable aeromedical evacuation of patients suffering with highly infectious diseases.

In FY 2024, PE 0604617F, (Agile Combat Support), Project 654910, (Aeromedical Readiness) efforts were transferred to PE 0208036F, (Medical Counter-CBRN), Project 654910, (Aeromedical Readiness), in order to consolidate Combat Support medical readiness requirements under a single PE.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force  |                |   |                     | <b>Date:</b> March 2023 |                      |                |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>   |                | <b>R-1 Program Element (Number/Name)</b><br>PE 0208036F / <i>Medical C-CBRNE Programs</i> |                     |                         |                      |                |
| <b>B. Program Change Summary (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b>  | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>      | <b>FY 2024 Total</b> |                |
| Previous President's Budget   | 0.000          | 0.000   | 0.000               | 0.000                   | 0.000                |                |
| Current President's Budget  | 0.000          | 0.000   | 2.006               | 0.000                   | 2.006                |                |
| Total Adjustments   | 0.000          | 0.000   | 2.006               | 0.000                   | 2.006                |                |
| • Congressional General Reductions  | 0.000          | 0.000   |                     |                         |                      |                |
| • Congressional Directed Reductions   | 0.000          | 0.000   |                     |                         |                      |                |
| • Congressional Rescissions   | 0.000          | 0.000   |                     |                         |                      |                |
| • Congressional Adds  | 0.000          | 0.000   |                     |                         |                      |                |
| • Congressional Directed Transfers  | 0.000          | 0.000   |                     |                         |                      |                |
| • Reprogrammings  | 0.000          | 0.000   |                     |                         |                      |                |
| • SBIR/STTR Transfer  | 0.000          | 0.000   |                     |                         |                      |                |
| • Other Adjustments   | 0.000          | 0.000   | 2.006               | 0.000                   | 2.006                |                |
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   |                |   |                     | <b>FY 2022</b>          | <b>FY 2023</b>       | <b>FY 2024</b> |
| <b>Title:</b> Aeromedical Equipment Testing/Studies/Minor Development   |                |   |                     | -                       | 0.000                | 2.006          |
| <b>Description:</b> Aeromedical supports Defense Health Program, Joint Services and MAJCOM medical modernization. The Air Force Medical Readiness Agency (AFMRA) Surgeon General Requirement Oversight Council (SGROC) Governance process manages medical capability gaps, research and development, funding prioritization and decisional boards. Aeromedical procures and qualifies commercial-off-the-shelf (COTS) or near COTS medical and aeromedical products and/or performs minor development, studies and management efforts, under Aeromedical Readiness. Aeromedical Program efforts evaluate integrating technologies or prototype systems in a realistic operating environment, expedite technology transition from the laboratory to operational use, emphasis on proving maturity prior to integration and viable decision ready materiel solutions. |                |   |                     |                         |                      |                |
| <b>FY 2023 Plans:</b><br>Contract Studies to develop Medical requirements.  |                |   |                     |                         |                      |                |
| <b>FY 2024 Plans:</b><br>Contract Studies to develop Medical requirements.  |                |   |                     |                         |                      |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>In FY 2024, PE 0604617F, (Agile Combat Support), Project 654910, (Aeromedical Readiness) efforts were transferred to PE 0208036F, (Medical Counter-CBRN), Project 654910, (Aeromedical Readiness), in order to consolidate Combat Support medical readiness requirements under a single PE.   |                |   |                     |                         |                      |                |
| <b>Accomplishments/Planned Programs Subtotals</b>   |                |   |                     | -                       | 0.000                | 2.006          |



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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force Date: March 2023

**Appropriation/Budget Activity**  
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)

**R-1 Program Element (Number/Name)**  
PE 0208036F I Medical C-CBRNE Programs

**D. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**E. Acquisition Strategy**

Programs consider a streamlined acquisition approach. Whenever practical, commercial items are tested and evaluated as candidates for providing solutions to user needs. This normally involves contractor characterization, verification, and qualification testing to ensure Food and Drug Administration (FDA) approved, commercial off-the-shelf equipment is properly evaluated to identify any capability gaps that may require minor modifications for military use. However, acquisition strategies may also be carried out for traditional Engineering and Manufacturing Development (EMD). Funds may be used to address associated emerging Aeromedical Readiness requirements and for program management activities.





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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0208036F / <i>Medical C-CBRNE Programs</i> | <b>Project (Number/Name)</b><br>654910 / <i>Aeromedical Readiness</i> |

Schedule Details

| Events by Sub Project   | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Aeromedical Readiness RDTE Efforts</i></b>              |         |      |         |      |
| Aeromedical Equipment Testing/Studies/Minor Development       | 1       | 2024 | 4       | 2027 |
| Spinal Transport Device testing concludes, mod contract award | 2       | 2024 | 2       | 2025 |
| Digital Engineering Investment                                | 4       | 2024 | 4       | 2025 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0305205F / <i>Endurance Unmanned Aerial Vehicles</i> |
|---|---|

| COST (\$ in Millions)               | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|-------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element               | -           | 0.000   | 0.000   | 30.000       | 0.000       | 30.000        | 30.002  | 0.000   | 0.000   | 0.000   | Continuing       | Continuing |
| 654236: <i>Engineering Analysis</i> | -           | 0.000   | 0.000   | 30.000       | 0.000       | 30.000        | 30.002  | 0.000   | 0.000   | 0.000   | Continuing       | Continuing |
| Quantity of RDT&E Articles          | -           | -       | -       | -            | -           | -             | 2       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

The Ultra Long-endurance Unmanned Reconnaissance Aircraft (ULTRA) is an Air Force-led technology and concept development effort to demonstrate, transition, and field an Unmanned Aerial System (UAS) that is capable of multiple-day duration flights while still being extremely affordable. ULTRA is a shift in UAS design paradigm by significantly leveraging commercial-off-the-shelf technologies to minimize expensive custom/proprietary items while at the same time simplifying maintenance and manpower costs. The payload integration for ULTRA maintains a modular and flexible architecture to allow for rapid integration of customer-driven payload options.

ULTRA was initiated by the Air Force Research Lab in 2018 in response to demand signals for long-endurance ISR that maintains an affordable edge. ULTRA leverages and builds off the successes and lessons learned of several AFRL, DoD, and other partner-funded development efforts from 2015-2021, including the Long Endurance Aerial Platform UAS which transitioned in 2019 and a number of unique payload developments and integrations. These prior developments guided and informed the initial development and demonstration of ULTRA. The initial ULTRA UAS was developed in 2018 and flight-tested in 2019. In 2020 ULTRA performed limited operational test and evaluation over a six-month period, the results of which informed payload and system requirements to meet current and future needs. Future operational test and evaluation in relevant operational environments is a critical next step in developing ULTRA as an affordable ultra-long endurance ISR platform that is responsive to current and future needs.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F.

This effort is not a new start. It is a flight demonstration of the ULTRA program, which was previously executed in FY23 and prior years under Program 0604555D8Z Operational Energy Prototyping, and under Section 219 authorities.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0305205F / <i>Endurance Unmanned Aerial Vehicles</i> |
|---|---|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 0.000          | 0.000          | 0.000               | 0.000              | 0.000                |
| Current President's Budget                        | 0.000          | 0.000          | 30.000              | 0.000              | 30.000               |
| Total Adjustments                                 | 0.000          | 0.000          | 30.000              | 0.000              | 30.000               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 30.000              | 0.000              | 30.000               |

**Change Summary Explanation**

FY 2024 increased by \$30.000 million from previous President's Budget submission to establish an urgent demonstration capability in response to operational demand signals. Increase supports integration and preparation activities required to perform a flight demonstration in an operationally relevant environment.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Ultra Long-endurance Unmanned Reconnaissance Aircraft (ULTRA) Flight Demonstration  | 0.000          | 0.000          | 30.000         |
| <b>Description:</b> This effort is not a new start. It is a flight demonstration of the ULTRA program, which was previously executed in FY23 and prior years under Program 0604555D8Z Operational Energy Prototyping, and under Section 219 authorities. This effort conducts integration and preparation work required to prepare the ULTRA platform for flight demonstration in operationally relevant environments in response to an urgent operational need. It leverages technologies and expertise from across all of the Air Force Research Laboratories, integrating and testing a variety of technologies. |                |                |                |
| <b>FY 2023 Plans:</b><br>Development in this area was accomplished under PE 060455D8Z Operational Energy Prototyping and under Section 219 authorities.   |                |                |                |
| <b>FY 2024 Plans:</b><br>- Initiate and complete integration and test of commercial-off-the-shelf (COTS) turbo-charged engine to enable ULTRA altitude and airspeed for relevant geographically-constrained mission areas of interest<br>- Initiate integration and testing of COTS engine control unit<br>- Continue integration of ULTRA into the control system for common control of multiple unmanned aerial systems<br>- Continue to conduct aircrew training to support extended operational testing and evaluation of ULTRA   |                |                |                |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0305205F / <i>Endurance Unmanned Aerial Vehicles</i> |
|---|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | FY 2022 | FY 2023 | FY 2024 |
|---|---------|---------|---------|
| <ul style="list-style-type: none"> <li>- Continue development and refinement of training curriculum and documentation based on results from operational test and evaluation</li> <li>- Initiate early sustainment analyses to include long lead item evaluation of hardware and spares</li> <li>- Continue operational test and evaluation of ULTRA in operationally relevant environments</li> </ul> <p><b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br/> FY 2024 increased compared to FY 2023 by 30.000 million. This increase represents an urgent operational requirement to demonstrate the technology in an operationally relevant environment, and enables the integration and preparation activities required for such a demonstration.</p> |         |         |         |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 0.000   | 0.000   | 30.000  |

**D. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**E. Acquisition Strategy**

This effort will be awarded as a contract modification to an existing Phase III Small Business Innovation Research (SBIR) contract. This contract was awarded sole-source as required by SBIR policy. This approach was approved through AFRL/PZ.







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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0305205F / <i>Endurance Unmanned Aerial Vehicles</i> | <b>Project (Number/Name)</b><br>654236 / <i>Engineering Analysis</i> |

Schedule Details

| Events by Sub Project                              | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b><i>ULTRA Flight Test</i></b>                    |         |      |         |      |
| Commercial-off-the-shelf (COTS) Engine Integration | 2       | 2024 | 3       | 2024 |
| COTS Engine Electronic Control Unit Integration    | 3       | 2024 | 2       | 2025 |
| Control System Integration                         | 1       | 2024 | 2       | 2025 |
| Aircrew Training Development                       | 1       | 2024 | 4       | 2024 |
| Training curriculum and transition documentation   | 1       | 2024 | 4       | 2025 |
| Operational Test and Evaluation prep activities    | 1       | 2024 | 2       | 2025 |
| Operational Assessment                             | 3       | 2025 | 4       | 2025 |

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0401221F / <i>KC-46A Tanker Squadrons</i> |
|---|--|

| COST (\$ in Millions)                          | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                          | 5,821.342   | 54.145  | 177.529 | 124.662      | 0.000       | 124.662       | 67.702  | 29.381  | 0.383   | 0.000   | Continuing       | Continuing |
| 651120: <i>Pegasus Capability Improvements</i> | 3.105       | 24.206  | 55.610  | 54.860       | 0.000       | 54.860        | 45.056  | 25.643  | 0.383   | 0.000   | Continuing       | Continuing |
| 655271: <i>KC-46 RDT&amp;E</i>                 | 5,818.237   | 29.939  | 121.919 | 69.802       | 0.000       | 69.802        | 22.646  | 3.738   | 0.000   | 0.000   | 0.000            | 6,066.281  |

**Program MDAP/MAIS Code:** 387

**Note**

In FY 2021, Program Element (PE) 0605221F KC-46A, Project 655271 KC-46 RDT&E, and Project 651120 Pegasus Capability Improvements efforts were transferred to PE 401221F, Project 655271 KC-46A RDT&E, and Project 651120 Pegasus Capability Improvements in order to consolidate all KC-46A activity under a single PE. PE 0401221F also has historical Tanker Replacement costs from FY 2005-2008 reflected in prior years. PE 0605221F has costs from FY 2009 to FY 2020.

In FY2023, PE 0401221F, KC-46A Tanker Squadrons, Project 655KCY, was transferred to a new PE 0605164F, Air Refueling Capability Modernization (ARCM), Project 645164, Continued Tanker Recapitalization RDT&E due to congressional request.

