

UNCLASSIFIED

**Department of Defense
Fiscal Year (FY) 2018 Budget Estimates**

May 2017



Air Force

Justification Book Volume 3b of 3

Research, Development, Test & Evaluation, Air Force

Vol-III Part 2

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Air Force • Budget Estimates FY 2018 • RDT&E Program

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Department of Defense
 FY 2018 President's Budget Request
 Exhibit R-1 FY 2018 President's Budget Request
 Total Obligational Authority
 (Dollars in Thousands)

04 May 2017

| Appropriation | FY 2016 Base + OCO | FY 2017 PB Request with CR Adj Base | FY 2017 Total PB Requests* with CR Adj Base | FY 2017 PB Request with CR Adj OCO | FY 2017 Total PB Requests* with CR Adj OCO | FY 2017 Less Enacted Div B P.L.114-254** OCO | FY 2017 Remaining Req with CR Adj OCO |
|--|-----------------------|--|---|---|--|--|--|
| Research, Development, Test & Eval, AF | 25,243,981 | 25,146,562 | 25,988,644 | 17,100 | 89,900 | | 89,900 |
| Total Research, Development, Test & Evaluation | 25,243,981 | 25,146,562 | 25,988,644 | 17,100 | 89,900 | | 89,900 |

Department of Defense
 FY 2018 President's Budget Request
 Exhibit R-1 FY 2018 President's Budget Request
 Total Obligational Authority
 (Dollars in Thousands)

04 May 2017

| Appropriation | FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA | FY 2017 Total PB Requests* with CR Adj Base + OCO | FY 2017 Less Enacted Div B P.L.114-254** OCO | FY 2017 Remaining Req with CR Adj Base + OCO | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|--|---|--|---|-----------------|----------------|------------------|
| Research, Development, Test & Eval, AF | 25,163,662 | 26,078,544 | | 26,078,544 | 34,914,359 | 135,358 | 35,049,717 |
| Total Research, Development, Test & Evaluation | 25,163,662 | 26,078,544 | | 26,078,544 | 34,914,359 | 135,358 | 35,049,717 |

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Department of Defense
 FY 2018 President's Budget Request
 Exhibit R-1 FY 2018 President's Budget Request
 Total Obligational Authority
 (Dollars in Thousands)

04 May 2017

| Summary Recap of Budget Activities | FY 2016 Base + OCO | FY 2017 PB Request with CR Adj Base | FY 2017 Total PB Requests* with CR Adj Base | FY 2017 PB Request with CR Adj OCO | FY 2017 Total PB Requests* with CR Adj OCO | FY 2017 Less Enacted Div B P.L.114-254** OCO | FY 2017 Remaining Req with CR Adj OCO |
|--|-----------------------|--|---|---|--|--|--|
| Basic Research | 510,673 | 500,024 | 500,024 | | | | |
| Applied Research | 1,241,501 | 1,260,152 | 1,260,152 | | | | |
| Advanced Technology Development | 675,737 | 725,805 | 725,805 | | | | |
| Advanced Component Development & Prototypes | 1,555,274 | 2,847,833 | 3,047,833 | | 4,700 | | 4,700 |
| System Development & Demonstration | 3,832,399 | 4,075,804 | 4,135,704 | 425 | 11,425 | | 11,425 |
| Management Support | 1,512,458 | 1,245,577 | 1,369,377 | | | | |
| Operational Systems Development | 15,915,939 | 17,457,056 | 17,915,438 | 32,480 | 89,580 | | 89,580 |
| Undistributed | | -2,965,689 | -2,965,689 | -15,805 | -15,805 | | -15,805 |
| Total Research, Development, Test & Evaluation | 25,243,981 | 25,146,562 | 25,988,644 | 17,100 | 89,900 | | 89,900 |

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Department of Defense
 FY 2018 President's Budget Request
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 Total Obligational Authority
 (Dollars in Thousands)

04 May 2017

| | FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA | FY 2017 Total PB Requests* with CR Adj Base + OCO | FY 2017 Less Enacted Div B P.L.114-254** OCO | FY 2017 Remaining Req with CR Adj Base + OCO | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|--|---|--|---|-----------------|----------------|------------------|
| Summary Recap of Budget Activities | | | | | | | |
| ----- | | | | | | | |
| Basic Research | 500,024 | 500,024 | | 500,024 | 505,259 | | 505,259 |
| Applied Research | 1,260,152 | 1,260,152 | | 1,260,152 | 1,284,114 | | 1,284,114 |
| Advanced Technology Development | 725,805 | 725,805 | | 725,805 | 794,017 | | 794,017 |
| Advanced Component Development & Prototypes | 2,847,833 | 3,052,533 | | 3,052,533 | 4,605,030 | 13,200 | 4,618,230 |
| System Development & Demonstration | 4,076,229 | 4,147,129 | | 4,147,129 | 4,476,762 | | 4,476,762 |
| Management Support | 1,245,577 | 1,369,377 | | 1,369,377 | 2,663,875 | | 2,663,875 |
| Operational Systems Development | 17,489,536 | 18,005,018 | | 18,005,018 | 20,585,302 | 122,158 | 20,707,460 |
| Undistributed | -2,981,494 | -2,981,494 | | -2,981,494 | | | |
| Total Research, Development, Test & Evaluation | 25,163,662 | 26,078,544 | | 26,078,544 | 34,914,359 | 135,358 | 35,049,717 |

Department of Defense
 FY 2018 President's Budget Request
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 (Dollars in Thousands)

04 May 2017

| | FY 2016 Base + OCO | FY 2017 PB Request with CR Adj Base | FY 2017 Total PB Requests* with CR Adj Base | FY 2017 PB Request with CR Adj OCO | FY 2017 Total PB Requests* with CR Adj OCO | FY 2017 Less Enacted Div B P.L.114-254** OCO | FY 2017 Remaining Req with CR Adj OCO |
|--|-----------------------|--|---|---|--|--|--|
| Summary Recap of FYDP Programs ----- | | | | | | | |
| Strategic Forces | 551,805 | 636,723 | 646,723 | | | | |
| General Purpose Forces | 1,608,073 | 2,203,903 | 2,382,603 | | | | |
| Intelligence and Communications | 1,605,446 | 1,850,451 | 1,983,297 | 4,715 | 9,415 | | 9,415 |
| Mobility Forces | 294,978 | 505,020 | 517,020 | | | | |
| Research and Development | 8,916,417 | 9,680,261 | 10,036,961 | 425 | 11,425 | | 11,425 |
| Central Supply and Maintenance | 98,763 | 105,997 | 105,997 | | | | |
| Training Medical and Other | 3,155 | 3,114 | 3,114 | | | | |
| Administration and Associated Activities | 110,405 | -2,935,248 | -2,935,248 | -15,805 | -15,805 | | -15,805 |
| Support of Other Nations | 2,315 | 4,784 | 4,784 | | | | |
| Space | | | | | | | |
| Classified Programs | 12,052,624 | 13,091,557 | 13,243,393 | 27,765 | 84,865 | | 84,865 |
| Total Research, Development, Test & Evaluation | 25,243,981 | 25,146,562 | 25,988,644 | 17,100 | 89,900 | | 89,900 |

Department of Defense
 FY 2018 President's Budget Request
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 (Dollars in Thousands)

04 May 2017

| | FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA | FY 2017 Total PB Requests* with CR Adj Base + OCO | FY 2017 Less Enacted Div B P.L.114-254** OCO | FY 2017 Remaining Req with CR Adj Base + OCO | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|--|---|--|---|-----------------|----------------|------------------|
| Summary Recap of FYDP Programs | | | | | | | |
| Strategic Forces | 636,723 | 646,723 | | 646,723 | 825,038 | | 825,038 |
| General Purpose Forces | 2,203,903 | 2,382,603 | | 2,382,603 | 2,962,365 | 9,750 | 2,972,115 |
| Intelligence and Communications | 1,855,166 | 1,992,712 | | 1,992,712 | 1,466,925 | 5,400 | 1,472,325 |
| Mobility Forces | 505,020 | 517,020 | | 517,020 | 602,629 | | 602,629 |
| Research and Development | 9,680,686 | 10,048,386 | | 10,048,386 | 10,713,989 | 7,800 | 10,721,789 |
| Central Supply and Maintenance | 105,997 | 105,997 | | 105,997 | 109,419 | | 109,419 |
| Training Medical and Other | 3,114 | 3,114 | | 3,114 | 3,615 | | 3,615 |
| Administration and Associated Activities | -2,951,053 | -2,951,053 | | -2,951,053 | 121,899 | | 121,899 |
| Support of Other Nations | 4,784 | 4,784 | | 4,784 | 4,569 | | 4,569 |
| Space | | | | | 3,165,909 | | 3,165,909 |
| Classified Programs | 13,119,322 | 13,328,258 | | 13,328,258 | 14,938,002 | 112,408 | 15,050,410 |
| Total Research, Development, Test & Evaluation | 25,163,662 | 26,078,544 | | 26,078,544 | 34,914,359 | 135,358 | 35,049,717 |

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| Summary Recap of Budget Activities | FY 2016 Base + OCO | FY 2017 PB Request with CR Adj Base | FY 2017 Total PB Requests* with CR Adj Base | FY 2017 PB Request with CR Adj OCO | FY 2017 Total PB Requests* with CR Adj OCO | FY 2017 Less Enacted Div B P.L.114-254** OCO | FY 2017 Remaining Req with CR Adj OCO |
|--|-----------------------|--|---|---|--|--|--|
| Basic Research | 510,673 | 500,024 | 500,024 | | | | |
| Applied Research | 1,241,501 | 1,260,152 | 1,260,152 | | | | |
| Advanced Technology Development | 675,737 | 725,805 | 725,805 | | | | |
| Advanced Component Development & Prototypes | 1,555,274 | 2,847,833 | 3,047,833 | | 4,700 | | 4,700 |
| System Development & Demonstration | 3,832,399 | 4,075,804 | 4,135,704 | 425 | 11,425 | | 11,425 |
| Management Support | 1,512,458 | 1,245,577 | 1,369,377 | | | | |
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| Total Research, Development, Test & Evaluation | 25,243,981 | 25,146,562 | 25,988,644 | 17,100 | 89,900 | | 89,900 |