**A. Mission Description and Budget Item Justification**

Replacement of the legacy tanker fleet will take place in several stages. The initial tanker replacement increment of KC-46As will replace roughly a third of the current capability. Future programs will ultimately recapitalize the entire tanker fleet over a period of more than 30 years. The Air Force completed an Analysis of Alternatives (AoA) in Apr 2006 to determine the most appropriate strategy to recapitalize the aging fleet of aerial refueling aircraft. Based on this analysis, the Air Force concluded a strategy of full and open competition to select a commercial derivative replacement tanker aircraft would result in a best value tanker contract. To initiate the first phase of the tanker replacement, the KC-46A program released a final Request for Proposal (RFP) on 24 Feb 2010, and entered source selection on 9 Jul 2010. The KC-46A program held a Milestone B (MS B) Defense Acquisition Board (DAB) on 23 Feb 2011, received approval to enter Engineering and Manufacturing Development (EMD) from the Undersecretary of Defense (Acquisition, Technology and Logistics) (USD(AT&L)) on 24 Feb 2011, and awarded the KC-46A EMD contract to Boeing on 24 Feb 2011 to develop and procure 179 KC-46A aircraft. The program is procuring four RDT&E aircraft for integration and demonstration of capability which will ultimately be operationally fielded. During production, the program plans to procure 175 aircraft throughout 13 lots. The KC-46A program held a MS C DAB on 12 Aug 2016 and received approval to enter Low Rate Initial Production (LRIP). The program awarded LRIP Lots 1 and 2 on 18 Aug 2016, LRIP Lot 3 on 27 Jan 2017, LRIP Lot 4 on 10 Sep 2018, and LRIP Lot 5 on 27 Sep 2019. Lot 6 awarded on 12 Jan 2021, Lot 7 awarded on 20 Jan 2021, Lot 8 awarded 31 Aug 2022, and Lot 9 awarded 27 Jan 2023, bringing the total number of aircraft on production contract to 124. Initial sustainment effort is provided via Interim Contractor Support (ICS) as the program is transitioning to organic sustainment. KC-46A funding also supports Training Systems, Support Equipment, Operational Site Activation, Depot Stand-Up, Alternate Mission Equipment (AME), Direct Mission Support, Program Support Costs (PSC) activities, Other Government Costs (OGC), various studies and analyses, future tanker planning activities, long lead items, and potential Diminishing Manufacturing Sources (DMS) and obsolescence planning activities.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0401221F / <i>KC-46A Tanker Squadrons</i> |
|---|--|

The KC-46A will provide the capability to fuel joint and coalition receivers via a boom or drogue system on every mission and will also augment the airlift fleet with cargo, passenger, and aeromedical evacuation capabilities. The KC-46A will operate in day, night, and adverse weather conditions to enable deployment, employment, sustainment, and redeployment of U.S. joint, allied, and coalition forces. The KC-46A will have communication, navigation, and surveillance equipment for world-wide operations; the capability to perform missions in chemical and biological environments; the ability to operate in up to medium threat environments with self-defense/ protection (both active and passive) capabilities; and the necessary battle space awareness to mitigate survivability threats. The first DD250 was signed on 10 Jan 2019. The Air Force delivered the first KC-46A to McConnell Air Force Base on 25 Jan 2019. As of 1 Mar 2023, 68 aircraft have been delivered to the Air Force via DD250.

The Aircrew Training System (ATS) and Maintenance Training System (MTS) are being procured using KC-46A funding. The ATS contract was awarded on 1 May 2013 to Flight Safety Services Corporation, now known as Flight Safety International - Defense. The ATS contract will provide Aircrew Training Devices (ATDs), to include Weapon System Trainers (WSTs), Boom Operator Trainers (BOTs), Fuselage Trainers (FuTs), Part-Task Trainers (PTTs), and emerging technologies to meet validated Air Mobility Command (AMC) aircrew training requirements at each Main Operating Base (MOB) and the Formal Training Unit (FTU). The ATS contract will also support Distributed Mission Operations (DMO), provide aircrew instruction, develop courseware, provide logistics support, acquire a technical data package to support future competition efforts, and manage training device/courseware concurrency with the aircraft. The first eight ATS production options were exercised on 19 Aug 2015, 31 May 2017, 30 Apr 2018, 31 Mar 2019, 27 Feb 2020, 4 Mar 2021, 24 Feb 2022, and 15 Nov 2022.

The MTS contract was awarded 6 Jul 2016 to The Boeing Company. The MTS acquisition focuses on designing, developing, testing, producing, and fielding an optimized training system for KC-46A maintainers by integrating various forms of training media and Maintenance Training Devices (MTDs) into a "blended" solution. This blended solution includes the appropriate mix of hardware and software, "high-fidelity" Augmented Hardware Training Devices (AHTDs), Part Task Trainers (PTTs), Interactive Multimedia Instruction (IMI), and emerging technologies to meet validated AMC maintenance training requirements.

This requirement supports performance of a full financial audit as required by U.S.C. Title 10, Subtitle A, Part I, Chapter 9A, Sec 240-D, Financial Improvement and Audit Remediation (FIAR) Plan.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver KC-46A weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program elements 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, and 0606398F. In FY 2022 \$2.173 million was expended for civilian pay expenses in this program element, and in FY 2023 \$2.217 million is forecast for civilian pay expenses in this program element.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0401221F / <i>KC-46A Tanker Squadrons</i> |
|---|--|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 66.758         | 197.510        | 73.709              | 0.000              | 73.709               |
| Current President's Budget                        | 54.145         | 177.529        | 124.662             | 0.000              | 124.662              |
| Total Adjustments                                 | -12.613        | -19.981        | 50.953              | 0.000              | 50.953               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | -8.700         |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | -11.281        |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -1.613         | 0.000          |                     |                    |                      |
| • Other Adjustments                               | -11.000        | 0.000          | 50.953              | 0.000              | 50.953               |

**Change Summary Explanation**

In FY 2022, the Air Force provided \$1.613 million to help fund Small Business Innovative Research (SBIR) and authorized transfer of \$11.00 million to fulfill invoice of FY 2015 obligated funds (now cancelled).

FY2023 Appropriations Conference reduced KC-46A Pegasus Advanced Communications Suite (PACS) by \$8.700 million for "PACS delays" and \$11.281 million for Congressional Directed Transfer to a new PE 0605164F, Air Refueling Capability Modernization (ARCM), Project 645164, Continued Tanker Recapitalization RDT&E.

FY 2024 Base Value from previous FY2023 PB consisted of \$54.404 million for KC-46A and \$19.305 million for ARCM. The \$19.305 million was later removed and transferred into a new new PE 0605164F, Air Refueling Capability Modernization (ARCM), Project 645164, Continued Tanker Recapitalization RDT&E. Currently, all of the \$124.662 million requested in the FY 2024 PB is for KC-46A, resulting in an actual FY 2024 adjustment of \$70.258 million for the KC-46A program between FY 2023 PB and FY 2024 PB (difference between \$54.404 million and 124.662 million). The FY 2024 President's Budget increase is to support continuation and expansion of KC-46A Block I Pegasus Advanced Communications Suite (PACS) EMD activities, studies and analyses, Air Refueling Airplane Simulator Qualification (ARASQ) data collection and modeling, Take Off and Landing Data (TOLD) program development.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

|  |   |  |
|--|---|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0401221F / KC-46A Tanker Squadrons | <b>Project (Number/Name)</b><br>651120 / Pegasus Capability Improvements |
|--|---|--|

| COST (\$ in Millions)                          | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 651120: <i>Pegasus Capability Improvements</i> | 3.105       | 24.206  | 55.610  | 54.860       | 0.000       | 54.860        | 45.056  | 25.643  | 0.383   | 0.000   | Continuing       | Continuing |
| Quantity of RDT&E Articles                     | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**A. Mission Description and Budget Item Justification**

The KC-46A will provide the capability to fuel joint and coalition receivers via a boom or drogue system on every mission and will also augment the airlift fleet with cargo, passenger, and aeromedical evacuation capabilities. The KC-46A will operate in day/night and adverse weather conditions to enable deployment, employment, sustainment, and redeployment of U.S. joint, allied, and coalition forces. The KC-46A will have communication, navigation, and surveillance equipment for worldwide operations; the capability to perform missions in chemical and biological environments; the ability to operate in up to medium threat environments with self-defense/protection (both active and passive) capabilities; and the necessary battlespace awareness to mitigate survivability threats.

The dynamics and mission urgency of the post-production (post-DD-250) environment require the program to maintain a flexible and responsive posture to support a broad range of mission support needs. The KC-46A will continue to identify, design, develop, integrate, verify, certify, produce, install, field, and sustain a comprehensive range of non-recurring and recurring post-production, air vehicle enhancements and field support needs. These needs may originate from programmed Mobility Air Force (MAF) requirements, Combatant Commander Joint or Urgent Operational Needs (JUON/UON), non-programmed Federal Aviation Administration (FAA) directives, requirements identified and supported by HHQ Enterprise Capability Collaboration Teams (i.e., High Value Airborne Asset [HVAA], Air Superiority 2030, and Multi-Domain Command and Control [MDC2]), or correction of field deficiencies.

The KC-46A will continue to develop, field, and sustain warfighter capabilities to meet evolving threats and mission support requirements through Block or discrete modification or modernization programs depending on mission urgency, available funding, and programmatic and technical risks. Post-production requirements can include, but will not be limited to avionics and structural systems/ architecture and subsystem updates, general mission equipment updates and procurement, general sustainment support, studies and analyses, future Tanker requirements simulation and training, and correction of field deficiencies.

Project 651120 funding will also support Program Support Costs (PSC) activities, test support, mission planning capability development and various studies and analyses.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver KC-46A Pegasus Capability Improvements weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program elements 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, and 0606398F. In FY 2022 \$2.173 million was expended for civilian pay expenses in this program element, and in FY 2023 \$2.217 million is forecast for civilian pay expenses in this program element.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | FY 2022 | FY 2023 | FY 2024 |
|---|---------|---------|---------|
| <b>Title:</b> KC-46A Block 1 Pegasus Advanced Communications Suite (PACS) | 12.033  | 53.326  | 30.257  |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        | <b>R-1 Program Element (Number/Name)</b><br>PE 0401221F / KC-46A Tanker Squadrons | <b>Project (Number/Name)</b><br>651120 / Pegasus Capability Improvements |

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <p><b>Description:</b> The KC-46A Block 1 Pegasus Advanced Communications Suite (PACS) program will satisfy Department of Defense (DoD), National Security Agency (NSA), Department of Transportation (DoT), and USAF mandates by upgrading legacy Tactical Data Link 16, Beyond Line-of-Sight (BLOS) Ultra High Frequency (UHF) Line-of-Sight (LOS) capabilities with next-generation Link 16 terminals and UHF secure, global, BLOS and anti-jam LOS satellite voice communications capabilities for the KC-46A weapon system. PACS enables compatibility and interoperability with current and planned future joint and allied forces while simultaneously increasing the survivability of secure global voice and data communications capabilities between Mobility Air Force (MAF) C2 agencies and MAF aircraft operating worldwide in or near contested environments.</p> <p><b>FY 2023 Plans:</b><br/>Award Contract for Block 1 PACS EMD program, begin development and follow-on associated contracting efforts.</p> <p><b>FY 2024 Plans:</b><br/>Continuation of Block 1 PACS EMD program and associated contracting efforts.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding decreased due to reduced developmental program activities.</p> |                |                |                |
| <p><b>Title:</b> Support</p> <p><b>Description:</b> Studies and analyses to support planning activities for future initiatives for upgrades, future tanker efforts, test support, test execution and other Program Support Costs.</p> <p><b>FY 2023 Plans:</b><br/>Continued Program Office Support to include studies, analyses and planning.</p> <p><b>FY 2024 Plans:</b><br/>Initiate testing and test support, modernization programs, studies, analyses and planning activities to support future upgrade initiatives.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Funding increased due to the ramp up of support and upgrade activities, to include but not limited to test and test support.</p>   | 12.173         | 2.284          | 24.603         |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 24.206         | 55.610         | 54.860         |

| <b>C. Other Program Funding Summary (\$ in Millions)</b> |                |                |                         |                        |                          |                |                |                |                |                             |                   |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| <b>Line Item</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024<br/>Base</b> | <b>FY 2024<br/>OCO</b> | <b>FY 2024<br/>Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b> | <b>FY 2028</b> | <b>Cost To<br/>Complete</b> | <b>Total Cost</b> |
| • APAF 05 41221F/<br>KC046A: KC-46A Tanker               | 1.984          | 0.467          | 0.000                   | -                      | 0.000                    | -              | 59.067         | 70.862         | 72.233         | 0.000                       | 204.613           |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|  |   |  |
|--|---|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0401221F / KC-46A Tanker Squadrons | <b>Project (Number/Name)</b><br>651120 / Pegasus Capability Improvements |
|--|---|--|

**C. Other Program Funding Summary (\$ in Millions)**

| <u>Line Item</u> | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|

**Remarks**

**D. Acquisition Strategy**

The KC-46A Post-Production Change Management (PPCM) construct is comprised of processes and tools, specifically tailored to a broad spectrum of post-production requirements to support the KC-46A enterprise (e.g. weapon system, sustainability, training devices). PPCM is designed to leverage competition when applicable and emphasize configuration management and discrete cost accounting methodologies. KC-46A PPCM oversight will promote competition throughout the life cycle of the KC-46A fleet. All KC-46A post-production requirements and associated acquisition strategies will be carefully managed, reviewed, and approved at the appropriate levels by the KC-46A Division and/or Tanker Directorate senior functional leaders. PPCM requirements will employ multiple contract-types, tailored to the requirement and documented in discrete Acquisition Strategy Panel briefings, to minimize cost, technical, and schedule execution risks and ensure on-time deliverables. In addition, all ACAT-level programs, deriving from the PPCM process, will follow Department of Defense (DoD) Directive 5000.01 and DoD Instruction 5000.02 guidelines and directives, as applicable, to ensure management controls--commensurate with the scope and cost of the supported requirement.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0401221F / KC-46A Tanker Squadrons | <b>Project (Number/Name)</b><br>651120 / Pegasus Capability Improvements |
|--|---|--|

| <b>Product Development (\$ in Millions)</b>                            |                        |                                  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|----------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location   | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| KC-46A Capability Upgrades (to include modification and modernization) | SS/CPFF                | The Boeing Company : Seattle, WA | 0.000       | 12.033  | Mar 2023   | 53.326  | Mar 2023   | 38.264       | Mar 2024   | -           |            | 38.264        | 167.588          | 271.211    | -                        |
| <b>Subtotal</b>  |                        |                                  | 0.000       | 12.033  |            | 53.326  |            | 38.264       |            | -           |            | 38.264        | 167.588          | 271.211    | N/A                      |

**Remarks**  
Target value is TBD since Block I PACS and Block II has not awarded yet.

| <b>Support (\$ in Millions)</b>        |                        |  |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                     | Contract Method & Type | Performing Activity & Location             | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Direct Mission Support                 | Various                | KC-46 Program Office : Dayton, W-P AFB, OH | 2.349       | 10.000  | Jun 2022   | 0.067   | Mar 2023   | 14.335       | Feb 2024   | -           |            | 14.335        | 2.732            | 29.483     | -                        |
| Direct Cite Authority for Civilian Pay | RO                     | KC-46 Program Office : Dayton, W-P AFB, OH | 0.756       | 2.173   | Oct 2021   | 2.217   | Oct 2022   | 2.261        | Oct 2023   | -           |            | 2.261         | 90.155           | 97.562     | -                        |
| <b>Subtotal</b>                        |                        |  | 3.105       | 12.173  |            | 2.284   |            | 16.596       |            | -           |            | 16.596        | 92.887           | 127.045    | N/A                      |

**Remarks**  
Target value is blank for Direct Mission Support since there are various contracts. Target Value is blank for Direct Cite Authority for Civilian Pay since funds are provided to the center to fund manpower.

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> |             | 3.105   | 24.206  | 55.610       | 54.860      | 54.860        | 260.475          | 398.256    | N/A                      |

**Remarks**

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2024 Air Force</b> |  |   | <b>Date:</b> March 2023 |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0401221F / <i>KC-46A Tanker Squadrons</i> | <b>Project (Number/Name)</b><br>651120 / <i>Pegasus Capability Improvements</i> |                         |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   |            |
|---|------------|
| <b><i>Pegasus Capability Improvements</i></b> |            |
| KC-46A Block I PACS                           | [REDACTED] |
| Long Term Test Aircraft Maintenance Support   | [REDACTED] |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0401221F / <i>KC-46A Tanker Squadrons</i> | <b>Project (Number/Name)</b><br>651120 / <i>Pegasus Capability Improvements</i> |

Schedule Details

| Events by Sub Project                         | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Pegasus Capability Improvements</i></b> |         |      |         |      |
| KC-46A Block I PACS                           | 2       | 2023 | 4       | 2027 |
| Long Term Test Aircraft Maintenance Support   | 4       | 2023 | 4       | 2027 |

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|--|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |   |                      |                |                |  | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0401221F / KC-46A Tanker Squadrons |                      |                |                | <b>Project (Number/Name)</b><br>655271 / KC-46 RDT&E |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>  | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>                                       | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 655271: KC-46 RDT&E   | 5,818.237          | 29.939         | 121.919        | 69.802              | 0.000   | 69.802               | 22.646         | 3.738          | 0.000  | 0.000                   | 0.000                   | 6,066.281         |
| Quantity of RDT&E Articles  | 4                  | -              | -              | -                   | -   | -                    | -              | -              | -  | -                       |                         |                   |

**Note**

In FY2021, PE 0605221F KC-46A, Project 655271 KC-46A RDT&E, and Project 651120 Pegasus Capability Improvements efforts were transferred to PE 401221F, Project 655271 KC-46A RDT&E, and Project 651120 Pegasus Capability Improvements in order to consolidate all KC-46A activity under a single PE. PE 0401221F also has historical Tanker Replacement costs from FY 2005-2008 reflected in prior years. PE 0605221F has costs from FY2009 to FY2020.

**A. Mission Description and Budget Item Justification**

Replacement of the legacy tanker fleet will take place in several stages. The initial tanker replacement increment of KC-46As will replace roughly a third of the current capability. Future programs will ultimately recapitalize the entire tanker fleet over a period of more than 30 years. The Air Force completed an Analysis of Alternatives (AoA) in Apr 2006 to determine the most appropriate strategy to recapitalize the aging fleet of aerial refueling aircraft. Based on this analysis, the Air Force concluded a strategy of full and open competition to select a commercial derivative replacement tanker aircraft would result in a best value tanker contract. To initiate the first phase of the tanker replacement, the KC-46A program released a final Request for Proposal (RFP) on 24 Feb 2010, and entered source selection on 9 Jul 2010. The KC-46A program held a Milestone B (MS B) Defense Acquisition Board (DAB) on 23 Feb 2011, received approval to enter Engineering and Manufacturing Development (EMD) from the Undersecretary of Defense (Acquisition, Technology and Logistics) (USD(AT&L)) on 24 Feb 2011, and awarded the KC-46A EMD contract to Boeing on 24 Feb 2011 to develop and procure 179 KC-46 aircraft. The program is procuring four RDT&E aircraft for integration and demonstration of capability which will ultimately be operationally fielded. During production, the program plans to procure 175 aircraft throughout 13 lots. The KC-46A program held a MS C DAB on 12 Aug 2016 and received approval to enter Low Rate Initial Production (LRIP). The program awarded LRIP Lots 1 and 2 on 18 Aug 2016, LRIP Lot 3 on 27 Jan 2017, LRIP Lot 4 on 10 Sep 2018, and LRIP Lot 5 on 27 Sep 2019. Lot 6 awarded on 12 Jan 2021, Lot 7 awarded on 20 Jan 2021, Lot 8 awarded 31 Aug 2022, and Lot 9 awarded 27 Jan 2023, bringing the total number of aircraft on production contract to 124. Initial sustainment effort is provided via Interim Contractor Support (ICS) as the program is transitioning to organic sustainment. KC-46A funding also supports Training Systems, Support Equipment, Operational Site Activation, Depot Stand-Up, Alternate Mission Equipment (AME), Direct Mission Support, Program Support Costs (PSC) activities, Other Government Costs (OGC), various studies and analyses, future tanker planning activities, long lead items, and potential Diminishing Manufacturing Sources (DMS) and obsolescence planning activities.

The KC-46A will provide the capability to fuel joint and coalition receivers via a boom or drogue system on every mission and will also augment the airlift fleet with cargo, passenger, and aeromedical evacuation capabilities. The KC-46A will operate in day, night, and adverse weather conditions to enable deployment, employment, sustainment, and redeployment of U.S. joint, allied, and coalition forces. The KC-46A will have communication, navigation, and surveillance equipment for world-wide operations; the capability to perform missions in chemical and biological environments; the ability to operate in up to medium threat environments with self-defense/protection (both active and passive) capabilities; and the necessary battle space awareness to mitigate survivability threats. The first DD250 was signed on 10 Jan 2019. The Air Force delivered the first KC-46A to McConnell Air Force Base on 25 Jan 2019. As of 1 Mar 2023, 68 aircraft have been delivered to the Air Force via DD250.

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0401221F / <i>KC-46A Tanker Squadrons</i> | <b>Project (Number/Name)</b><br>655271 / <i>KC-46 RDT&amp;E</i> |
|--|--|---|

The Aircrew Training System (ATS) and Maintenance Training System (MTS) are being procured using KC-46A funding. The ATS contract was awarded on 1 May 2013 to Flight Safety Services Corporation, now known as Flight Safety International - Defense. The ATS contract will provide Aircrew Training Devices (ATDs), to include Weapon System Trainers (WSTs), Boom Operator Trainers (BOTs), Fuselage Trainers (FuTs), Part-Task Trainers (PTTs), and emerging technologies to meet validated Air Mobility Command (AMC) aircrew training requirements at each Main Operating Base (MOB) and the Formal Training Unit (FTU). The ATS contract will also support Distributed Mission Operations (DMO), provide aircrew instruction, develop courseware, provide logistics support, acquire a technical data package to support future competition efforts, and manage training device/courseware concurrency with the aircraft. The first eight ATS production options were exercised on 19 Aug 2015, 31 May 2017, 30 Apr 2018, 31 Mar 2019, 27 Feb 2020, 4 Mar 2021, 24 Feb 2022, and 15 Nov 2022.

The MTS contract was awarded 6 Jul 2016 to The Boeing Company. The MTS acquisition focuses on designing, developing, testing, producing, and fielding an optimized training system for KC-46A maintainers by integrating various forms of training media and Maintenance Training Devices (MTDs) into a "blended" solution. This blended solution includes the appropriate mix of hardware and software, "high-fidelity" Augmented Hardware Training Devices (AHTDs), Part Task Trainers (PTTs), Interactive Multimedia Instruction (IMI), and emerging technologies to meet validated AMC maintenance training requirements.

This requirement supports performance of a full financial audit as required by U.S.C. Title 10, Subtitle A, Part I, Chapter 9A, Sec 240-D, Financial Improvement and Audit Remediation (FIAR) Plan.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver KC-46A weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program elements 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, and 0606398F. In FY 2022 \$0.000 million was expended for civilian pay expenses in this program element, and in FY 2023 \$0.000 million is forecast for civilian pay expenses in this program element.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | FY 2022 | FY 2023 | FY 2024 |
|--|---------|---------|---------|
| <p><b>Title:</b> KC-46A Aircraft Product Development</p> <p><b>Description:</b> EMD activities will be conducted to include the following types of activities: develop a commercial 767-2C aircraft upon which the KC-46 is based; develop the KC-46A military capability and integrate it into the aircraft; build four EMD aircraft; procure live fire assets; procure required Government Furnished Equipment (GFE); procure simulator and maintenance data; develop technical manuals and Type 1 training; and conduct development and operational testing.</p> <p><b>FY 2023 Plans:</b><br/>Continue product refinement, studies, ground, and flight testing in support of the KC-46A weapon system to include receiver certifications, simulator data collection, and completion of IOT&amp;E events/reporting. Incrementally fund boom telescope actuator redesign (BTAR) Engineering Change Proposal (ECP) efforts (ongoing since 2020) and support other government costs associated with solution for Remote Vision System (RVS). Study, analyze, test and update documentation in order to certify and increase KC-46A capability for aerial refueling (AR) onload. Award contract and begin work for Take Off and Landing Data (TOLD) to address deficiencies and improve capability.</p> <p><b>FY 2024 Plans:</b></p> | 5.867   | 73.790  | 22.997  |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force  |   | <b>Date:</b> March 2023                              |                |                |
| <b>Appropriation/Budget Activity</b><br>3600 / 5   | <b>R-1 Program Element (Number/Name)</b><br>PE 0401221F / KC-46A Tanker Squadrons | <b>Project (Number/Name)</b><br>655271 / KC-46 RDT&E |                |                |
| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>  |   | <b>FY 2022</b>                                       | <b>FY 2023</b> | <b>FY 2024</b> |
| Continuation of product refinement, studies, ground, and flight testing in support of the KC-46A weapon system to include receiver certifications, simulator data collection, and completion of IOT&E events/reporting. Incrementally fund boom telescope actuator redesign (BTAR) Engineering Change Proposal (ECP) efforts (ongoing since 2020) and support other government costs associated with solution for Remote Vision System (RVS). Study, analyze, test and update documentation in order to certify and increase KC-46A capability for aerial refueling (AR) onload. Incrementally fund work for Take Off and Landing Data (TOLD) to address deficiencies and improve capability.<br><br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funding decreased due to reduction in scope for BTAR and KC-46A EMD costs in FY 2024. |   |  |                |                |
| <b>Title:</b> KC-46A Trainer Product Development - Aircrew Training System (ATS)<br><br><b>Description:</b> Trainer development activities will be conducted to include the following types of activities: development and procurements of ATDs, courseware, and associated support equipment.<br><br><b>FY 2023 Plans:</b><br>N/A<br><br><b>FY 2024 Plans:</b><br>eRVS, BTAR, NVG, LAIRCM, RVS 2.0, and TOLD Upgrade Development.<br><br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funding increased due to development for new upgrades of eRVS, BTAR, RVS 2.0, TOLD, and other smaller efforts.   |   | 0.190  | 0.000          | 20.169         |
| <b>Title:</b> KC-46A Test & Evaluation<br><br><b>Description:</b> Test & Evaluation (T&E) activities will be conducted to include the following types of activities: Development Test & Evaluation, Operational Test & Evaluation, Tanker Qualification, Receiver Certifications, Live Fire Test & Evaluation (LFT&E), Federal Aviation Administration (FAA) support, and other test planning and organizational support.<br><br><b>FY 2023 Plans:</b><br>Continue using EMD, pre-delivery production, and/or LRIP aircraft to support AR tanker-receiver certification testing, Aerial Refueling Simulator Qualifications data collection, correction of deficiencies, and other T&E activities. Continue Government Test for RVS and BTAR.<br><br><b>FY 2024 Plans:</b>  |   | 22.556   | 37.075         | 25.629         |