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|--|--|---|--|---|-----------------|----------------|------------------|
| Summary Recap of Budget Activities | | | | | | | |
| Basic Research | 500,024 | 500,024 | | 500,024 | 505,259 | | 505,259 |
| Applied Research | 1,260,152 | 1,260,152 | | 1,260,152 | 1,284,114 | | 1,284,114 |
| Advanced Technology Development | 725,805 | 725,805 | | 725,805 | 794,017 | | 794,017 |
| Advanced Component Development & Prototypes | 2,847,833 | 3,052,533 | | 3,052,533 | 4,605,030 | 13,200 | 4,618,230 |
| System Development & Demonstration | 4,076,229 | 4,147,129 | | 4,147,129 | 4,476,762 | | 4,476,762 |
| Management Support | 1,245,577 | 1,369,377 | | 1,369,377 | 2,663,875 | | 2,663,875 |
| Operational Systems Development | 17,489,536 | 18,005,018 | | 18,005,018 | 20,585,302 | 122,158 | 20,707,460 |
| Undistributed | -2,981,494 | -2,981,494 | | -2,981,494 | | | |
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| Summary Recap of Budget Activities ----- | | | | | | | |
| Summary Recap of FYDP Programs ----- | | | | | | | |
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| General Purpose Forces | 1,608,073 | 2,203,903 | 2,382,603 | | | | |
| Intelligence and Communications | 1,605,446 | 1,850,451 | 1,983,297 | 4,715 | 9,415 | | 9,415 |
| Mobility Forces | 294,978 | 505,020 | 517,020 | | | | |
| Research and Development | 8,916,417 | 9,680,261 | 10,036,961 | 425 | 11,425 | | 11,425 |
| Central Supply and Maintenance | 98,763 | 105,997 | 105,997 | | | | |
| Training Medical and Other | 3,155 | 3,114 | 3,114 | | | | |
| Administration and Associated Activities | 110,405 | -2,935,248 | -2,935,248 | -15,805 | -15,805 | | -15,805 |
| Support of Other Nations | 2,315 | 4,784 | 4,784 | | | | |
| Space | | | | | | | |
| Classified Programs | 12,052,624 | 13,091,557 | 13,243,393 | 27,765 | 84,865 | | 84,865 |
| Total Research, Development, Test & Evaluation | 25,243,981 | 25,146,562 | 25,988,644 | 17,100 | 89,900 | | 89,900 |

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|--|--|---|--|---|-----------------|----------------|------------------|
| Summary Recap of Budget Activities ----- | | | | | | | |
| Summary Recap of FYDP Programs ----- | | | | | | | |
| Strategic Forces | 636,723 | 646,723 | | 646,723 | 825,038 | | 825,038 |
| General Purpose Forces | 2,203,903 | 2,382,603 | | 2,382,603 | 2,962,365 | 9,750 | 2,972,115 |
| Intelligence and Communications | 1,855,166 | 1,992,712 | | 1,992,712 | 1,466,925 | 5,400 | 1,472,325 |
| Mobility Forces | 505,020 | 517,020 | | 517,020 | 602,629 | | 602,629 |
| Research and Development | 9,680,686 | 10,048,386 | | 10,048,386 | 10,713,989 | 7,800 | 10,721,789 |
| Central Supply and Maintenance | 105,997 | 105,997 | | 105,997 | 109,419 | | 109,419 |
| Training Medical and Other | 3,114 | 3,114 | | 3,114 | 3,615 | | 3,615 |
| Administration and Associated Activities | -2,951,053 | -2,951,053 | | -2,951,053 | 121,899 | | 121,899 |
| Support of Other Nations | 4,784 | 4,784 | | 4,784 | 4,569 | | 4,569 |
| Space | | | | | 3,165,909 | | 3,165,909 |
| Classified Programs | 13,119,322 | 13,328,258 | | 13,328,258 | 14,938,002 | 112,408 | 15,050,410 |
| Total Research, Development, Test & Evaluation | 25,163,662 | 26,078,544 | | 26,078,544 | 34,914,359 | 135,358 | 35,049,717 |

Department of the Air Force
 FY 2018 President's Budget Request
 Exhibit R-1 FY 2018 President's Budget Request
 Total Obligational Authority
 (Dollars in Thousands)

04 May 2017

Appropriation: 3600F Research, Development, Test & Eval, AF

| Line No | Program Element Number | Item | Act | FY 2016 Base + OCO | FY 2017 PB Request with CR Adj Base | FY 2017 Total PB Requests* with CR Adj Base | FY 2017 PB Request with CR Adj OCO | FY 2017 Total PB Requests* with CR Adj OCO | FY 2017 Less Enacted Div B P.L.114-254** OCO | FY 2017 Remaining Req with CR Adj OCO | Req S e c |
|---------|------------------------|---|-----|--------------------|-------------------------------------|---|------------------------------------|--|--|---------------------------------------|-----------|
| 1 | 0601102F | Defense Research Sciences | 01 | 365,276 | 340,812 | 340,812 | | | | | U |
| 2 | 0601103F | University Research Initiatives | 01 | 132,526 | 145,044 | 145,044 | | | | | U |
| 3 | 0601108F | High Energy Laser Research Initiatives | 01 | 12,871 | 14,168 | 14,168 | | | | | U |
| | | Basic Research | | 510,673 | 500,024 | 500,024 | | | | | |
| 4 | 0602102F | Materials | 02 | 132,768 | 126,152 | 126,152 | | | | | U |
| 5 | 0602201F | Aerospace Vehicle Technologies | 02 | 118,263 | 122,831 | 122,831 | | | | | U |
| 6 | 0602202F | Human Effectiveness Applied Research | 02 | 108,784 | 111,647 | 111,647 | | | | | U |
| 7 | 0602203F | Aerospace Propulsion | 02 | 184,498 | 185,671 | 185,671 | | | | | U |
| 8 | 0602204F | Aerospace Sensors | 02 | 151,264 | 155,174 | 155,174 | | | | | U |
| 9 | 0602298F | Science and Technology Management - Major Headquarters Activities | 02 | | | | | | | | U |
| 10 | 0602601F | Space Technology | 02 | 107,442 | 117,915 | 117,915 | | | | | U |
| 11 | 0602602F | Conventional Munitions | 02 | 105,296 | 109,649 | 109,649 | | | | | U |
| 12 | 0602605F | Directed Energy Technology | 02 | 122,835 | 127,163 | 127,163 | | | | | U |
| 13 | 0602788F | Dominant Information Sciences and Methods | 02 | 171,196 | 161,650 | 161,650 | | | | | U |
| 14 | 0602890F | High Energy Laser Research | 02 | 39,155 | 42,300 | 42,300 | | | | | U |
| | | Applied Research | | 1,241,501 | 1,260,152 | 1,260,152 | | | | | |
| 15 | 0603112F | Advanced Materials for Weapon Systems | 03 | 38,238 | 35,137 | 35,137 | | | | | U |
| 16 | 0603199F | Sustainment Science and Technology (S&T) | 03 | 17,323 | 20,636 | 20,636 | | | | | U |

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Department of the Air Force
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 (Dollars in Thousands)

04 May 2017

Appropriation: 3600F Research, Development, Test & Eval, AF

| Line No | Program Element Number | Item | Act | FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA | FY 2017 Total PB Requests* with CR Adj Base + OCO | FY 2017 Less Enacted Div B P.L.114-254** OCO | FY 2017 Remaining Req with CR Adj Base + OCO | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Se |
|---------|------------------------|---|-----|--|---|--|--|--------------|-------------|---------------|----|
| 1 | 0601102F | Defense Research Sciences | 01 | 340,812 | 340,812 | | 340,812 | 342,919 | | 342,919 | U |
| 2 | 0601103F | University Research Initiatives | 01 | 145,044 | 145,044 | | 145,044 | 147,923 | | 147,923 | U |
| 3 | 0601108F | High Energy Laser Research Initiatives | 01 | 14,168 | 14,168 | | 14,168 | 14,417 | | 14,417 | U |
| | | Basic Research | | 500,024 | 500,024 | | 500,024 | 505,259 | | 505,259 | |
| 4 | 0602102F | Materials | 02 | 126,152 | 126,152 | | 126,152 | 124,264 | | 124,264 | U |
| 5 | 0602201F | Aerospace Vehicle Technologies | 02 | 122,831 | 122,831 | | 122,831 | 124,678 | | 124,678 | U |
| 6 | 0602202F | Human Effectiveness Applied Research | 02 | 111,647 | 111,647 | | 111,647 | 108,784 | | 108,784 | U |
| 7 | 0602203F | Aerospace Propulsion | 02 | 185,671 | 185,671 | | 185,671 | 192,695 | | 192,695 | U |
| 8 | 0602204F | Aerospace Sensors | 02 | 155,174 | 155,174 | | 155,174 | 152,782 | | 152,782 | U |
| 9 | 0602298F | Science and Technology Management - Major Headquarters Activities | 02 | | | | | 8,353 | | 8,353 | U |
| 10 | 0602601F | Space Technology | 02 | 117,915 | 117,915 | | 117,915 | 116,503 | | 116,503 | U |
| 11 | 0602602F | Conventional Munitions | 02 | 109,649 | 109,649 | | 109,649 | 112,195 | | 112,195 | U |
| 12 | 0602605F | Directed Energy Technology | 02 | 127,163 | 127,163 | | 127,163 | 132,993 | | 132,993 | U |
| 13 | 0602788F | Dominant Information Sciences and Methods | 02 | 161,650 | 161,650 | | 161,650 | 167,818 | | 167,818 | U |
| 14 | 0602890F | High Energy Laser Research | 02 | 42,300 | 42,300 | | 42,300 | 43,049 | | 43,049 | U |
| | | Applied Research | | 1,260,152 | 1,260,152 | | 1,260,152 | 1,284,114 | | 1,284,114 | |
| 15 | 0603112F | Advanced Materials for Weapon Systems | 03 | 35,137 | 35,137 | | 35,137 | 37,856 | | 37,856 | U |
| 16 | 0603199F | Sustainment Science and Technology (S&T) | 03 | 20,636 | 20,636 | | 20,636 | 22,811 | | 22,811 | U |