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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0401221F / KC-46A Tanker Squadrons | <b>Project (Number/Name)</b><br>655271 / KC-46 RDT&E |
|--|---|--|

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   | FY 2022 | FY 2023 | FY 2024 |
|---|---------|---------|---------|
| Continuation of EMD, pre-delivery production, and/or LRIP aircraft to support AR tanker-receiver certification testing, Aerial Refueling Simulator Qualifications data collection, correction of deficiencies, and other T&E activities for the KC-46A. Continue Government Test for RVS and BTAR.<br><br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funding decreased due to reduced Test activities and gradual transition of test requirements to Pegasus Capability Improvements BPAC.   |         |         |         |
| <b>Title:</b> KC-46A Support<br><br><b>Description:</b> Development, integration, and demonstration of the KC-46A mission planning capability. In addition, studies and analysis to support planning activities for future efficiency initiatives, business case analyses, future tanker planning, and miscellaneous Program Office support and planning. Also includes requirements such as travel, office supplies, training courses, and service contracts.<br><br><b>FY 2023 Plans:</b><br>Continue Program Office Support and Planning and continue Future Tanker efforts.<br><br><b>FY 2024 Plans:</b><br>Continued Program Office Support and Planning.<br><br><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funding decreased due to transfer for future tanker efforts, PE 65164F, ARCM. | 1.326   | 11.054  | 1.007   |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 29.939  | 121.919 | 69.802  |

**C. Other Program Funding Summary (\$ in Millions)**

| <u>Line Item</u>                              | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u><br><u>Base</u> | <u>FY 2024</u><br><u>OCO</u> | <u>FY 2024</u><br><u>Total</u> | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Cost To</u><br><u>Complete</u> | <u>Total Cost</u> |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • APAF 02 Line Item<br>KC046A: KC-46A Tanker  | 2,289.015      | 2,458.717      | 2,882.590                     | -                            | 2,882.590                      | 2,843.554      | 2,835.248      | 1,548.227      | 0.000          | 0.000                             | 14,857.351        |
| • APAF 06 Line Item<br>000999: Initial Spares | 154.207        | 100.938        | 195.184                       | -                            | 195.184                        | 251.280        | 255.597        | 150.383        | -              | 0.000                             | 1,107.589         |

**Remarks**

**D. Acquisition Strategy**  
The KC-46A Program acquisition strategy is to procure an existing commercial, Federal Aviation Administration (FAA) certified aircraft modified to meet USAF requirements. The KC-46A program released a final RFP on 24 Feb 2010, and entered source selection on 9 Jul 2010. The KC-46A program held a Milestone B (MS

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force  |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5   | <b>R-1 Program Element (Number/Name)</b><br>PE 0401221F / <i>KC-46A Tanker Squadrons</i> | <b>Project (Number/Name)</b><br>655271 / <i>KC-46 RDT&amp;E</i> |
| <p>B) Defense Acquisition Board (DAB) on 23 Feb 2011, received approval to enter EMD from the Undersecretary of Defense (Acquisition, Technology and Logistics) (USD(AT&amp;L)) on 24 Feb 2011, and awarded the KC-46A contract to Boeing on 24 Feb 2011 to develop and procure 179 KC-46A aircraft. The KC-46A contract procurement was conducted via a full and open competition per Federal Acquisition Regulation (FAR) Part 15, and resulted in a FY 2011 Engineering and Manufacturing Development (EMD) Fixed Price Incentive Firm (FPIF) contract. The EMD phase is developing, building, and testing four KC-46A aircraft, and will qualify the KC-46A as a tanker and certify pairings with receiver aircraft.</p> <p>The MS B acquisition strategy planned for two LRIP lots followed by 11 Full-Rate Production (FRP) lots for a total aircraft procurement of 175 production aircraft. An update to the acquisition strategy occurred in support of MS C that increased LRIP from two to four lots, with the total aircraft buy remaining at 175 production aircraft. A Dec 2017 USD(AT&amp;L) Acquisition Decision Memorandum expanded LRIP to include Lot 5. Another Program Deviation Report was submitted on June 8, 2020, to declare a breach to the Full Rate Production Decision. A new APB dated October 19, 2020 was approved, and a new ADM dated October 20, 2020 re-designated Lots 6 through 9 as LRIP with the total aircraft buy remaining at 175 Production aircraft (+4 EMD aircraft for a grand total of 179 aircraft).</p> <p>LRIP now consists of two Firm Fixed Price (FFP) and seven FFP Not to Exceed (NTE) options (LRIP-1 Qty 7, LRIP-2 Qty 12, LRIP-3 Qty 15, LRIP-4 Qty 18, LRIP-5 Qty 15, LRIP-6 Qty 12, LRIP-7 Qty 15, LRIP-8 Qty 15, LRIP-9 Qty 15). This will be followed by four (Lots 10-13) FFP production options [via NTE values + Economic Price Adjustment (EPA)]. LRIP Lots 1 and 2 were awarded Aug 2016, LRIP Lot 3 was awarded Jan 2017, LRIP Lot 4 was awarded Sep 2018, LRIP Lot 5 was awarded Sep 2019, and LRIP Lots 6 and 7 were awarded Jan 2021. LRIP Lot 8 was awarded August 2022 and LRIP Lot 9 was awarded January 2023.</p> <p>The Aircrew Training System (ATS) acquisition strategy is to provide Aircrew Training Devices (ATDs), and associated support structure, to each Main Operating Base (MOB) and the Flying Training Unit (FTU). The ATS EMD FPIF contract with production options was conducted via a full and open competition per FAR Part 15, and awarded to FlightSafety Services Corporation in FY 2013. The ATS EMD phase will develop and procure ATDs; and will be supported with courseware, Training System Support Center, the technical data package, and support equipment to ensure system availability and concurrency with the aircraft. The first eight ATS production options were exercised on 19 Aug 2015, 31 May 2017, 30 Apr 2018, 31 Mar 2019, 2 Sep 2020, 4 Mar 2021, 23 May 2022, and 2 February 2023. Lot 9 of 10 total lots is planned to be awarded in January 2024.</p> <p>The Maintenance Training System (MTS) acquisition strategy is to acquire Maintenance Training Devices (MTDs), and associated support structure, for two AMC active duty Regional Maintenance Training Facilities. The MTS EMD FFP contract with production options was conducted via a full and open competition per FAR Part 15, and awarded to The Boeing Company in FY 2016. The MTS EMD phase will develop and procure MTDs; and will be supported with courseware, Training System Support Center, the technical data package, and support equipment to ensure system availability and concurrency with the aircraft.</p> <p>The KC-46A Program is responsible for the development, testing, and production of a drogue-equipped, wing-mounted refueling system to meet Capability Production Document (CPD) thresholds and objectives for simultaneous refueling of two probe-equipped receivers. The system can be installed or removed from the KC-46A as mission needs dictate.</p> <p>The long-term support concept for the KC-4A is organic two-level maintenance (2LM): organization level (O-level) and depot level (D-level). For the purposes of this program, all maintenance other than O-level shall be referred to as D-level. The product support strategy will initially employ Interim Contractor Support (ICS) before</p> |  |   |



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**Exhibit R-2A, RDT&E Project Justification:** PB 2024 Air Force **Date:** March 2023

| <b>Appropriation/Budget Activity</b> | <b>R-1 Program Element (Number/Name)</b>     | <b>Project (Number/Name)</b>    |
|--------------------------------------|--|---------------------------------|
| 3600 / 5                             | PE 0401221F / <i>KC-46A Tanker Squadrons</i> | 655271 / <i>KC-46 RDT&amp;E</i> |

transitioning to a 100% organically-managed maintenance and supply support capability. Performance Based Logistics (PBL) solutions will be evaluated during EMD as viable approaches to facilitate the transition.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0401221F / KC-46A Tanker Squadrons | <b>Project (Number/Name)</b><br>655271 / KC-46 RDT&E |
|--|---|--|

| <b>Product Development (\$ in Millions)</b>   |                                   |  |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---|-----------------------------------|--|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b>  | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| KC-46A aircraft non-recurring development, integration, and testing; 4 RDT&E tanker aircraft; and support | SS/FPIF                           | The Boeing Company : Seattle, WA           | 5,146.722          | 5.867          | Jan 2023          | 70.576         | Mar 2023          | 11.452              | Dec 2023          | -                  |                   | 11.452               | 17.064                  | 5,251.681         | -                               |
| KC-46A Take Off and Landing Data (TOLD) Development Capability  | SS/TBD                            | The Boeing Company : Seattle, WA           | 0.000              | 0.000          | Aug 2022          | 3.214          | Jan 2024          | 11.546              | Jul 2024          | -                  |                   | 11.546               | 36.576                  | 51.336            | -                               |
| KC-46A Aircrew Training System  | SS/FPIF                           | Flight Safety Services Co : Centennial, CO | 133.267            | 0.190          | Sep 2022          | 0.000          | Dec 2023          | 20.169              | Dec 2023          | -                  |                   | 20.169               | 2.714                   | 156.340           | -                               |
| <b>Subtotal</b>   |                                   |  | 5,279.989          | 6.057          |                   | 73.790         |                   | 43.167              |                   | -                  |                   | 43.167               | 56.354                  | 5,459.357         | N/A                             |

**Remarks**  
 The KC-46A EMD contract was awarded 24 Feb 2011. The total cost represents the current Program Office Estimate (POE) which accounts for the ceiling price of the contract plus the financial and schedule risk of potential design changes for the KC-46A aircraft.

Target value is blank for the KC-46A aircraft category since the contract is fully funded. Target value is TBD for TOLD since it has not awarded yet. Target value is blank for the KC-46A Aircrew Training System category since the contract is fully funded.

FINANCIAL PERFORMANCE: The KC-46A is evaluated against traditional Research and Development (R&D) program expenditure benchmarks. Unlike many traditional R&D programs, the KC-46A EMD contract is a FPIF contract with progress payments. Twenty percent (20%) of incurred costs are withheld until the end of the contract, when they are liquidated. Mandatory funding obligations and progress payment withholds will cause the program to lag traditional expenditure benchmarks, painting an inaccurate portrait of overall program health.

| <b>Support (\$ in Millions)</b>   |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| KC-46A studies and analysis associated with the development, integration, and demonstration of KC-46 capability & future planning | C/CPAF                            | Various : Various                         | 270.690            | 1.326          | Jun 2022          | 11.054         | Jun 2023          | 1.007               | Jan 2024          | -                  |                   | 1.007                | 0.000                   | 284.077           | -                               |
| <b>Subtotal</b>   |                                   |   | 270.690            | 1.326          |                   | 11.054         |                   | 1.007               |                   | -                  |                   | 1.007                | 0.000                   | 284.077           | N/A                             |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0401221F / KC-46A Tanker Squadrons | <b>Project (Number/Name)</b><br>655271 / KC-46 RDT&E |
|--|---|--|

| Support (\$ in Millions) |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item       | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |

**Remarks**  
These contracts are on an as needed basis, with various contract types and performing activities. Target value is blank since there are various contracts.

| Test and Evaluation (\$ in Millions)   |                        |                                      |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item   | Contract Method & Type | Performing Activity & Location       | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| KC-46A testing and planning support of development & operational test, FAA & military certification, and aircraft qualification activities | MIPR                   | 418th FLTS : Edwards AFB, CA         | 246.897     | 9.761   | May 2022   | 25.871  | Dec 2022   | 25.628       | Dec 2023   | -           |            | 25.628        | 8.327            | 316.484    | -                        |
| KC-46A Long Term Test Aircraft Maintenance Support   | SS/CPAF                | The Boeing Company : Edwards AFB, CA | 20.661      | 12.795  | Sep 2022   | 11.204  | Sep 2023   | 0.000        | Sep 2024   | -           |            | 0.000         | 0.000            | 44.660     | 46.636                   |
| <b>Subtotal</b>  |                        |                                      | 267.558     | 22.556  |            | 37.075  |            | 25.628       |            | -           |            | 25.628        | 8.327            | 361.144    | N/A                      |

**Remarks**  
Integrated testing and planning activities are performed by government organizations, with some contractor technical subject matter experts and teaming with the prime contractor. Target value is blank for the KC-46A testing and planning support of development & operational test because this is funding provided to government agencies.