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Department of the Air Force
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 Total Obligational Authority
 (Dollars in Thousands)

04 May 2017

Appropriation: 3600F Research, Development, Test & Eval, AF

| Line No | Program Element Number | Item | Act | FY 2016 Base + OCO | FY 2017 PB Request with CR Adj Base | FY 2017 Total PB Requests* with CR Adj Base | FY 2017 PB Request with CR Adj OCO | FY 2017 Total PB Requests* with CR Adj OCO | FY 2017 Less Enacted Div B P.L.114-254** OCO | FY 2017 Remaining Req with CR Adj OCO | S e c |
|---------|------------------------|---|-----|--------------------|-------------------------------------|---|------------------------------------|--|--|---------------------------------------|-------|
| 17 | 0603203F | Advanced Aerospace Sensors | 03 | 39,794 | 40,945 | 40,945 | | | | | U |
| 18 | 0603211F | Aerospace Technology Dev/Demo | 03 | 95,266 | 130,950 | 130,950 | | | | | U |
| 19 | 0603216F | Aerospace Propulsion and Power Technology | 03 | 168,542 | 94,594 | 94,594 | | | | | U |
| 20 | 0603270F | Electronic Combat Technology | 03 | 45,359 | 58,250 | 58,250 | | | | | U |
| 21 | 0603401F | Advanced Spacecraft Technology | 03 | 62,278 | 61,593 | 61,593 | | | | | U |
| 22 | 0603444F | Maui Space Surveillance System (MSSS) | 03 | 12,303 | 11,681 | 11,681 | | | | | U |
| 23 | 0603456F | Human Effectiveness Advanced Technology Development | 03 | 24,094 | 26,492 | 26,492 | | | | | U |
| 24 | 0603601F | Conventional Weapons Technology | 03 | 42,204 | 102,009 | 102,009 | | | | | U |
| 25 | 0603605F | Advanced Weapons Technology | 03 | 37,301 | 39,064 | 39,064 | | | | | U |
| 26 | 0603680F | Manufacturing Technology Program | 03 | 51,467 | 46,344 | 46,344 | | | | | U |
| 27 | 0603788F | Battlespace Knowledge Development and Demonstration | 03 | 41,568 | 58,110 | 58,110 | | | | | U |
| | | Advanced Technology Development | | 675,737 | 725,805 | 725,805 | | | | | |
| 28 | 0603260F | Intelligence Advanced Development | 04 | 5,032 | 5,598 | 5,598 | | | | | U |
| 29 | 0603438F | Space Control Technology | 04 | 3,955 | 7,534 | 7,534 | | | | | U |
| 30 | 0603742F | Combat Identification Technology | 04 | 21,025 | 24,418 | 24,418 | | | | | U |
| 31 | 0603790F | NATO Research and Development | 04 | 4,566 | 4,333 | 4,333 | | | | | U |
| 32 | 0603830F | Space Security and Defense Program | 04 | 30,771 | 32,399 | 32,399 | | | | | U |
| 33 | 0603851F | Intercontinental Ballistic Missile - Dem/Val | 04 | 34,765 | 108,663 | 108,663 | | | | | U |

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Department of the Air Force
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|---------|------------------------|---|-----|--|---|--|--|--------------|-------------|---------------|----|
| 17 | 0603203F | Advanced Aerospace Sensors | 03 | 40,945 | 40,945 | | 40,945 | 40,978 | | 40,978 | U |
| 18 | 0603211F | Aerospace Technology Dev/Demo | 03 | 130,950 | 130,950 | | 130,950 | 115,966 | | 115,966 | U |
| 19 | 0603216F | Aerospace Propulsion and Power Technology | 03 | 94,594 | 94,594 | | 94,594 | 104,499 | | 104,499 | U |
| 20 | 0603270F | Electronic Combat Technology | 03 | 58,250 | 58,250 | | 58,250 | 60,551 | | 60,551 | U |
| 21 | 0603401F | Advanced Spacecraft Technology | 03 | 61,593 | 61,593 | | 61,593 | 58,910 | | 58,910 | U |
| 22 | 0603444F | Maui Space Surveillance System (MSSS) | 03 | 11,681 | 11,681 | | 11,681 | 10,433 | | 10,433 | U |
| 23 | 0603456F | Human Effectiveness Advanced Technology Development | 03 | 26,492 | 26,492 | | 26,492 | 33,635 | | 33,635 | U |
| 24 | 0603601F | Conventional Weapons Technology | 03 | 102,009 | 102,009 | | 102,009 | 167,415 | | 167,415 | U |
| 25 | 0603605F | Advanced Weapons Technology | 03 | 39,064 | 39,064 | | 39,064 | 45,502 | | 45,502 | U |
| 26 | 0603680F | Manufacturing Technology Program | 03 | 46,344 | 46,344 | | 46,344 | 46,450 | | 46,450 | U |
| 27 | 0603788F | Battlespace Knowledge Development and Demonstration | 03 | 58,110 | 58,110 | | 58,110 | 49,011 | | 49,011 | U |
| | | Advanced Technology Development | | 725,805 | 725,805 | | 725,805 | 794,017 | | 794,017 | |
| 28 | 0603260F | Intelligence Advanced Development | 04 | 5,598 | 5,598 | | 5,598 | 5,652 | | 5,652 | U |
| 29 | 0603438F | Space Control Technology | 04 | 7,534 | 7,534 | | 7,534 | | 7,800 | 7,800 | U |
| 30 | 0603742F | Combat Identification Technology | 04 | 24,418 | 24,418 | | 24,418 | 24,397 | | 24,397 | U |
| 31 | 0603790F | NATO Research and Development | 04 | 4,333 | 4,333 | | 4,333 | 3,851 | | 3,851 | U |
| 32 | 0603830F | Space Security and Defense Program | 04 | 32,399 | 32,399 | | 32,399 | | | | U |
| 33 | 0603851F | Intercontinental Ballistic Missile - Dem/Val | 04 | 108,663 | 108,663 | | 108,663 | 10,736 | | 10,736 | U |

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Department of the Air Force
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 Total Obligational Authority
 (Dollars in Thousands)

04 May 2017

Appropriation: 3600F Research, Development, Test & Eval, AF

| Line No | Program Element Number | Item | Act | FY 2016 Base + OCO | FY 2017 PB Request with CR Adj Base | FY 2017 Total PB Requests* with CR Adj Base | FY 2017 PB Request with CR Adj OCO | FY 2017 Total PB Requests* with CR Adj OCO | FY 2017 Less Enacted Div B P.L.114-254** OCO | FY 2017 Remaining Req with CR Adj OCO | S e c |
|---------|------------------------|--|-----|--------------------|-------------------------------------|---|------------------------------------|--|--|---------------------------------------|-------|
| 34 | 0603859F | Pollution Prevention - Dem/Val | 04 | | | | | | | | U |
| 35 | 0604015F | Long Range Strike - Bomber | 04 | 710,390 | 1,358,309 | 1,358,309 | | | | | U |
| 36 | 0604201F | Integrated Avionics Planning and Development | 04 | | | | | | | | U |
| 37 | 0604257F | Advanced Technology and Sensors | 04 | | 34,818 | 34,818 | | | | | U |
| 38 | 0604288F | National Airborne Ops Center (NAOC) Recap | 04 | | | | | | | | U |
| 39 | 0604317F | Technology Transfer | 04 | 7,494 | 3,368 | 3,368 | | | | | U |
| 40 | 0604327F | Hard and Deeply Buried Target Defeat System (HDBTDS) Program | 04 | 62,034 | 74,308 | 74,308 | | | | | U |
| 41 | 0604414F | Cyber Resiliency of Weapon Systems-ACS | 04 | | | 40,000 | | | | | U |
| 42 | 0604422F | Weather System Follow-on | 04 | 46,307 | 118,953 | 118,953 | | | | | U |
| 43 | 0604425F | Space Situation Awareness Systems | 04 | | 9,901 | 10,901 | | | | | U |
| 44 | 0604776F | Deployment & Distribution Enterprise R&D | 04 | | 25,890 | 25,890 | | | | | U |
| 45 | 0604857F | Operationally Responsive Space | 04 | 22,123 | 7,921 | 17,921 | | | | | U |
| 46 | 0604858F | Tech Transition Program | 04 | 264,673 | 347,304 | 349,304 | | | | | U |
| 47 | 0605230F | Ground Based Strategic Deterrent | 04 | 64,966 | 113,919 | 113,919 | | | | | U |
| 48 | 0201184F | Counter Narco-Terrorism Program Office | 04 | 1,850 | | | | | | | U |
| 49 | 0207110F | Next Generation Air Dominance | 04 | 32,495 | 20,595 | 167,595 | | | | | U |
| 50 | 0207455F | Three Dimensional Long-Range Radar (3DELRR) | 04 | 7,865 | 49,491 | 49,491 | | | | | U |

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Department of the Air Force
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|---------|------------------------|--|-----|--|---|--|--|--------------|-------------|---------------|----|
| 34 | 0603859F | Pollution Prevention - Dem/Val | 04 | | | | | 2 | | 2 | U |
| 35 | 0604015F | Long Range Strike - Bomber | 04 | 1,358,309 | 1,358,309 | | 1,358,309 | 2,003,580 | | 2,003,580 | U |
| 36 | 0604201F | Integrated Avionics Planning and Development | 04 | | | | | 65,458 | | 65,458 | U |
| 37 | 0604257F | Advanced Technology and Sensors | 04 | 34,818 | 34,818 | | 34,818 | 68,719 | | 68,719 | U |
| 38 | 0604288F | National Airborne Ops Center (NAOC) Recap | 04 | | | | | 7,850 | | 7,850 | U |
| 39 | 0604317F | Technology Transfer | 04 | 3,368 | 3,368 | | 3,368 | 3,295 | | 3,295 | U |
| 40 | 0604327F | Hard and Deeply Buried Target Defeat System (HDBTDS) Program | 04 | 74,308 | 74,308 | | 74,308 | 17,365 | | 17,365 | U |
| 41 | 0604414F | Cyber Resiliency of Weapon Systems-ACS | 04 | | 40,000 | | 40,000 | 32,253 | | 32,253 | U |
| 42 | 0604422F | Weather System Follow-on | 04 | 118,953 | 118,953 | | 118,953 | | | | U |
| 43 | 0604425F | Space Situation Awareness Systems | 04 | 9,901 | 10,901 | | 10,901 | | | | U |
| 44 | 0604776F | Deployment & Distribution Enterprise R&D | 04 | 25,890 | 25,890 | | 25,890 | 26,222 | | 26,222 | U |
| 45 | 0604857F | Operationally Responsive Space | 04 | 7,921 | 17,921 | | 17,921 | | | | U |
| 46 | 0604858F | Tech Transition Program | 04 | 347,304 | 349,304 | | 349,304 | 840,650 | | 840,650 | U |
| 47 | 0605230F | Ground Based Strategic Deterrent | 04 | 113,919 | 113,919 | | 113,919 | 215,721 | | 215,721 | U |
| 48 | 0201184F | Counter Narco-Terrorism Program Office | 04 | | | | | | | | U |
| 49 | 0207110F | Next Generation Air Dominance | 04 | 20,595 | 167,595 | | 167,595 | 294,746 | | 294,746 | U |
| 50 | 0207455F | Three Dimensional Long-Range Radar (3DELRR) | 04 | 49,491 | 49,491 | | 49,491 | 10,645 | | 10,645 | U |

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Department of the Air Force
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 (Dollars in Thousands)

04 May 2017

Appropriation: 3600F Research, Development, Test & Eval, AF

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|---------|------------------------|--|-----|--------------------|-------------------------------------|---|------------------------------------|--|--|---------------------------------------|---|
| 51 | 0305164F | NAVSTAR Global Positioning System (User Equipment) | 04 | 143,118 | 278,147 | 278,147 | | | | | U |
| 52 | 0305236F | Common Data Link Executive Agent (CDL EA) | 04 | | 42,338 | 42,338 | | | | | U |
| 53 | 0306250F | Cyber Operations Technology Development | 04 | 91,845 | 158,002 | 158,002 | | 4,700 | | 4,700 | U |
| 54 | 0306415F | Enabled Cyber Activities | 04 | | 15,842 | 15,842 | | | | | U |
| 55 | 0408011F | Special Tactics / Combat Control | 04 | | | | | | | | U |
| 56 | 0901410F | Contracting Information Technology System | 04 | | 5,782 | 5,782 | | | | | U |
| 57 | 1203164F | NAVSTAR Global Positioning System (User Equipment) | 04 | | | | | | | | U |
| 58 | 1203710F | EO/IR Weather Systems | 04 | | | | | | | | U |
| 59 | 1206422F | Weather System Follow-on | 04 | | | | | | | | U |
| 60 | 1206425F | Space Situation Awareness Systems | 04 | | | | | | | | U |
| 61 | 1206434F | Midterm Polar MILSATCOM System | 04 | | | | | | | | U |
| 62 | 1206438F | Space Control Technology | 04 | | | | | | | | U |
| 63 | 1206730F | Space Security and Defense Program | 04 | | | | | | | | U |
| 64 | 1206760F | Protected Tactical Enterprise Service (PTES) | 04 | | | | | | | | U |
| 65 | 1206761F | Protected Tactical Service (PTS) | 04 | | | | | | | | U |
| 66 | 1206855F | Protected SATCOM Services (PSCS) - Aggregated | 04 | | | | | | | | U |

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|---------|------------------------|--|-----|--|---|--|--|--------------|-------------|---------------|----|
| 51 | 0305164F | NAVSTAR Global Positioning System (User Equipment) (SPACE) | 04 | 278,147 | 278,147 | | 278,147 | | | | U |
| 52 | 0305236F | Common Data Link Executive Agent (CDL EA) | 04 | 42,338 | 42,338 | | 42,338 | 41,509 | | 41,509 | U |
| 53 | 0306250F | Cyber Operations Technology Development | 04 | 158,002 | 162,702 | | 162,702 | 226,287 | 5,400 | 231,687 | U |
| 54 | 0306415F | Enabled Cyber Activities | 04 | 15,842 | 15,842 | | 15,842 | 16,687 | | 16,687 | U |
| 55 | 0408011F | Special Tactics / Combat Control | 04 | | | | | 4,500 | | 4,500 | U |
| 56 | 0901410F | Contracting Information Technology System | 04 | 5,782 | 5,782 | | 5,782 | 15,867 | | 15,867 | U |
| 57 | 1203164F | NAVSTAR Global Positioning System (User Equipment) (SPACE) | 04 | | | | | 253,939 | | 253,939 | U |
| 58 | 1203710F | EO/IR Weather Systems | 04 | | | | | 10,000 | | 10,000 | U |
| 59 | 1206422F | Weather System Follow-on | 04 | | | | | 112,088 | | 112,088 | U |
| 60 | 1206425F | Space Situation Awareness Systems | 04 | | | | | 34,764 | | 34,764 | U |
| 61 | 1206434F | Midterm Polar MILSATCOM System | 04 | | | | | 63,092 | | 63,092 | U |
| 62 | 1206438F | Space Control Technology | 04 | | | | | 7,842 | | 7,842 | U |
| 63 | 1206730F | Space Security and Defense Program | 04 | | | | | 41,385 | | 41,385 | U |
| 64 | 1206760F | Protected Tactical Enterprise Service (PTES) | 04 | | | | | 18,150 | | 18,150 | U |
| 65 | 1206761F | Protected Tactical Service (PTS) | 04 | | | | | 24,201 | | 24,201 | U |
| 66 | 1206855F | Protected SATCOM Services (PSCS) - Aggregated | 04 | | | | | 16,000 | | 16,000 | U |

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|---------|------------------------|--|-----|--------------------|-------------------------------------|---|------------------------------------|--|--|---------------------------------------|-------|
| 67 | 1206857F | Operationally Responsive Space | 04 | | | | | | | | U |
| | | Advanced Component Development & Prototypes | | 1,555,274 | 2,847,833 | 3,047,833 | | 4,700 | | 4,700 | |
| 68 | 0604200F | Future Advanced Weapon Analysis & Programs | 05 | | | | | | | | U |
| 69 | 0604201F | Integrated Avionics Planning and Development | 05 | | | | | | | | U |
| 70 | 0604222F | Nuclear Weapons Support | 05 | | | | | | | | U |
| 71 | 0604270F | Electronic Warfare Development | 05 | 813 | 12,476 | 12,476 | | | | | U |
| 72 | 0604281F | Tactical Data Networks Enterprise | 05 | 49,495 | 82,380 | 82,380 | | | | | U |
| 73 | 0604287F | Physical Security Equipment | 05 | 5,973 | 8,458 | 24,458 | | 11,000 | | 11,000 | U |
| 74 | 0604329F | Small Diameter Bomb (SDB) - EMD | 05 | 27,950 | 54,838 | 54,838 | | | | | U |
| 75 | 0604421F | Counterspace Systems | 05 | 24,134 | 34,394 | 41,494 | 425 | 425 | | 425 | U |
| 76 | 0604425F | Space Situation Awareness Systems | 05 | 30,116 | 23,945 | 23,945 | | | | | U |
| 77 | 0604426F | Space Fence | 05 | 240,692 | 168,364 | 168,364 | | | | | U |
| 78 | 0604429F | Airborne Electronic Attack | 05 | 8,067 | 9,187 | 9,187 | | | | | U |
| 79 | 0604441F | Space Based Infrared System (SBIRS) High EMD | 05 | 291,510 | 181,966 | 218,766 | | | | | U |
| 80 | 0604602F | Armament/Ordnance Development | 05 | 36,266 | 20,312 | 20,312 | | | | | U |
| 81 | 0604604F | Submunitions | 05 | 2,419 | 2,503 | 2,503 | | | | | U |
| 82 | 0604617F | Agile Combat Support | 05 | 56,178 | 53,680 | 53,680 | | | | | U |
| 83 | 0604618F | Joint Direct Attack Munition | 05 | | 9,901 | 9,901 | | | | | U |
| 84 | 0604706F | Life Support Systems | 05 | 7,904 | 7,520 | 7,520 | | | | | U |