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | 5,818.237   | 29.939  | 121.919 | 69.802       | -           | 69.802        | 64.681           | 6,104.578  | N/A                      |

**Remarks**  
In FY2021, PE 0605221F KC-46A, Project 655271 KC-46A RDT&E, and Project 651120 Pegasus Capability Improvements efforts were transferred to PE 401221F, Project 655271 KC-46A RDT&E, and Project 651120 Pegasus Capability Improvements in order to consolidate all KC-46 activity under a single PE. PE 0401221F also has historical Tanker Replacement costs from FY 2005-2008 reflected in prior years. PE 0605221F has costs from FY2009 to FY2020.



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**Exhibit R-4A, RDT&E Schedule Details:** PB 2024 Air Force **Date:** March 2023

|  |  |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0401221F / <i>KC-46A Tanker Squadrons</i> | <b>Project (Number/Name)</b><br>655271 / <i>KC-46 RDT&amp;E</i> |
|--|--|---|

Schedule Details

| Events by Sub Project                                | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b>KC-46A</b>  |         |      |         |      |
| Initial Operational Test & Evaluation (for WARPs)    | 2       | 2022 | 2       | 2023 |
| Government Testing for Correction of Deficiencies    | 1       | 2022 | 1       | 2026 |
| Boom Telescope Actuator Redesign ECP                 | 4       | 2022 | 2       | 2025 |
| Aircrew Training System Development & Updates        | 1       | 2022 | 4       | 2025 |
| Take Off and Landing Data (TOLD)                     | 3       | 2023 | 2       | 2027 |
| Long Term Test Aircraft Maintenance Support (LTTAMS) | 4       | 2022 | 4       | 2024 |

**Note**  
Events prior to Q1 2021 are reflected in PE 0605221F. Funding moved to PE 0401221F in FY 2021.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |  |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0401319F / VC-25B |
|---|--|

| COST (\$ in Millions)      | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element      | 3,228.836   | 407.147 | 147.932 | 490.701      | 0.000       | 490.701       | 294.829 | 112.744 | 56.851  | 0.000   | 0.000            | 4,739.040  |
| 655250: VC-25B             | 3,228.836   | 407.147 | 147.932 | 490.701      | 0.000       | 490.701       | 294.829 | 112.744 | 56.851  | 0.000   | 0.000            | 4,739.040  |
| Quantity of RDT&E Articles | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       | -                | -          |

**Program MDAP/MAIS Code:** 425

**Note**

FY10-14 Prior Years Funding \$27.29M was executed in PE 0401314F, BPAC 675355

**A. Mission Description and Budget Item Justification**

The VC-25B Program, formerly known as the Presidential Aircraft Recapitalization (PAR) Program, replaces the Presidential VC-25A fleet which faces capability gaps, rising maintenance costs, and parts obsolescence as it ages beyond 30 years. The VC-25B Program delivers two new aircraft to meet the requirements for the President to execute the duties of Head of State, Chief Executive, and Commander-in-Chief. The VC-25B Program uniquely modifies two Boeing 747-8 commercial aircraft to provide the President, staff, and guests with safe and reliable air transportation with the equivalent level of communications capability and security available in the White House. The modifications to the 747-8 aircraft include an electrical power upgrade with dual Auxiliary Power Units that are usable in flight, a mission communication system, a work and rest environment, an executive interior, military avionics, a self-defense system, independent enplaning and deplaning, and independent baggage loading. No significant changes to the existing VC-25A Concept of Operations or Concept of Employment are expected. This budget provides for Post-Milestone B (MS B) design, integration, modification, product support and test of two aircraft to make them Presidential mission ready.

Funds may be used to lease test equipment, as well as address emerging and short-notice Diminishing Manufacturing Sources and Material Shortage (DMSMS) issues.

This requirement supports performance of a full financial audit as required by title 10 U.S.C. Chapter 9A, Sec 240-D.

This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver VC-25B for emergent or unanticipated weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY 2022 \$3.924M was expended for civilian pay expenses in this program element, and in FY 2023 \$5.217M is forecasted for civilian pay expenses in this program element.

This program is in Budget Activity 5, System Development and Demonstration (SDD); however, it will not enter full rate production as stated below.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|   |  |
|---|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0401319F / VC-25B |
|---|--|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 655.665        | 492.932        | 372.856             | 0.000              | 372.856              |
| Current President's Budget                        | 407.147        | 147.932        | 490.701             | 0.000              | 490.701              |
| Total Adjustments                                 | -248.518       | -345.000       | 117.845             | 0.000              | 117.845              |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | -345.000       |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | -225.000       | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | -23.518        | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | 117.845             | 0.000              | 117.845              |

**Change Summary Explanation**

FY22 funding was reduced by a total of \$248.518 million which included \$225.0 million for reprogramming due to program delays and \$23.518 million for Small Business Innovation Research.

FY23 funding was Congressionally reduced by \$345 million as "Excess to need."

FY24 funding was increased \$117.845 million as a part of rephasing the FY22 reprogramming.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> VC-25B Engineering and Manufacturing Development (EMD), Product Support, & Program Support Costs (PSC)  | 404.265        | 145.033        | 480.132        |
| <b>Description:</b> EMD activities include activities such as management, integration, modification, contractor test, certification, and product support to deliver two Presidential mission-ready VC-25B Aircraft utilizing modeling and simulation, system integration labs (SILs), and mockups to assist in design/modification. |                |                |                |
| <b>FY 2023 Plans:</b><br>Funds in FY 2023 will continue EMD activities, aircraft modification, test planning and product support activities to include, but not limited to procurement of: initial spares, support equipment, aircraft familiarization training, technical order publications, and airworthiness directives.        |                |                |                |
| <b>FY 2024 Plans:</b>   |                |                |                |



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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0401319F / VC-25B |
|---|--|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | FY 2022 | FY 2023 | FY 2024 |
|--|---------|---------|---------|
| Funds in FY 2024 will continue EMD activities, aircraft modification, transition to Developmental Test and Evaluation (DT&E) and product support activities to include, but not limited to procurement of: initial spares, support equipment, aircraft familiarization training, technical order publications, and airworthiness directives. |         |         |         |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>EMD, Product Support, and PSC funding increased due to re-phasing of program funding to align funding requirements with the updated contractor Integrated Master Schedule on the Firm Fixed-Price VC-25B EMD contract.   |         |         |         |
| <b>Title:</b> VC-25B Government Test   | 2.882   | 2.899   | 10.569  |
| <b>Description:</b> Government test activities to prepare for, oversee, and conduct test events.   |         |         |         |
| <b>FY 2023 Plans:</b><br>Funds in FY 2023 will be used for test planning to include technical and safety review boards to include, but not limited to support for test working group meetings leading up to first flight in FY 2024.   |         |         |         |
| <b>FY 2024 Plans:</b><br>Funds in FY 2024 will be used to prepare for and conduct aircraft functional checkout to include, but not limited to some SIL, ground, and flight testing with the participating test organizations and contractors as the first aircraft enters Developmental Test and Evaluation (DT&E).                          |         |         |         |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Funding increased due to the initiation of ground test, flight test, and aircraft fuel costs.  |         |         |         |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 407.147 | 147.932 | 490.701 |

| <b>D. Other Program Funding Summary (\$ in Millions)</b> |                |                |                |                |                |                |                |                |                |                 |                   |
|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|-------------------|
| <u>Line Item</u>   | <u>FY 2022</u> | <u>FY 2023</u> | <u>FY 2024</u> | <u>FY 2024</u> | <u>FY 2024</u> |                |                |                |                |                 | <u>Cost To</u>    |
|  |                |                | <u>Base</u>    | <u>OCO</u>     | <u>Total</u>   | <u>FY 2025</u> | <u>FY 2026</u> | <u>FY 2027</u> | <u>FY 2028</u> | <u>Complete</u> | <u>Total Cost</u> |
| • OPAF 02 825990:<br><i>Materials Handling Vehicles</i>  | 0.251          | 0.000          | -              | -              | -              | -              | -              | -              | -              | 0.000           | 0.251             |
| • OPAF 03 837300: <i>Base Comm Infrastructure</i>        | 0.000          | 0.378          | -              | -              | -              | -              | -              | -              | -              | 0.000           | 0.378             |
| • OPAF 02 823990:<br><i>Special Purpose Vehicles</i>     | 2.319          | 2.946          | -              | -              | -              | -              | -              | -              | -              | 0.000           | 5.265             |

**Remarks**

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force Date: March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> / BA 5: <i>System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0401319F / VC-25B |
|--|--|

**E. Acquisition Strategy**  
In August 2012, the Defense Acquisition Executive (DAE), as the VC-25B Milestone Decision Authority, approved the Materiel Development Decision. The Capability Development Document (CDD) was validated by the Joint Requirements Oversight Council in November 2014.

In January 2015, the Secretary of the Air Force's Determination and Findings designated the Boeing 747-8 aircraft as the airframe platform, and the DAE's Acquisition Decision Memorandum authorized Pre-Milestone (MS) B contracts aimed at improving affordability and reducing program execution risk. In February 2015, the Assistant Secretary of the Air Force for Acquisition approved a Justification and Approval designating Boeing as the sole source for Pre-MS B activities, Post-MS B design, integration, modification, and test activities. The DAE approved the initial acquisition strategy in September 2015.

MS B certification occurred in September 2016. In March 2017, the White House reaffirmed the minimum set of requirements necessary to meet Presidential mission needs; these requirements are codified in the March 2017 CDD.

The DAE approved the updated VC-25B Acquisition Strategy and set the Acquisition Program Baseline (APB) in December 2018. The VC-25B Program integrates technologically mature subsystems into two Government furnished, commercial, Boeing 747-8 aircraft. The VC-25B Program designs, integrates, modifies, and tests two aircraft to make them Presidential Mission Ready. Boeing is the prime integrator for VC-25B development activities. The VC-25B Program has a single, sole-source, firm-fixed-price contract with multiple major contract modifications. Modifications include risk reduction activities, 747-8 commercial aircraft purchase, preliminary design, Engineering and Manufacturing Development (EMD), and product support.

The contract for risk reduction activities was awarded in January 2016. The contract modification to purchase two commercial aircraft was awarded in August 2017. The contract modification for Preliminary Design was awarded in September 2017. The contract modification for EMD was awarded in July 2018. The initial contract modification for product support activities was awarded in April 2020.

In April 2021, Boeing submitted an updated Integrated Master Schedule (IMS) and a formal request to extend aircraft contractual delivery dates by 12-months. In August 2021, upon updating their schedule risk assessment (SRA), Boeing submitted an updated request to the program office to extend aircraft contractual delivery dates by 17-months. This delay resulted in an APB schedule program deviation for the remaining APB milestones (First Flight, Operational Test, Required Asset Availability (RAA) for Initial Operational Capability (IOC), and RAA for Full Operational Capability (FOC)). Supported by the VC-25B Program Office SRA, the APB schedule re-baseline was approved by the DAE 28 June 2022. It extends RAA IOC and RAA FOC 24-months (objective) to 36-months (threshold) from original contractual delivery dates.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0401319F / VC-25B | <b>Project (Number/Name)</b><br>655250 / VC-25B |
|--|--|---|

| <b>Product Development (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| VC-25B EMD Contract Activities              | SS/FFP                 | The Boeing Company : Various   | 3,055.981   | 331.618 | Oct 2021   | 76.428  | Oct 2022   | 364.645      | Oct 2023   | -           |            | 364.645       | 45.232           | 3,873.904  | -                        |
| VC-25B Product Support Contract Activities  | SS/FFP                 | The Boeing Company : Various   | 87.441      | 58.943  | Oct 2021   | 44.806  | Oct 2022   | 91.768       | Oct 2023   | -           |            | 91.768        | 322.251          | 605.209    | -                        |
| <b>Subtotal</b>                             |                        |                                | 3,143.422   | 390.561 |            | 121.234 |            | 456.413      |            | -           |            | 456.413       | 367.483          | 4,479.113  | N/A                      |

| <b>Support (\$ in Millions)</b>    |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|------------------------------------|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                 | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Direct Cite Authority Civilian Pay | Various                | AFLCMC/WV : WPAFB, OH          | 9.369       | 3.924   | Oct 2021   | 5.217   | Oct 2022   | 5.326        | Oct 2023   | -           |            | 5.326         | 13.355           | 37.191     | -                        |
| <b>Subtotal</b>                    |                        |                                | 9.369       | 3.924   |            | 5.217   |            | 5.326        |            | -           |            | 5.326         | 13.355           | 37.191     | N/A                      |