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|---------|------------------------|--|-----|--|---|--|--|--------------|-------------|---------------|----|
| 67 | 1206857F | Operationally Responsive Space | 04 | | | | | 87,577 | | 87,577 | U |
| | | Advanced Component Development & Prototypes | | 2,847,833 | 3,052,533 | | 3,052,533 | 4,605,030 | 13,200 | 4,618,230 | |
| 68 | 0604200F | Future Advanced Weapon Analysis & Programs | 05 | | | | | 5,100 | | 5,100 | U |
| 69 | 0604201F | Integrated Avionics Planning and Development | 05 | | | | | 101,203 | | 101,203 | U |
| 70 | 0604222F | Nuclear Weapons Support | 05 | | | | | 3,009 | | 3,009 | U |
| 71 | 0604270F | Electronic Warfare Development | 05 | 12,476 | 12,476 | | 12,476 | 2,241 | | 2,241 | U |
| 72 | 0604281F | Tactical Data Networks Enterprise | 05 | 82,380 | 82,380 | | 82,380 | 38,250 | | 38,250 | U |
| 73 | 0604287F | Physical Security Equipment | 05 | 8,458 | 35,458 | | 35,458 | 19,739 | | 19,739 | U |
| 74 | 0604329F | Small Diameter Bomb (SDB) - EMD | 05 | 54,838 | 54,838 | | 54,838 | 38,979 | | 38,979 | U |
| 75 | 0604421F | Counterspace Systems | 05 | 34,819 | 41,919 | | 41,919 | | | | U |
| 76 | 0604425F | Space Situation Awareness Systems | 05 | 23,945 | 23,945 | | 23,945 | | | | U |
| 77 | 0604426F | Space Fence | 05 | 168,364 | 168,364 | | 168,364 | | | | U |
| 78 | 0604429F | Airborne Electronic Attack | 05 | 9,187 | 9,187 | | 9,187 | 7,091 | | 7,091 | U |
| 79 | 0604441F | Space Based Infrared System (SBIRS) High EMD | 05 | 181,966 | 218,766 | | 218,766 | | | | U |
| 80 | 0604602F | Armament/Ordnance Development | 05 | 20,312 | 20,312 | | 20,312 | 46,540 | | 46,540 | U |
| 81 | 0604604F | Submunitions | 05 | 2,503 | 2,503 | | 2,503 | 2,705 | | 2,705 | U |
| 82 | 0604617F | Agile Combat Support | 05 | 53,680 | 53,680 | | 53,680 | 31,240 | | 31,240 | U |
| 83 | 0604618F | Joint Direct Attack Munition | 05 | 9,901 | 9,901 | | 9,901 | | | | U |
| 84 | 0604706F | Life Support Systems | 05 | 7,520 | 7,520 | | 7,520 | 9,060 | | 9,060 | U |

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|---------|------------------------|---|-----|--------------------|-------------------------------------|---|------------------------------------|--|--|---------------------------------------|---------|
| 85 | 0604735F | Combat Training Ranges | 05 | 11,368 | 77,409 | 77,409 | | | | | U |
| 86 | 0604800F | F-35 - EMD | 05 | 575,932 | 450,467 | 450,467 | | | | | U |
| 87 | 0604853F | Evolved Expendable Launch Vehicle Program (SPACE) - EMD | 05 | 224,920 | 296,572 | 296,572 | | | | | U |
| 88 | 0604932F | Long Range Standoff Weapon | 05 | 16,143 | 95,604 | 95,604 | | | | | U |
| 89 | 0604933F | ICBM Fuze Modernization | 05 | 138,027 | 189,751 | 189,751 | | | | | U |
| 90 | 0605030F | Joint Tactical Network Center (JTNC) | 05 | | 1,131 | 1,131 | | | | | U |
| 91 | 0605031F | Joint Tactical Network (JTN) | 05 | | | | | | | | U |
| 92 | 0605213F | F-22 Modernization Increment 3.2B | 05 | 115,603 | 70,290 | 70,290 | | | | | U |
| 93 | 0605214F | Ground Attack Weapons Fuze Development | 05 | 3,477 | 937 | 937 | | | | | U |
| 94 | 0605221F | KC-46 | 05 | 572,118 | 261,724 | 261,724 | | | | | U |
| 95 | 0605223F | Advanced Pilot Training | 05 | 10,395 | 12,377 | 12,377 | | | | | U |
| 96 | 0605229F | Combat Rescue Helicopter | 05 | 150,341 | 319,331 | 319,331 | | | | | U |
| 97 | 0605431F | Advanced EHF MILSATCOM (SPACE) | 05 | 208,095 | 259,131 | 259,131 | | | | | U |
| 98 | 0605432F | Polar MILSATCOM (SPACE) | 05 | 71,867 | 50,815 | 50,815 | | | | | U |
| 99 | 0605433F | Wideband Global SATCOM (SPACE) | 05 | 49,954 | 41,632 | 41,632 | | | | | U |
| 100 | 0605458F | Air & Space Ops Center 10.2 RDT&E | 05 | 55,333 | 28,911 | 28,911 | | | | | U |
| 101 | 0605931F | B-2 Defensive Management System | 05 | 261,162 | 315,615 | 315,615 | | | | | U |
| 102 | 0101125F | Nuclear Weapons Modernization | 05 | 204,358 | 137,909 | 137,909 | | | | | U |
| 103 | 0207171F | F-15 EPAWSS | 05 | 174,439 | 256,669 | 256,669 | | | | | U |

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|---------|------------------------|---|-----|---|--|--|---|-----------------|----------------|------------------|---------|
| 85 | 0604735F | Combat Training Ranges | 05 | 77,409 | 77,409 | | 77,409 | 87,350 | | 87,350 | U |
| 86 | 0604800F | F-35 - EMD | 05 | 450,467 | 450,467 | | 450,467 | 292,947 | | 292,947 | U |
| 87 | 0604853F | Evolved Expendable Launch Vehicle Program (SPACE) - EMD | 05 | 296,572 | 296,572 | | 296,572 | | | | U |
| 88 | 0604932F | Long Range Standoff Weapon | 05 | 95,604 | 95,604 | | 95,604 | 451,290 | | 451,290 | U |
| 89 | 0604933F | ICBM Fuze Modernization | 05 | 189,751 | 189,751 | | 189,751 | 178,991 | | 178,991 | U |
| 90 | 0605030F | Joint Tactical Network Center (JTNC) | 05 | 1,131 | 1,131 | | 1,131 | 12,736 | | 12,736 | U |
| 91 | 0605031F | Joint Tactical Network (JTN) | 05 | | | | | 9,319 | | 9,319 | U |
| 92 | 0605213F | F-22 Modernization Increment 3.2B | 05 | 70,290 | 70,290 | | 70,290 | 13,600 | | 13,600 | U |
| 93 | 0605214F | Ground Attack Weapons Fuze Development | 05 | 937 | 937 | | 937 | | | | U |
| 94 | 0605221F | KC-46 | 05 | 261,724 | 261,724 | | 261,724 | 93,845 | | 93,845 | U |
| 95 | 0605223F | Advanced Pilot Training | 05 | 12,377 | 12,377 | | 12,377 | 105,999 | | 105,999 | U |
| 96 | 0605229F | Combat Rescue Helicopter | 05 | 319,331 | 319,331 | | 319,331 | 354,485 | | 354,485 | U |
| 97 | 0605431F | Advanced EHF MILSATCOM (SPACE) | 05 | 259,131 | 259,131 | | 259,131 | | | | U |
| 98 | 0605432F | Polar MILSATCOM (SPACE) | 05 | 50,815 | 50,815 | | 50,815 | | | | U |
| 99 | 0605433F | Wideband Global SATCOM (SPACE) | 05 | 41,632 | 41,632 | | 41,632 | | | | U |
| 100 | 0605458F | Air & Space Ops Center 10.2 RDT&E | 05 | 28,911 | 28,911 | | 28,911 | 119,745 | | 119,745 | U |
| 101 | 0605931F | B-2 Defensive Management System | 05 | 315,615 | 315,615 | | 315,615 | 194,570 | | 194,570 | U |
| 102 | 0101125F | Nuclear Weapons Modernization | 05 | 137,909 | 137,909 | | 137,909 | 91,237 | | 91,237 | U |
| 103 | 0207171F | F-15 EPAWSS | 05 | 256,669 | 256,669 | | 256,669 | 209,847 | | 209,847 | U |

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| Line No | Program Element Number | Item | Act | FY 2016 Base + OCO | FY 2017 PB Request with CR Adj Base | FY 2017 Total PB Requests* with CR Adj Base | FY 2017 PB Request with CR Adj OCO | FY 2017 Total PB Requests* with CR Adj OCO | FY 2017 Less Enacted Div B P.L.114-254** OCO | FY 2017 Remaining Req with CR Adj OCO | S e c |
|---------|------------------------|--|-----|--------------------|-------------------------------------|---|------------------------------------|--|--|---------------------------------------|-------|
| 104 | 0207328F | Stand In Attack Weapon | 05 | | | | | | | | U |
| 105 | 0207701F | Full Combat Mission Training | 05 | 17,290 | 12,051 | 12,051 | | | | | U |
| 106 | 0303267F | Auctioned Spectrum Relocation Fund | 05 | 40,571 | | | | | | | U |
| 107 | 0303367F | Spectrum Access Research and Development | 05 | 383 | | | | | | | U |
| 108 | 0305176F | Combat Survivor Evader Locator | 05 | 958 | 29,253 | 29,253 | | | | | U |
| 109 | 0307581F | JSTARS Recap | 05 | 51,306 | 128,019 | 128,019 | | | | | U |
| 110 | 0401310F | C-32 Executive Transport Recapitalization | 05 | | | | | | | | U |
| 111 | 0401319F | Presidential Aircraft Recapitalization (PAR) | 05 | 82,420 | 351,220 | 351,220 | | | | | U |
| 112 | 0701212F | Automated Test Systems | 05 | 14,422 | 19,062 | 19,062 | | | | | U |
| 113 | 1203176F | Combat Survivor Evader Locator | 05 | | | | | | | | U |
| 114 | 1203940F | Space Situation Awareness Operations | 05 | | | | | | | | U |
| 115 | 1206421F | Counterspace Systems | 05 | | | | | | | | U |
| 116 | 1206425F | Space Situation Awareness Systems | 05 | | | | | | | | U |
| 117 | 1206426F | Space Fence | 05 | | | | | | | | U |
| 118 | 1206431F | Advanced EHF MILSATCOM (SPACE) | 05 | | | | | | | | U |
| 119 | 1206432F | Polar MILSATCOM (SPACE) | 05 | | | | | | | | U |
| 120 | 1206433F | Wideband Global SATCOM (SPACE) | 05 | | | | | | | | U |
| 121 | 1206441F | Space Based Infrared System (SBIRS) High EMD | 05 | | | | | | | | U |

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Department of the Air Force
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 (Dollars in Thousands)