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| VC-25B Developmental Test and Evaluation    | MIPR                   | 412 TW, JITC : Various         | 11.404      | 2.882   | Dec 2021   | 2.899   | Oct 2022   | 10.569       | Oct 2023   | -           |            | 10.569        | 44.713           | 72.467     | -                        |
| <b>Subtotal</b>                             |                        |                                | 11.404      | 2.882   |            | 2.899   |            | 10.569       |            | -           |            | 10.569        | 44.713           | 72.467     | N/A                      |

| <b>Management Services (\$ in Millions)</b>           |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                                    | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| VC-25B Program Support Costs - Other Government Costs | Various                | AFLCMC/WV : WPAFB, OH          | 27.166      | 1.625   | Nov 2021   | 5.800   | Nov 2022   | 5.409        | Nov 2023   | -           |            | 5.409         | 10.283           | 50.283     | -                        |
| VC-25B Program Support Costs- Contract Services       | C/T&M                  | AFLCMC/WV : WPAFB, OH          | 37.475      | 8.155   | Feb 2022   | 12.782  | Feb 2023   | 12.984       | Feb 2024   | -           |            | 12.984        | 28.590           | 99.986     | -                        |
| <b>Subtotal</b>                                       |                        |                                | 64.641      | 9.780   |            | 18.582  |            | 18.393       |            | -           |            | 18.393        | 38.873           | 150.269    | N/A                      |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0401319F / VC-25B | <b>Project (Number/Name)</b><br>655250 / VC-25B |
|--|--|---|

|                            | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> | 3,228.836   | 407.147 | 147.932 | 490.701      | -           | 490.701       | 464.424          | 4,739.040  | N/A                      |

**Remarks**  
FY 2010-2014 RDT&E Funding (\$27.3M) was executed in PE 0401314F, Project 675355, BA07.

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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0401319F / VC-25B | <b>Project (Number/Name)</b><br>655250 / VC-25B |
|--|--|---|

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |  |
|--|--|
| <b>VC-25B</b>  |  |
| Aircraft Modification  |  |
| Product Support Activities   |  |
| Developmental Test (DT)  |  |
| Familiarization and Operational Test (FAM/OT)                            |  |
| Required Assets Available (RAA) for Initial Operational Capability (IOC) |  |
| RAA for Full Operational Capability (FOC)                                |  |

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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023                         |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0401319F / VC-25B | <b>Project (Number/Name)</b><br>655250 / VC-25B |

Schedule Details

| Events by Sub Project  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b>VC-25B</b>  |         |      |         |      |
| Aircraft Modification  | 1       | 2022 | 4       | 2025 |
| Product Support Activities   | 1       | 2022 | 2       | 2026 |
| Developmental Test (DT)  | 3       | 2024 | 2       | 2026 |
| Familiarization and Operational Test (FAM/OT)                            | 4       | 2026 | 1       | 2027 |
| Required Assets Available (RAA) for Initial Operational Capability (IOC) | 2       | 2027 | 2       | 2027 |
| RAA for Full Operational Capability (FOC)                                | 3       | 2027 | 3       | 2027 |

**Note**  
EMD, Aircraft Modification, and Product Support Activities all began prior to Q1 2022.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0701212F / <i>Automated Test Systems</i> |
|---|---|

| COST (\$ in Millions)                                       | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                                       | -           | 15.445  | 16.664  | 12.911       | 0.000       | 12.911        | 29.331  | 34.566  | 36.288  | 14.215  | Continuing       | Continuing |
| 6506TE: <i>Test And Evaluation Support Budget Authority</i> | -           | 15.445  | 16.664  | 12.911       | 0.000       | 12.911        | 29.331  | 34.566  | 36.288  | 14.215  | Continuing       | Continuing |
| Quantity of RDT&E Articles                                  | -           | -       | -       | -            | -           | -             | -       | -       | -       | -       |                  |            |

**Program MDAP/MAIS Code:** 6506

**Note**

This program, BA 5, PE 0701212F, project 6506TE, Aircraft Smart Weapons Test Set ASWTS, is a new start.  
 This program, BA 5, PE 0701212F, project 6506TE, Common Armament Tester - Fighter, is a new start.

**A. Mission Description and Budget Item Justification**

The Automatic Test Systems (ATS) program office is responsible for developing, acquiring, delivering and sustaining ATS war-fighting capabilities for the United States Air Force (USAF). ATS is responsible for developing, modernizing, acquiring, and sustaining ATS to meet the user's operational needs.

ATS Product Group consists of the following:

- Armament and Stores
- Avionics
- Electronic Warfare
- Software Loader/Verifier and Built-in-Test
- Radar and Identification Friend or Foe
- Specialized

Development, modernization and technology insertion for over 8K testers across all major commands and Joint Force. Accelerates developing and modernizing cyber-resilient, nuclear-certified ATS supporting USAF Armament, Bomber, Fighter/Advance Aircraft, Mobility, Training, ISR & SOF.

RDT&E (APPN 3600) funds needed for development of the Common Armament Tester-Fighters (CAT-F) which will be a common nuclear certified, cyber secure armament testing solution for the F-15 and F-16 with the option for A-10, F-22, and F-35 platforms. The development of this test will give the DoD the ability to develop a common tester to decrease life cycle cost, increase cyber security, reduce sustainment and mobility footprint across multiple platforms and acquiring government owned data.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force Date: March 2023

Appropriation/Budget Activity R-1 Program Element (Number/Name)
3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD) PE 0701212F I Automated Test Systems

Funds will be utilized to closeout remaining contract actions for the Bomber Armament Tester (BAT) is replacing six legacy testers and combining their capabilities into one tester. The Bomber Armament Tester will support the B-2, B-1 and B-52 platforms. It will ensure the USAF bomber fleet can conduct nuclear deterrence, global power projection and global strike operations to support the President of the United States and Combatant Commanders by providing a reliable, cyber secure, and sustainable tester. The tasks are to develop a common bomber armament tester and the Test Program Sets (Software, Hardware, and Documentation) to test the armament release equipment on the bombers.

RDT&E efforts support development, testing, and producibility of the Bomber Armament Tester and Test Program Sets. The program will utilize an incremental development approach with B-2 as Increment 1, B-1 as Increment 2, and B-52 as Increment 3.

The Common Aircraft Portable Reprogramming Equipment (CAPRE) Secure Memory Loader Verifier (SMLV) loads operational flight programs to the weapon systems. CAPRE SMLV leads the fleet on Cyber initiatives and is government owned and developed. CAPRE SMLV supports 45 Mission Design Series (MDS) including but not limited to A-10, B-1, B-52, C-5, C-17, C-130, CV-22, F-15, F-16, H-60 and KC-46.

This RDT&E effort includes developing a Network Interface Module (NIM) that provides additional cyber hardening to the CAPRE system and redesigning the current CAPRE system to adapt to the NIM. Additionally this RDT&E effort includes software development for NIM interfaces and new weapons systems moving to the CAPRE system from other MLV systems. The goal is to provide one common cyber secure MLV for the Air Force to minimize cyber vulnerabilities in weapon systems.

RDT&E efforts support prototype development and testing of the Common Armament Tester Fighter and Test Program Sets.

Aircraft Smart Weapons Test Set (ASWTS)-The legacy testers do not have the capability to check a multitude of capabilities (such as MIL-STD-1760 signal integrity) added to the Fighter aircraft through avionics and weapons upgrades. A new ASWTS is required in order to fulfill current testing requirements not covered by the legacy Aircraft Circuits Preload Test Set (ACPTS). Program will be completed in an incremental Approach: Capture all Fighter aircraft requirements, Develop F-16 capability for all blocks (3600),Develop F-15 capability (3600) and Develop A-10 capability (3600)

This program element also includes program administrative cost for the Automatic Test Systems program office and funds the cost of studies and research to support the Automatic Test Systems fleet.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Automatic Test Systems Program Office weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 0.000M was expended, and in FY23 0.000M is forecast for civilian pay expenses in this program element.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD) | <b>R-1 Program Element (Number/Name)</b><br>PE 0701212F I Automated Test Systems |
|--|--|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 15.445         | 0.000          | 0.000               | 0.000              | 0.000                |
| Current President's Budget                        | 15.445         | 16.664         | 12.911              | 0.000              | 12.911               |
| Total Adjustments                                 | 0.000          | 16.664         | 12.911              | 0.000              | 12.911               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 16.664         | 12.911              | 0.000              | 12.911               |

**Change Summary Explanation**

Appropriated baseline.

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
|---|----------------|----------------|----------------|

|   |       |       |       |
|---|-------|-------|-------|
| <p><b>Title:</b> Aircraft Smart Weapons Test Set ASWTS</p> <p><b>Description:</b> Develop the capability to test fighter aircrafts MIL-STD-1760 smart weapons.</p> <p><b>FY 2023 Plans:</b><br/>N/A</p> <p><b>FY 2024 Plans:</b><br/>Develop a common, cyber secure armament testing solution for the A-10, F-15, F-16, F-22, and MQ-9 platforms.</p> <p>Develops and modernizes ATS that maximize warfighter core capabilities across spectrum of DoD weapon systems; accelerates technology development and transition of game-changing technologies into new and existing ATS</p> <p>Digital Transformation and Innovation are key to ATS relevant for tomorrow's fight in contested environment and supporting Persistent Logistics/Agile Combat Employment (i.e. Flight Line of the Future, Scalable ATS, Wireless and Cable-less ATS, Smart ATS, Rapid Reprogrammability, etc.)</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>FUNDS NOT REQUIRED UNTIL FY 24. NEW START PROGRAM</p> | 0.000 | 0.000 | 1.600 |
| <b>Title:</b> Common Armament Tester - Fighter  | 0.000 | 0.000 | 6.811 |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force  |  | <b>Date:</b> March 2023   |                |                |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>   |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0701212F / <i>Automated Test Systems</i> |                |                |
| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>   |  | <b>FY 2022</b>  | <b>FY 2023</b> | <b>FY 2024</b> |
| <p><b>Description:</b> RDT&amp;E efforts support development, testing, and producibility of the Common Armament Tester -Fighter and Test Program Sets.</p> <p><b>FY 2023 Plans:</b><br/>N/A</p> <p><b>FY 2024 Plans:</b><br/>Funds efforts to develop cyber-secure ATS to protect from existing and emerging threats and modernize with game-changing technology including digital engineering, open systems architecture &amp; agile software enabling ACE.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>FUNDS NOT REQUIRED UNTIL FY24 FOR NEW START PROGRAM</p>  |  |   |                |                |
| <p><b>Title:</b> Bomber Armament Tester</p> <p><b>Description:</b> Funds will be utilized to close out contract actions on behalf of the Bomber Armament Tester program for B-1, B-2, and B-52. RDT&amp;E efforts support development, testing, and producibility of the Bomber Armament Tester and Test Program Sets as well as DSMS studies associated with the B-52 and B-2 programs to include but not limited to COLT and MUSTANG.</p> <p><b>FY 2023 Plans:</b><br/>Funds needed to complete contract closeout, evaluation of property, software, etc. In addition, funds are needed to support obsolete/DMSMS for existing B-52 and B-2 testers long-term.</p> <p><b>FY 2024 Plans:</b><br/>Remaining funds needed to complete contract closeout, evaluation of property, software, etc. In addition, funds are needed to support obsolete/DMSMS for existing B-52 and B-2 testers long-term.</p> <p><b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br/>Due to change in program strategy, funds decrease to meet contract closeout action items.</p> |  | 4.434   | 10.660         | 0.000          |
| <p><b>Title:</b> Common Aircraft Portable Reprogramming Equipment (CAPRE)</p> <p><b>Description:</b> Development of a common cyber secure Memory Loader Verifier for the Air Force.</p> <p><b>FY 2023 Plans:</b><br/>Funding will be utilized for approximately 200 air adapter groups (AAG) that will allow the 18 platforms currently utilizing CAPRE legacy to transition over to utilizing CAPRE SMLV system.</p> <p><b>FY 2024 Plans:</b></p>  |  | 11.011  | 6.004          | 4.500          |

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|   |   |
|---|---|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0701212F / <i>Automated Test Systems</i> |
|---|---|

| <b>C. Accomplishments/Planned Programs (\$ in Millions)</b>  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| Continuation of development of air adapter groups (AAG) that will allow the 18 platforms currently utilizing CAPRE legacy to transition over to utilizing CAPRE SMLV system. |                |                |                |
| <b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br>Funding decrease is due to completion of the AAGs and NIM development wrapping up.                          |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | 15.445         | 16.664         | 12.911         |

| <b>D. Other Program Funding Summary (\$ in Millions)</b> |                |                |                         |                        |                          |                |                |                |                |                             |                   |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| <b>Line Item</b>   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024<br/>Base</b> | <b>FY 2024<br/>OCO</b> | <b>FY 2024<br/>Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b> | <b>FY 2028</b> | <b>Cost To<br/>Complete</b> | <b>Total Cost</b> |
| • APAF 07 00071: <i>Replacement Support Equipment</i>    | 27.392         | 23.677         | 19.182                  | -                      | 19.182                   | 23.948         | -              | -              | -              | 0.000                       | 94.199            |

**Remarks**  
Other program funding includes procurement funds for Bomber Armament Tester Program, the Common Aircraft Portable Reprogrammable Equipment Secure Memory Loader Verifier, Aircraft Smart Weapons Test Set (ASWTS), Common Armament Tester - Fighters

Funds efforts to develop cyber-secure ATS to protect from existing and emerging threats and modernize with game-changing technology including digital engineering, open systems architecture & agile software enabling ACE.