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Appropriation: 3600F Research, Development, Test & Eval, AF

| Line No | Program Element Number | Item | Act | FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA | FY 2017 Total PB Requests* with CR Adj Base + OCO | FY 2017 Less Enacted Div B P.L.114-254** OCO | FY 2017 Remaining Req with CR Adj Base + OCO | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Se |
|---------|------------------------|--|-----|--|---|--|--|--------------|-------------|---------------|----|
| 104 | 0207328F | Stand In Attack Weapon | 05 | | | | | 3,400 | | 3,400 | U |
| 105 | 0207701F | Full Combat Mission Training | 05 | 12,051 | 12,051 | | 12,051 | 16,727 | | 16,727 | U |
| 106 | 0303267F | Auctioned Spectrum Relocation Fund | 05 | | | | | | | | U |
| 107 | 0303367F | Spectrum Access Research and Development | 05 | | | | | | | | U |
| 108 | 0305176F | Combat Survivor Evader Locator | 05 | 29,253 | 29,253 | | 29,253 | | | | U |
| 109 | 0307581F | JSTARS Recap | 05 | 128,019 | 128,019 | | 128,019 | 417,201 | | 417,201 | U |
| 110 | 0401310F | C-32 Executive Transport Recapitalization | 05 | | | | | 6,017 | | 6,017 | U |
| 111 | 0401319F | Presidential Aircraft Recapitalization (PAR) | 05 | 351,220 | 351,220 | | 351,220 | 434,069 | | 434,069 | U |
| 112 | 0701212F | Automated Test Systems | 05 | 19,062 | 19,062 | | 19,062 | 18,528 | | 18,528 | U |
| 113 | 1203176F | Combat Survivor Evader Locator | 05 | | | | | 24,967 | | 24,967 | U |
| 114 | 1203940F | Space Situation Awareness Operations | 05 | | | | | 10,029 | | 10,029 | U |
| 115 | 1206421F | Counterspace Systems | 05 | | | | | 66,370 | | 66,370 | U |
| 116 | 1206425F | Space Situation Awareness Systems | 05 | | | | | 48,448 | | 48,448 | U |
| 117 | 1206426F | Space Fence | 05 | | | | | 35,937 | | 35,937 | U |
| 118 | 1206431F | Advanced EHF MILSATCOM (SPACE) | 05 | | | | | 145,610 | | 145,610 | U |
| 119 | 1206432F | Polar MILSATCOM (SPACE) | 05 | | | | | 33,644 | | 33,644 | U |
| 120 | 1206433F | Wideband Global SATCOM (SPACE) | 05 | | | | | 14,263 | | 14,263 | U |
| 121 | 1206441F | Space Based Infrared System (SBIRS) High EMD | 05 | | | | | 311,844 | | 311,844 | U |

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|---------|------------------------|---|-----|--------------------|-------------------------------------|---|------------------------------------|--|--|---------------------------------------|---------|
| 122 | 1206442F | Evolved SBIRS | 05 | | | | | | | | U |
| 123 | 1206853F | Evolved Expendable Launch Vehicle Program (SPACE) - EMD | 05 | | | | | | | | U |
| | | System Development & Demonstration | | 3,832,399 | 4,075,804 | 4,135,704 | 425 | 11,425 | | 11,425 | |
| 124 | 0604256F | Threat Simulator Development | 06 | 23,558 | 21,630 | 21,630 | | | | | U |
| 125 | 0604759F | Major T&E Investment | 06 | 70,894 | 66,385 | 71,385 | | | | | U |
| 126 | 0605101F | RAND Project Air Force | 06 | 33,943 | 34,641 | 34,641 | | | | | U |
| 127 | 0605502F | Small Business Innovation Research | 06 | 337,762 | | | | | | | U |
| 128 | 0605712F | Initial Operational Test & Evaluation | 06 | 11,172 | 11,529 | 11,529 | | | | | U |
| 129 | 0605807F | Test and Evaluation Support | 06 | 683,307 | 661,417 | 680,217 | | | | | U |
| 130 | 0605826F | Acq Workforce- Global Power | 06 | | | | | | | | U |
| 131 | 0605827F | Acq Workforce- Global Vig & Combat Sys | 06 | | | | | | | | U |
| 132 | 0605828F | Acq Workforce- Global Reach | 06 | | | | | | | | U |
| 133 | 0605829F | Acq Workforce- Cyber, Network, & Bus Sys | 06 | | | | | | | | U |
| 134 | 0605830F | Acq Workforce- Global Battle Mgmt | 06 | | | | | | | | U |
| 135 | 0605831F | Acq Workforce- Capability Integration | 06 | | | | | | | | U |
| 136 | 0605832F | Acq Workforce- Advanced Prgm Technology | 06 | | | | | | | | U |
| 137 | 0605833F | Acq Workforce- Nuclear Systems | 06 | | | | | | | | U |

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| Line No | Program Element Number | Item | Act | FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA | FY 2017 Total PB Requests* with CR Adj Base + OCO | FY 2017 Less Enacted Div B P.L.114-254** OCO | FY 2017 Remaining Req with CR Adj Base + OCO | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Se |
|---------|------------------------|---|-----|--|---|--|--|--------------|-------------|---------------|----|
| 122 | 1206442F | Evolved SBIRS | 05 | | | | | 71,018 | | 71,018 | U |
| 123 | 1206853F | Evolved Expendable Launch Vehicle Program (SPACE) - EMD | 05 | | | | | 297,572 | | 297,572 | U |
| | | System Development & Demonstration | | 4,076,229 | 4,147,129 | | 4,147,129 | 4,476,762 | | 4,476,762 | |
| 124 | 0604256F | Threat Simulator Development | 06 | 21,630 | 21,630 | | 21,630 | 35,405 | | 35,405 | U |
| 125 | 0604759F | Major T&E Investment | 06 | 66,385 | 71,385 | | 71,385 | 82,874 | | 82,874 | U |
| 126 | 0605101F | RAND Project Air Force | 06 | 34,641 | 34,641 | | 34,641 | 34,346 | | 34,346 | U |
| 127 | 0605502F | Small Business Innovation Research | 06 | | | | | | | | U |
| 128 | 0605712F | Initial Operational Test & Evaluation | 06 | 11,529 | 11,529 | | 11,529 | 15,523 | | 15,523 | U |
| 129 | 0605807F | Test and Evaluation Support | 06 | 661,417 | 680,217 | | 680,217 | 678,289 | | 678,289 | U |
| 130 | 0605826F | Acq Workforce- Global Power | 06 | | | | | 219,809 | | 219,809 | U |
| 131 | 0605827F | Acq Workforce- Global Vig & Combat Sys | 06 | | | | | 223,179 | | 223,179 | U |
| 132 | 0605828F | Acq Workforce- Global Reach | 06 | | | | | 138,556 | | 138,556 | U |
| 133 | 0605829F | Acq Workforce- Cyber, Network, & Bus Sys | 06 | | | | | 221,393 | | 221,393 | U |
| 134 | 0605830F | Acq Workforce- Global Battle Mgmt | 06 | | | | | 152,577 | | 152,577 | U |
| 135 | 0605831F | Acq Workforce- Capability Integration | 06 | | | | | 196,561 | | 196,561 | U |
| 136 | 0605832F | Acq Workforce- Advanced Prgm Technology | 06 | | | | | 28,322 | | 28,322 | U |
| 137 | 0605833F | Acq Workforce- Nuclear Systems | 06 | | | | | 126,611 | | 126,611 | U |

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|---------|------------------------|--|-----|--------------------|-------------------------------------|---|------------------------------------|--|--|---------------------------------------|----|
| 138 | 0605860F | Rocket Systems Launch Program (SPACE) | 06 | 21,245 | 11,198 | 11,198 | | | | | U |
| 139 | 0605864F | Space Test Program (STP) | 06 | 28,143 | 27,070 | 27,070 | | | | | U |
| 140 | 0605898F | Management HQ - R&D | 06 | | | | | | | | U |
| 141 | 0605976F | Facilities Restoration and Modernization - Test and Evaluation Support | 06 | 40,518 | 134,111 | 134,111 | | | | | U |
| 142 | 0605978F | Facilities Sustainment - Test and Evaluation Support | 06 | 27,895 | 28,091 | 28,091 | | | | | U |
| 143 | 0606017F | Requirements Analysis and Maturation | 06 | 21,922 | 29,100 | 129,100 | | | | | U |
| 144 | 0606116F | Space Test and Training Range Development | 06 | 18,465 | 18,528 | 18,528 | | | | | U |
| 145 | 0606392F | Space and Missile Center (SMC) Civilian Workforce | 06 | 169,196 | 176,666 | 176,666 | | | | | U |
| 146 | 0308602F | ENTEPRISE INFORMATION SERVICES (EIS) | 06 | 3,841 | 4,410 | 4,410 | | | | | U |
| 147 | 0702806F | Acquisition and Management Support | 06 | 16,358 | 14,613 | 14,613 | | | | | U |
| 148 | 0804731F | General Skill Training | 06 | 1,268 | 1,404 | 1,404 | | | | | U |
| 149 | 0909999F | Financing for Cancelled Account Adjustments | 06 | 656 | | | | | | | U |
| 150 | 1001004F | International Activities | 06 | 2,315 | 4,784 | 4,784 | | | | | U |
| 151 | 1206116F | Space Test and Training Range Development | 06 | | | | | | | | U |
| 152 | 1206392F | Space and Missile Center (SMC) Civilian Workforce | 06 | | | | | | | | U |
| 153 | 1206398F | Space & Missile Systems Center - MHA | 06 | | | | | | | | U |