**E. Acquisition Strategy**  
Acquisition Strategy for ATS modernization and technology insertion projects are evaluated for priority, feasibility, Return on Investment, and cost then sorted into Tiers for ease of classification:

- Tier I: Stars-Highest priority projects that are both achievable and provide significant benefits to the Air Force.
- Tier II: Rising Stars-Projects that are high priority, meet modernization goals, and will deliver needed capabilities.
- Tier III: Innovation Opportunities-Low TRL projects that require small investments to begin development.
- Tier IV: Sustainment Efforts-Lower cost efforts targeted at improving existing systems. Typically sustaining engineering funds (583), rather than R&D funds (3600)
- Tier V: Watch List-Low priority and/or immature concepts that require significant investment or technology development

Acquisition Strategy for the Bomber Armament Tester (BAT) was approved by AFPEO/ Agile Combat Support on 12 November 2015. The BAT program will use an incremental approach based on customer needs to satisfy this requirement. Increment 1 includes the development of the core test set, the B-2A requirements and development of the most complex B-1B and B-52 test program sets. Increment 2 consist of the B-1B development and Increment 3 consists of the B-52H requirements. The BAT program will utilize full and open competition to award the contract. Contract awarded September 28, 2017.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force  |   | <b>Date:</b> March 2023 |
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0701212F / <i>Automated Test Systems</i> |                         |

The Acquisition strategy for Common Aircraft Portable Reprogrammable Equipment (CAPRE) Secure Memory Loader Verifier (SMLV) is to use the original government manufacturer to develop the NIM, software and hardware development. Acquisition Strategy for CAPRE was approved by the Milestone Decision Authority in June 2017.

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|--|--|--|--|--|---|--|--|--|--|--|-------------------------|--|--|
| <b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2024 Air Force</b> |  |  |  |  |   |  |  |  |  |  | <b>Date: March 2023</b> |  |  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                       |  |  |  |  | <b>R-1 Program Element (Number/Name)</b><br>PE 0701212F / <i>Automated Test Systems</i> |  |  |  | <b>Project (Number/Name)</b><br>6506TE / <i>Test And Evaluation Support Budget Authority</i> |  |                         |  |  |

| <b>Product Development (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |                         |                   |                                 |
| Product Development                         | C/CPAF                            | Not specified. : TBD                      | -                  | -              |                   | -              |                   | -                   |                   | -                  |                   | -                    | Continuing              | Continuing        | -                               |
| CAPRE/CAPRE SMLV Development                | PO                                | 309th OO-ALC : UT                         | -                  | -              |                   | 9.000          | Nov 2022          | 4.500               | Nov 2023          | -                  |                   | 4.500                | Continuing              | Continuing        | -                               |
| BAT Development / Cost Overruns             | C/CPAF                            | Not specified. : CA                       | -                  | 3.450          | Oct 2021          | 7.664          | Mar 2023          | -                   |                   | -                  |                   | -                    | Continuing              | Continuing        | -                               |
| CAT-F DEVELOPMENT                           | C/TBD                             | Not specified. : TBD                      | -                  | -              |                   | -              |                   | 6.811               | Jan 2024          | -                  |                   | 6.811                | Continuing              | Continuing        | -                               |
| ASWTS DEVELOPMENT                           | C/TBD                             | Not specified. : TBD                      | -                  | -              |                   | -              |                   | 1.000               | Feb 2024          | -                  |                   | 1.000                | Continuing              | Continuing        | -                               |
| <b>Subtotal</b>                             |                                   |   | -                  | 3.450          |                   | 16.664         |                   | 12.311              |                   | -                  |                   | 12.311               | Continuing              | Continuing        | N/A                             |

**Remarks**

Product Development Cost include all ATS modernization and technology insertion to include but not limited to the development of the Bomber Armament Test Sets (Units under test Software, hardware and Technical Data), Technical Data and maintenance of Government Furnished Equipment. Remaining funds needed to complete contract closeout, evaluation of property, software, etc. In addition, funds are needed to support obsolete/DMSMS for existing B-52 and B-2 testers long-term.

Development efforts include developing a Network Interface Module (NIM) that provides additional cyber hardening to the CAPRE system and redesigning the current CAPRE system to adapt to the NIM. Development effort also include software development for NIM interfaces and new weapons systems moving to the CAPRE system from other MLV systems. The goal is to provide one common cyber secure MLV for the Air Force.

Develops and modernizes ATS that maximize warfighter core capabilities across spectrum of DoD weapon systems; accelerates technology development and transition of game-changing technologies into new and existing ATS

Develops and modernizes ATS that maximize warfighter core capabilities across spectrum of DoD weapon systems; accelerates technology development and transition of game-changing technologies into new and existing ATS.

Joint Force/All MAJCOMs depend on ATS digital transformation leveraging MBSE, Agile SW development, and Open Systems Architecture

Digital Transformation and Innovation are key to ATS relevant for tomorrow's fight in contested environment and supporting Persistent Logistics/Agile Combat Employment; (i.e. Flight Line of the Future, Scalable ATS, Wireless and Cable-less ATS, Smart ATS, Rapid Reprogrammability, etc.)

Program is growing as WNA focuses on 5-10 year ATS Technology and Modernization program/roadmap.

Common Armament Tester-Fighter will develop a common, cyber secure armament testing solution for the A-10, F-15, F-16, F-22, and MQ-9 platforms. Reduces life cycle cost, increases cyber security, reduces sustainment footprint across multiple platforms and acquires government owned data.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |  |
|--|--|--|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0701212F / Automated Test Systems | <b>Project (Number/Name)</b><br>6506TE / Test And Evaluation Support<br>Budget Authority |
|--|--|--|

| <b>Product Development (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |

The Aircraft Smart Weapon Test Set (ASWTS) will fill the capability gap to test fighter aircrafts MIL-STD-1760 smart weapons.&#160; The current Aircraft Circuits Preload Test Set for the F-16 is not capable. Tester's positive impact on mission readiness expected to save 13,000 man-hours per year.

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Test and Evaluation                         | C/CPAF                 | Not specified. : TBD           | -           | 3.062   | Oct 2021   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Development and Operation Testing support   | C/CPIF                 | Not specified. : NV            | -           | 8.933   | Oct 2021   | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 11.995  |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | N/A                      |

**Remarks**  
Test and Evaluation Cost include all ATS modernization and technology insertion to include but not limited to the environmental testing of the Bomber Armament Tester and operational testing of the test program sets for the B-2 and most complex B-1 and B-52.

| <b>Management Services (\$ in Millions)</b>  |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                           | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Management Services                          | C/CPAF                 | Not specified. : TBD           | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| Digital Innovation and Transformation        | TBD                    | Not specified. : TBD           | -           | -       |            | -       |            | 0.600        | Feb 2024   | -           |            | 0.600         | Continuing       | Continuing | -                        |
| BAT Travel                                   | Various                | Not specified. : NV            | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| BAT Program Management Support               | C/FFP                  | Not specified. : NV            | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| CAPRE/CAPRE SMLV Travel                      | Various                | Not specified. : NV            | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| CAPRE/ CAPRE SMLV Program Management Support | C/FFP                  | Not specified. : NV            | -           | -       |            | -       |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                              |                        |                                | -           | -       |            | -       |            | 0.600        |            | -           |            | 0.600         | Continuing       | Continuing | N/A                      |

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

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| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0701212F / <i>Automated Test Systems</i> | <b>Project (Number/Name)</b><br>6506TE / <i>Test And Evaluation Support Budget Authority</i> |
|--|---|--|

| <b>Management Services (\$ in Millions)</b> |                                   |   |                    | <b>FY 2022</b> |                   | <b>FY 2023</b> |                   | <b>FY 2024 Base</b> |                   | <b>FY 2024 OCO</b> |                   | <b>FY 2024 Total</b> |  | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|---|-----------------------------------|---|--------------------|----------------|-------------------|----------------|-------------------|---------------------|-------------------|--------------------|-------------------|----------------------|--|-------------------------|-------------------|---------------------------------|
| <b>Cost Category Item</b>                   | <b>Contract Method &amp; Type</b> | <b>Performing Activity &amp; Location</b> | <b>Prior Years</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>    | <b>Award Date</b> | <b>Cost</b>         | <b>Award Date</b> | <b>Cost</b>        | <b>Award Date</b> | <b>Cost</b>          |  |                         |                   |                                 |

**Remarks**  
PMA costs includes efforts to develop cyber-secure ATS to protect from existing and emerging threats and modernize with game-changing technology including digital engineering, open systems architecture & agile software enabling ACE and travel requirements. PMA cost also include an Information Assurance expert, Assistance and advisory service contractors to provide support to the program office during the development of the program. The program element may include necessary civilian pay expenses required to manage, execute and deliver Automatic Test System capability.

|                            | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> | <b>Cost To Complete</b> | <b>Total Cost</b> | <b>Target Value of Contract</b> |
|----------------------------|--------------------|----------------|----------------|---------------------|--------------------|----------------------|-------------------------|-------------------|---------------------------------|
| <b>Project Cost Totals</b> | -                  | 15.445         | 16.664         | 12.911              | -                  | 12.911               | Continuing              | Continuing        | N/A                             |

**Remarks**

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| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0701212F / <i>Automated Test Systems</i> | <b>Project (Number/Name)</b><br>6506TE / <i>Test And Evaluation Support Budget Authority</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|  |  |
|--|--|
| <b>AUTOMATIC TEST SYSTEMS</b>          |  |
| TEST SYSTEM MODERNIZATION              |  |
| DT/OT                                  |  |
| CAPRE DT/OT AAG LEGACY PLATFORMS       |  |
| CAPRE LEGACY AAG DEVELOPMENT GATE      |  |
| <b>CAT-F</b>                           |  |
| Develop F-16 capability for all blocks |  |



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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |   | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0701212F / <i>Automated Test Systems</i> | <b>Project (Number/Name)</b><br>6506TE / <i>Test And Evaluation Support Budget Authority</i> |

Schedule Details

| Events by Sub Project                  | Start   |      | End     |      |
|--|---------|------|---------|------|
|  | Quarter | Year | Quarter | Year |
| <b>AUTOMATIC TEST SYSTEMS</b>          |         |      |         |      |
| TEST SYSTEM MODERNIZATION              | 2       | 2023 | 4       | 2027 |
| DT/OT                                  | 1       | 2022 | 3       | 2023 |
| CAPRE DT/OT AAG LEGACY PLATFORMS       | 4       | 2023 | 2       | 2025 |
| CAPRE LEGACY AAG DEVELOPMENT GATE      | 4       | 2023 | 2       | 2025 |
| <b>CAT-F</b>                           |         |      |         |      |
| Develop F-16 capability for all blocks | 1       | 2023 | 4       | 2025 |

**Note**

Bomber Armament Tester (BAT) is a nuclear certified common tester capable of testing on-aircraft Stores Management Systems and Line Replacement Units both on- and off-aircraft. The BAT System will test functionality of the Armament Mission Equipment (AME) that is required for B-2A, B-1B, and B-52H weapons delivery. The BAT schedule reflects Increments I, II, AND III. Due to an increase in material cost and lack of access to needed Government Furnished Property (GFP) to the Original Equipment Manufacturer (OEM), the BAT program is experiencing major schedule delays which is causing the program to overrun the projected cost. Program re-baselined at the beginning of FY21 to stabilize program costs and schedule.

FY22 funds will be used for Engineering & Manufacture Design (EMD) phases for Increments I, II, and III. Without FY22 3600 funding, EMD and integration will be stopped, and BAT development and integration will be further delayed.

The Common Aircraft Portable Reprogramming Equipment (CAPRE) Secure Memory Loader Verifier (SMLV) a is government designed and developed memory loader verifier (MLV) to replace the aging F-16 unique MLV and legacy CAPRE equipment. FY22 funds will be used for Engineering & Manufacture Design (EMD) of the CAPRE SMLV to ensure a cyber-secure MLV to maximize readiness for 18 platforms.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2024 Air Force **Date:** March 2023

|   |  |
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| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0804772F / <i>Training Developments</i> |
|---|--|

| COST (\$ in Millions)                                       | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | FY 2025 | FY 2026 | FY 2027 | FY 2028 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element                                       | -           | 2.482   | 10.838  | 1.922        | 0.000       | 1.922         | 4.951   | 5.074   | 5.177   | 5.287   | Continuing       | Continuing |
| 652400: <i>Training Developments</i>                        | -           | 2.482   | 7.831   | 1.922        | 0.000       | 1.922         | 4.951   | 5.074   | 5.177   | 5.287   | Continuing       | Continuing |
| 652401: <i>AETC Transformational Education and Training</i> | -           | 0.000   | 3.007   | 0.000        | 0.000       | 0.000         | 0.000   | 0.000   | 0.000   | 0.000   | Continuing       | Continuing |

**A. Mission Description and Budget Item Justification**

Pilot Training Next [PTN] offers a more effective approach to pilot training. New training technologies will be studied and validated. Results will be used by Air Education and Training Command to develop processes and procedures to increase pilot production, improve and streamline existing training programs, and to incorporate into other programs.

Alignment to the NDS: PTN is part of a complete redesign of pilot training using cutting edge technology to provide a faster, more cost effective and more comprehensive training model to get the warfighter to the cockpit in half the time of the existing model.

Funding contained in this documentation directly aids Air Education and Training Command's flying training enterprise to continue reducing the USAF Pilot Shortage.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY2022 \$0 was expended for civilian pay expenses in this program element, and in FY2023 \$0 is forecasted for civilian pay expenses in this program element

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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| <b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
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|   |  |
|---|--|
| <b>Appropriation/Budget Activity</b><br>3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i> | <b>R-1 Program Element (Number/Name)</b><br>PE 0804772F / <i>Training Developments</i> |
|---|--|

| <b>B. Program Change Summary (\$ in Millions)</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b> | <b>FY 2024 Total</b> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget                       | 2.482          | 15.138         | 7.942               | 0.000              | 7.942                |
| Current President's Budget                        | 2.482          | 10.838         | 1.922               | 0.000              | 1.922                |
| Total Adjustments                                 | 0.000          | -4.300         | -6.020              | 0.000              | -6.020               |
| • Congressional General Reductions                | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Reductions               | 0.000          | -4.300         |                     |                    |                      |
| • Congressional Rescissions                       | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Adds                              | 0.000          | 0.000          |                     |                    |                      |
| • Congressional Directed Transfers                | 0.000          | 0.000          |                     |                    |                      |
| • Reprogrammings                                  | 0.000          | 0.000          |                     |                    |                      |
| • SBIR/STTR Transfer                              | 0.000          | 0.000          |                     |                    |                      |
| • Other Adjustments                               | 0.000          | 0.000          | -6.020              | 0.000              | -6.020               |

**Change Summary Explanation**

FY2023 directed reduction (-4.300 million) for insufficient justification.  
 FY2024 funding reduced to match requirements.

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|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|---|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |  |                      |                |                |   | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0804772F / <i>Training Developments</i> |                      |                |                | <b>Project (Number/Name)</b><br>652400 / <i>Training Developments</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>   | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>  | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 652400: <i>Training Developments</i>                                    | -                  | 2.482          | 7.831          | 1.922               | 0.000  | 1.922                | 4.951          | 5.074          | 5.177   | 5.287                   | Continuing              | Continuing        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -  | -                    | -              | -              | -   | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

Pilot Training Next [PTN] offers a more effective approach to pilot training. New training technologies will be studied and validated. Results will be used by Air Education and Training Command to develop processes and procedures to increase pilot production, improve and streamline existing training programs, and to incorporate into other programs.

Alignment to the NDS: PTN is part of a complete redesign of pilot training using cutting edge technology to provide a faster, more cost effective and more comprehensive training model to get the warfighter to the cockpit in half the time of the existing model.

Funding contained in this documentation directly aids Air Education and Training Command's flying training enterprise to continue reducing the USAF Pilot Shortage.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY2022 \$0 was expended for civilian pay expenses in this program element, and in FY2023 \$0 is forecasted for civilian pay expenses in this program element

**B. Accomplishments/Planned Programs (\$ in Millions)**

|   | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|---|----------------|----------------|----------------|
| <b>Title:</b> Pilot Training Next (PTN) Development   | 2.482          | 7.831          | 1.922          |
| <b>Description:</b> Pilot Training Next currently utilizes eight (8) T-6B aircraft equipped with heads-up and advanced situational awareness displays. Mission computers were temporarily modified to enable Air-to-Air and Air-to-Ground simulated weapons delivery. Numerous Virtual Reality (VR) Immersive Training Devices (ITDs) are also being utilized in the training curriculum. The aircraft and VR ITDs enable proper assessment of advanced pilot training concepts, techniques, procedures, and capabilities, while also providing a flexible architecture that incorporates Live, Virtual, and Constructive (LVC) elements into undergraduate pilot training. |                |                |                |
| Efforts will be focused on validating new LVC and VR ITD concepts to develop processes and procedures to increase pilot production, improve and streamline existing undergraduate pilot training programs.  |                |                |                |
| <b>FY 2023 Plans:</b><br>Continue development of PTN.   |                |                |                |
| <b>FY 2024 Plans:</b>   |                |                |                |

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| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force | <b>Date:</b> March 2023 |
|---|-------------------------|

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0804772F / <i>Training Developments</i> | <b>Project (Number/Name)</b><br>652400 / <i>Training Developments</i> |
|--|--|---|

| <b>B. Accomplishments/Planned Programs (\$ in Millions)</b>   | FY 2022 | FY 2023 | FY 2024 |
|---|---------|---------|---------|
| Continue development of PTN.  |         |         |         |
| <b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b><br>Funding adjusted to match requirement. |         |         |         |
| <b>Accomplishments/Planned Programs Subtotals</b>   | 2.482   | 7.831   | 1.922   |

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

Program Office[s] will select their own acquisition strategies based on Air Education and Training Command's innovation unit [Detachment 24] requirements. The initial systems PTN is primarily focused on are small-scale avionics modifications to the T-6A aircraft and incorporating Virtual Reality Immersive Training Devices into the undergraduate pilot training curriculum.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0804772F / <i>Training Developments</i> | <b>Project (Number/Name)</b><br>652400 / <i>Training Developments</i> |
|--|--|---|

| <b>Product Development (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Pilot Training Next Contracts               | Various                | AFLCMC : TBD                   | -           | 1.111   | Jun 2022   | 6.460   | Apr 2023   | 1.248        | Apr 2024   | -           |            | 1.248         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 1.111   |            | 6.460   |            | 1.248        |            | -           |            | 1.248         | Continuing       | Continuing | N/A                      |

| <b>Test and Evaluation (\$ in Millions)</b> |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|---|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                          | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Pilot Training Next Test Activities         | TBD                    | TBD : TBD                      | -           | 0.152   |            | 0.152   |            | -            |            | -           |            | -             | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                             |                        |                                | -           | 0.152   |            | 0.152   |            | -            |            | -           |            | -             | Continuing       | Continuing | N/A                      |

| <b>Management Services (\$ in Millions)</b>  |                        |                                |             | FY 2022 |            | FY 2023 |            | FY 2024 Base |            | FY 2024 OCO |            | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|------------------------|--------------------------------|-------------|---------|------------|---------|------------|--------------|------------|-------------|------------|---------------|------------------|------------|--------------------------|
| Cost Category Item                           | Contract Method & Type | Performing Activity & Location | Prior Years | Cost    | Award Date | Cost    | Award Date | Cost         | Award Date | Cost        | Award Date | Cost          |                  |            |                          |
| Program Management Administrative Support    | TBD                    | Not specified. : TBD           | -           | 0.457   | Jan 2022   | 0.457   | Oct 2022   | 0.044        | Oct 2024   | -           |            | 0.044         | Continuing       | Continuing | -                        |
| Administrative and Advisory Services Support | TBD                    | Not specified. : TBD           | -           | 0.660   | Mar 2022   | 0.660   | Oct 2022   | 0.550        | Oct 2024   | -           |            | 0.550         | Continuing       | Continuing | -                        |
| Government Travel                            | Various                | Not specified. : TBD           | -           | 0.102   | Jan 2022   | 0.102   | Oct 2022   | 0.080        | Oct 2024   | -           |            | 0.080         | Continuing       | Continuing | -                        |
| <b>Subtotal</b>                              |                        |                                | -           | 1.219   |            | 1.219   |            | 0.674        |            | -           |            | 0.674         | Continuing       | Continuing | N/A                      |

|                            |  |  | Prior Years | FY 2022 | FY 2023 | FY 2024 Base | FY 2024 OCO | FY 2024 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|--|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| <b>Project Cost Totals</b> |  |  | -           | 2.482   | 7.831   | 1.922        | -           | 1.922         | Continuing       | Continuing | N/A                      |

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force** **Date:** March 2023

|  |  |   |
|--|--|---|
| <b>Appropriation/Budget Activity</b><br>3600 / 5 | <b>R-1 Program Element (Number/Name)</b><br>PE 0804772F / <i>Training Developments</i> | <b>Project (Number/Name)</b><br>652400 / <i>Training Developments</i> |
|--|--|---|

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

|   |            |
|---|------------|
| <b><i>Pilot Training Next Studies</i></b> |            |
| Pilot Training Next Systems Development   | [REDACTED] |



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| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0804772F / <i>Training Developments</i> | <b>Project (Number/Name)</b><br>652400 / <i>Training Developments</i> |

Schedule Details

| Events by Sub Project                     | Start   |      | End     |      |
|---|---------|------|---------|------|
|   | Quarter | Year | Quarter | Year |
| <b><i>Pilot Training Next Studies</i></b> |         |      |         |      |
| Pilot Training Next Systems Development   | 2       | 2022 | 4       | 2028 |

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|   |                    |                |                |                     |  |                      |                |                |  |                         |                         |                   |
|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|--|-------------------------|-------------------------|-------------------|
| <b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2024 Air Force |                    |                |                |                     |  |                      |                |                |  | <b>Date:</b> March 2023 |                         |                   |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                        |                    |                |                |                     | <b>R-1 Program Element (Number/Name)</b><br>PE 0804772F / <i>Training Developments</i> |                      |                |                | <b>Project (Number/Name)</b><br>652401 / <i>AETC Transformational Education and Training</i> |                         |                         |                   |
| <b>COST (\$ in Millions)</b>  | <b>Prior Years</b> | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024 Base</b> | <b>FY 2024 OCO</b>   | <b>FY 2024 Total</b> | <b>FY 2025</b> | <b>FY 2026</b> | <b>FY 2027</b>   | <b>FY 2028</b>          | <b>Cost To Complete</b> | <b>Total Cost</b> |
| 652401: <i>AETC Transformational Education and Training</i>             | -                  | 0.000          | 3.007          | 0.000               | 0.000  | 0.000                | 0.000          | 0.000          | 0.000  | 0.000                   | Continuing              | Continuing        |
| Quantity of RDT&E Articles  | -                  | -              | -              | -                   | -  | -                    | -              | -              | -  | -                       |                         |                   |

**A. Mission Description and Budget Item Justification**

The Mobility Pilot Production Fundamentals simulator provides stop-gap training for the Mobility Pilot production while the T-1 divests. Air Mobility Fundamentals is a prep course, allowing FTU manning to teach both this simulator and flying courses.

**B. Accomplishments/Planned Programs (\$ in Millions)**

|  | <b>FY 2022</b> | <b>FY 2023</b> | <b>FY 2024</b> |
|--|----------------|----------------|----------------|
| <b>Title:</b> Air Mobility Fundamentals  | -              | 3.007          | -              |
| <b>Description:</b> The Mobility Pilot Production Fundamentals simulator provides stop-gap training for the Mobility Pilot production while the T-1 divests. Air Mobility Fundamentals is a prep course, allowing FTU manning to teach both this simulator and flying courses. |                |                |                |
| <b>FY 2023 Plans:</b><br>Develop Air Mobility Fundamentals prep course.  |                |                |                |
| <b>FY 2023 to FY 2024 Increase/Decrease Statement:</b><br>Development will be complete in 2023   |                |                |                |
| <b>Accomplishments/Planned Programs Subtotals</b>  | -              | 3.007          | -              |

**C. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**D. Acquisition Strategy**

Program Office[s] will select their own acquisition strategies based on Air Education and Training Command's innovation unit [Detachment 24] requirements.



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|   |  |  |
|---|--|--|
| <b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                  | <b>R-1 Program Element (Number/Name)</b><br>PE 0804772F / <i>Training Developments</i> | <b>Project (Number/Name)</b><br>652401 / <i>AETC Transformational Education and Training</i> |

| FY 2022 |   |   |   | FY 2023 |   |   |   | FY 2024 |   |   |   | FY 2025 |   |   |   | FY 2026 |   |   |   | FY 2027 |   |   |   | FY 2028 |   |   |   |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 | 1       | 2 | 3 | 4 |

*No project title.*

No event title.



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|--|--|--|
| <b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force |  | <b>Date:</b> March 2023  |
| <b>Appropriation/Budget Activity</b><br>3600 / 5                   | <b>R-1 Program Element (Number/Name)</b><br>PE 0804772F / <i>Training Developments</i> | <b>Project (Number/Name)</b><br>652401 / <i>AETC Transformational Education and Training</i> |

Schedule Details

| Events by Sub Project    | Start   |      | End     |      |
|--------------------------|---------|------|---------|------|
|                          | Quarter | Year | Quarter | Year |
| <i>No project title.</i> |         |      |         |      |
| No event title.          | 1       | 2023 | 4       | 2023 |

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