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|---------|------------------------|--|-----|--|---|--|--|--------------|-------------|---------------|----|
| 138 | 0605860F | Rocket Systems Launch Program (SPACE) | 06 | 11,198 | 11,198 | | 11,198 | | | | U |
| 139 | 0605864F | Space Test Program (STP) | 06 | 27,070 | 27,070 | | 27,070 | | | | U |
| 140 | 0605898F | Management HQ - R&D | 06 | | | | | 9,154 | | 9,154 | U |
| 141 | 0605976F | Facilities Restoration and Modernization - Test and Evaluation Support | 06 | 134,111 | 134,111 | | 134,111 | 135,507 | | 135,507 | U |
| 142 | 0605978F | Facilities Sustainment - Test and Evaluation Support | 06 | 28,091 | 28,091 | | 28,091 | 28,720 | | 28,720 | U |
| 143 | 0606017F | Requirements Analysis and Maturation | 06 | 29,100 | 129,100 | | 129,100 | 35,453 | | 35,453 | U |
| 144 | 0606116F | Space Test and Training Range Development | 06 | 18,528 | 18,528 | | 18,528 | | | | U |
| 145 | 0606392F | Space and Missile Center (SMC) Civilian Workforce | 06 | 176,666 | 176,666 | | 176,666 | | | | U |
| 146 | 0308602F | ENTEPRISE INFORMATION SERVICES (EIS) | 06 | 4,410 | 4,410 | | 4,410 | 29,049 | | 29,049 | U |
| 147 | 0702806F | Acquisition and Management Support | 06 | 14,613 | 14,613 | | 14,613 | 14,980 | | 14,980 | U |
| 148 | 0804731F | General Skill Training | 06 | 1,404 | 1,404 | | 1,404 | 1,434 | | 1,434 | U |
| 149 | 0909999F | Financing for Cancelled Account Adjustments | 06 | | | | | | | | U |
| 150 | 1001004F | International Activities | 06 | 4,784 | 4,784 | | 4,784 | 4,569 | | 4,569 | U |
| 151 | 1206116F | Space Test and Training Range Development | 06 | | | | | 25,773 | | 25,773 | U |
| 152 | 1206392F | Space and Missile Center (SMC) Civilian Workforce | 06 | | | | | 169,887 | | 169,887 | U |
| 153 | 1206398F | Space & Missile Systems Center - MHA | 06 | | | | | 9,531 | | 9,531 | U |

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|---------|------------------------|---|-----|--------------------|-------------------------------------|---|------------------------------------|--|--|---------------------------------------|----|
| 154 | 1206860F | Rocket Systems Launch Program (SPACE) | 06 | | | | | | | | U |
| 155 | 1206864F | Space Test Program (STP) | 06 | | | | | | | | U |
| | | Management Support | | 1,512,458 | 1,245,577 | 1,369,377 | | | | | |
| 156 | 0603423F | Global Positioning System III - Operational Control Segment | 07 | 344,226 | 393,268 | 513,268 | | | | | U |
| 157 | 0604222F | Nuclear Weapons Support | 07 | | | | | | | | U |
| 158 | 0604233F | Specialized Undergraduate Flight Training | 07 | 7,742 | 15,427 | 15,427 | | | | | U |
| 159 | 0604445F | Wide Area Surveillance | 07 | 17,639 | 46,695 | 46,695 | | | | | U |
| 161 | 0605018F | AF Integrated Personnel and Pay System (AF-IPPS) | 07 | 30,334 | 10,368 | 10,368 | | | | | U |
| 162 | 0605024F | Anti-Tamper Technology Executive Agency | 07 | 25,857 | 31,952 | 31,952 | | | | | U |
| 163 | 0605117F | Foreign Materiel Acquisition and Exploitation | 07 | 41,689 | 42,960 | 42,960 | | | | | U |
| 164 | 0605278F | HC/MC-130 Recap RDT&E | 07 | 8,646 | 13,987 | 13,987 | | | | | U |
| 165 | 0606018F | NC3 Integration | 07 | | | | | | | | U |
| 166 | 0101113F | B-52 Squadrons | 07 | 70,172 | 78,267 | 88,267 | | | | | U |
| 167 | 0101122F | Air-Launched Cruise Missile (ALCM) | 07 | 451 | 453 | 453 | | | | | U |
| 168 | 0101126F | B-1B Squadrons | 07 | 2,174 | 5,830 | 5,830 | | | | | U |
| 169 | 0101127F | B-2 Squadrons | 07 | 105,914 | 152,458 | 152,458 | | | | | U |
| 170 | 0101213F | Minuteman Squadrons | 07 | 128,492 | 182,958 | 182,958 | | | | | U |

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|---------|------------------------|---|-----|--|---|--|--|--------------|-------------|---------------|----|
| 154 | 1206860F | Rocket Systems Launch Program (SPACE) | 06 | | | | | 20,975 | | 20,975 | U |
| 155 | 1206864F | Space Test Program (STP) | 06 | | | | | 25,398 | | 25,398 | U |
| | | Management Support | | 1,245,577 | 1,369,377 | | 1,369,377 | 2,663,875 | | 2,663,875 | |
| 156 | 0603423F | Global Positioning System III - Operational Control Segment | 07 | 393,268 | 513,268 | | 513,268 | | | | U |
| 157 | 0604222F | Nuclear Weapons Support | 07 | | | | | 27,579 | | 27,579 | U |
| 158 | 0604233F | Specialized Undergraduate Flight Training | 07 | 15,427 | 15,427 | | 15,427 | 5,776 | | 5,776 | U |
| 159 | 0604445F | Wide Area Surveillance | 07 | 46,695 | 46,695 | | 46,695 | 16,247 | | 16,247 | U |
| 161 | 0605018F | AF Integrated Personnel and Pay System (AF-IPPS) | 07 | 10,368 | 10,368 | | 10,368 | 21,915 | | 21,915 | U |
| 162 | 0605024F | Anti-Tamper Technology Executive Agency | 07 | 31,952 | 31,952 | | 31,952 | 33,150 | | 33,150 | U |
| 163 | 0605117F | Foreign Materiel Acquisition and Exploitation | 07 | 42,960 | 42,960 | | 42,960 | 66,653 | | 66,653 | U |
| 164 | 0605278F | HC/MC-130 Recap RDT&E | 07 | 13,987 | 13,987 | | 13,987 | 38,579 | | 38,579 | U |
| 165 | 0606018F | NC3 Integration | 07 | | | | | 12,636 | | 12,636 | U |
| 166 | 0101113F | B-52 Squadrons | 07 | 78,267 | 88,267 | | 88,267 | 111,910 | | 111,910 | U |
| 167 | 0101122F | Air-Launched Cruise Missile (ALCM) | 07 | 453 | 453 | | 453 | 463 | | 463 | U |
| 168 | 0101126F | B-1B Squadrons | 07 | 5,830 | 5,830 | | 5,830 | 62,471 | | 62,471 | U |
| 169 | 0101127F | B-2 Squadrons | 07 | 152,458 | 152,458 | | 152,458 | 193,108 | | 193,108 | U |
| 170 | 0101213F | Minuteman Squadrons | 07 | 182,958 | 182,958 | | 182,958 | 210,845 | | 210,845 | U |

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|---------|------------------------|---|-----|--------------------|-------------------------------------|---|------------------------------------|--|--|---------------------------------------|---------|
| 171 | 0101313F | Integrated Strategic Planning and Analysis Network (ISPAN) - USSTRATCOM | 07 | 26,954 | 39,148 | 39,148 | | | | | U |
| 172 | 0101314F | Night Fist - USSTRATCOM | 07 | 87 | | | | | | | U |
| 173 | 0101316F | Worldwide Joint Strategic Communications | 07 | 3,815 | 6,042 | 6,042 | | | | | U |
| 174 | 0101324F | Integrated Strategic Planning & Analysis Network | 07 | | | | | | | | U |
| 176 | 0102110F | UH-1N Replacement Program | 07 | | 14,116 | 14,116 | | | | | U |
| 177 | 0102326F | Region/Sector Operation Control Center Modernization Program | 07 | | 10,868 | 10,868 | | | | | U |
| 178 | 0105921F | Service Support to STRATCOM - Space Activities | 07 | 9,388 | 8,674 | 8,674 | | | | | U |
| 179 | 0205219F | MQ-9 UAV | 07 | 124,695 | 151,373 | 151,373 | | | | | U |
| 180 | 0205671F | Joint Counter RCIED Electronic Warfare | 07 | 300 | | | | | | | U |
| 181 | 0207040F | Multi-Platform Electronic Warfare Equipment | 07 | 3,980 | | | | | | | U |
| 182 | 0207131F | A-10 Squadrons | 07 | 16,200 | 14,853 | 21,353 | | | | | U |
| 183 | 0207133F | F-16 Squadrons | 07 | 153,611 | 132,795 | 147,795 | | | | | U |
| 184 | 0207134F | F-15E Squadrons | 07 | 210,029 | 356,717 | 356,717 | | | | | U |
| 185 | 0207136F | Manned Destructive Suppression | 07 | 14,400 | 14,773 | 14,773 | | | | | U |
| 186 | 0207138F | F-22A Squadrons | 07 | 224,550 | 387,564 | 387,564 | | | | | U |
| 187 | 0207142F | F-35 Squadrons | 07 | 51,990 | 153,045 | 153,045 | | | | | U |

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|---------|------------------------|---|-----|--|---|--|--|--------------|-------------|---------------|----|
| 171 | 0101313F | Integrated Strategic Planning and Analysis Network (ISPAN) - USSTRATCOM | 07 | 39,148 | 39,148 | | 39,148 | 25,736 | | 25,736 | U |
| 172 | 0101314F | Night Fist - USSTRATCOM | 07 | | | | | | | | U |
| 173 | 0101316F | Worldwide Joint Strategic Communications | 07 | 6,042 | 6,042 | | 6,042 | 6,272 | | 6,272 | U |
| 174 | 0101324F | Integrated Strategic Planning & Analysis Network | 07 | | | | | 11,032 | | 11,032 | U |
| 176 | 0102110F | UH-1N Replacement Program | 07 | 14,116 | 14,116 | | 14,116 | 108,617 | | 108,617 | U |
| 177 | 0102326F | Region/Sector Operation Control Center Modernization Program | 07 | 10,868 | 10,868 | | 10,868 | 3,347 | | 3,347 | U |
| 178 | 0105921F | Service Support to STRATCOM - Space Activities | 07 | 8,674 | 8,674 | | 8,674 | | | | U |
| 179 | 0205219F | MQ-9 UAV | 07 | 151,373 | 151,373 | | 151,373 | 201,394 | | 201,394 | U |
| 180 | 0205671F | Joint Counter RCIED Electronic Warfare | 07 | | | | | | | | U |
| 181 | 0207040F | Multi-Platform Electronic Warfare Equipment | 07 | | | | | | | | U |
| 182 | 0207131F | A-10 Squadrons | 07 | 14,853 | 21,353 | | 21,353 | 17,459 | | 17,459 | U |
| 183 | 0207133F | F-16 Squadrons | 07 | 132,795 | 147,795 | | 147,795 | 246,578 | | 246,578 | U |
| 184 | 0207134F | F-15E Squadrons | 07 | 356,717 | 356,717 | | 356,717 | 320,271 | | 320,271 | U |
| 185 | 0207136F | Manned Destructive Suppression | 07 | 14,773 | 14,773 | | 14,773 | 15,106 | | 15,106 | U |
| 186 | 0207138F | F-22A Squadrons | 07 | 387,564 | 387,564 | | 387,564 | 610,942 | | 610,942 | U |
| 187 | 0207142F | F-35 Squadrons | 07 | 153,045 | 153,045 | | 153,045 | 334,530 | | 334,530 | U |

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Department of the Air Force
 FY 2018 President's Budget Request
 Exhibit R-1 FY 2018 President's Budget Request
 Total Obligational Authority
 (Dollars in Thousands)

04 May 2017

Appropriation: 3600F Research, Development, Test & Eval, AF

| Line No | Program Element Number | Item | Act | FY 2016 Base + OCO | FY 2017 PB Request with CR Adj Base | FY 2017 Total PB Requests* with CR Adj Base | FY 2017 PB Request with CR Adj OCO | FY 2017 Total PB Requests* with CR Adj OCO | FY 2017 Less Enacted Div B P.L.114-254** OCO | FY 2017 Remaining Req with CR Adj OCO | S e c |
|---------|------------------------|---|-----|--------------------|-------------------------------------|---|------------------------------------|--|--|---------------------------------------|-------|
| 188 | 0207161F | Tactical AIM Missiles | 07 | 33,615 | 52,898 | 52,898 | | | | | U |
| 189 | 0207163F | Advanced Medium Range Air-to-Air Missile (AMRAAM) | 07 | 44,335 | 62,470 | 62,470 | | | | | U |
| 190 | 0207224F | Combat Rescue and Recovery | 07 | 398 | | | | | | | U |
| 191 | 0207227F | Combat Rescue - Pararescue | 07 | 636 | 362 | 362 | | | | | U |
| 192 | 0207247F | AF TENCAP | 07 | 37,489 | 28,413 | 28,413 | | | | | U |
| 193 | 0207249F | Precision Attack Systems Procurement | 07 | 1,064 | 649 | 649 | | | | | U |
| 194 | 0207253F | Compass Call | 07 | 32,024 | 13,723 | 23,923 | | | | | U |
| 195 | 0207268F | Aircraft Engine Component Improvement Program | 07 | 104,092 | 109,859 | 109,859 | | | | | U |
| 196 | 0207277F | ISR Innovations | 07 | | | | | | | | U |
| 197 | 0207325F | Joint Air-to-Surface Standoff Missile (JASSM) | 07 | 9,221 | 30,002 | 30,002 | | | | | U |
| 198 | 0207410F | Air & Space Operations Center (AOC) | 07 | 20,588 | 37,621 | 37,621 | | | | | U |
| 199 | 0207412F | Control and Reporting Center (CRC) | 07 | 557 | 13,292 | 13,292 | | | | | U |
| 200 | 0207417F | Airborne Warning and Control System (AWACS) | 07 | 124,457 | 86,644 | 86,644 | | | | | U |
| 201 | 0207418F | Tactical Airborne Control Systems | 07 | 5,786 | 2,442 | 2,442 | | | | | U |
| 203 | 0207431F | Combat Air Intelligence System Activities | 07 | 6,793 | 10,911 | 10,911 | | | | | U |
| 204 | 0207444F | Tactical Air Control Party-Mod | 07 | 10,747 | 11,843 | 11,843 | | | | | U |
| 205 | 0207448F | C2ISR Tactical Data Link | 07 | 1,629 | 1,515 | 1,515 | | | | | U |
| 206 | 0207452F | DCAPES | 07 | 12,909 | 14,979 | 14,979 | | | | | U |

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Department of the Air Force
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 (Dollars in Thousands)

04 May 2017

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| Line No | Program Element Number | Item | Act | FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA | FY 2017 Total PB Requests* with CR Adj Base + OCO | FY 2017 Less Enacted Div B P.L.114-254** OCO | FY 2017 Remaining Req with CR Adj Base + OCO | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Se |
|---------|------------------------|---|-----|--|---|--|--|--------------|-------------|---------------|----|
| 188 | 0207161F | Tactical AIM Missiles | 07 | 52,898 | 52,898 | | 52,898 | 34,952 | | 34,952 | U |
| 189 | 0207163F | Advanced Medium Range Air-to-Air Missile (AMRAAM) | 07 | 62,470 | 62,470 | | 62,470 | 61,322 | | 61,322 | U |
| 190 | 0207224F | Combat Rescue and Recovery | 07 | | | | | | | | U |
| 191 | 0207227F | Combat Rescue - Pararescue | 07 | 362 | 362 | | 362 | 693 | | 693 | U |
| 192 | 0207247F | AF TENCAP | 07 | 28,413 | 28,413 | | 28,413 | | | | U |
| 193 | 0207249F | Precision Attack Systems Procurement | 07 | 649 | 649 | | 649 | 1,714 | | 1,714 | U |
| 194 | 0207253F | Compass Call | 07 | 13,723 | 23,923 | | 23,923 | 14,040 | | 14,040 | U |
| 195 | 0207268F | Aircraft Engine Component Improvement Program | 07 | 109,859 | 109,859 | | 109,859 | 109,243 | | 109,243 | U |
| 196 | 0207277F | ISR Innovations | 07 | | | | | | 5,750 | 5,750 | U |
| 197 | 0207325F | Joint Air-to-Surface Standoff Missile (JASSM) | 07 | 30,002 | 30,002 | | 30,002 | 29,932 | | 29,932 | U |
| 198 | 0207410F | Air & Space Operations Center (AOC) | 07 | 37,621 | 37,621 | | 37,621 | 26,956 | | 26,956 | U |
| 199 | 0207412F | Control and Reporting Center (CRC) | 07 | 13,292 | 13,292 | | 13,292 | 2,450 | | 2,450 | U |
| 200 | 0207417F | Airborne Warning and Control System (AWACS) | 07 | 86,644 | 86,644 | | 86,644 | 151,726 | | 151,726 | U |
| 201 | 0207418F | Tactical Airborne Control Systems | 07 | 2,442 | 2,442 | | 2,442 | 3,656 | | 3,656 | U |
| 203 | 0207431F | Combat Air Intelligence System Activities | 07 | 10,911 | 10,911 | | 10,911 | 13,420 | | 13,420 | U |
| 204 | 0207444F | Tactical Air Control Party-Mod | 07 | 11,843 | 11,843 | | 11,843 | 10,623 | | 10,623 | U |
| 205 | 0207448F | C2ISR Tactical Data Link | 07 | 1,515 | 1,515 | | 1,515 | 1,754 | | 1,754 | U |
| 206 | 0207452F | DCAPES | 07 | 14,979 | 14,979 | | 14,979 | 17,382 | | 17,382 | U |

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Department of the Air Force
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 (Dollars in Thousands)

04 May 2017

Appropriation: 3600F Research, Development, Test & Eval, AF

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|---------|------------------------|---|-----|--------------------|-------------------------------------|---|------------------------------------|--|--|---------------------------------------|-----------|
| 207 | 0207573F | National Technical Nuclear Forensics | 07 | | | | | | | | U |
| 208 | 0207590F | Seek Eagle | 07 | 21,131 | 25,308 | 25,308 | | | | | U |
| 209 | 0207601F | USAF Modeling and Simulation | 07 | 20,358 | 16,666 | 16,666 | | | | | U |
| 210 | 0207605F | Wargaming and Simulation Centers | 07 | 5,819 | 4,245 | 4,245 | | | | | U |
| 211 | 0207697F | Distributed Training and Exercises | 07 | 4,202 | 3,886 | 3,886 | | | | | U |
| 212 | 0208006F | Mission Planning Systems | 07 | 54,176 | 71,785 | 71,785 | | | | | U |
| 213 | 0208007F | Tactical Deception | 07 | | | | | | | | U |
| 214 | 0208087F | AF Offensive Cyberspace Operations | 07 | 14,939 | 25,025 | 25,025 | | | | | U |
| 215 | 0208088F | AF Defensive Cyberspace Operations | 07 | 7,414 | 29,439 | 29,439 | | | | | U |
| 218 | 0301017F | Global Sensor Integrated on Network (GSIN) | 07 | 5,803 | 3,470 | 3,470 | | | | | U |
| 219 | 0301112F | Nuclear Planning and Execution System (NPES) | 07 | | 4,060 | 4,060 | | | | | U |
| 226 | 0301400F | Space Superiority Intelligence | 07 | 13,965 | 13,880 | 13,880 | | | | | U |
| 227 | 0301401F | Air Force Space and Cyber Non-Traditional ISR for Battlespace Awareness | 07 | | | | | | | | U |
| 228 | 0302015F | E-4B National Airborne Operations Center (NAOC) | 07 | 76,760 | 30,948 | 30,948 | | | | | U |
| 229 | 0303001F | Family of Advanced BLoS Terminals (FAB-T) | 07 | 12,313 | 42,378 | 52,578 | | | | | U |
| 230 | 0303131F | Minimum Essential Emergency Communications Network (MEECN) | 07 | 92,036 | 47,471 | 47,471 | | | | | U |
| 231 | 0303140F | Information Systems Security Program | 07 | 44,578 | 46,388 | 46,388 | | | | | U |

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| Line No | Program Element Number | Item | Act | FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA | FY 2017 Total PB Requests* with CR Adj Base + OCO | FY 2017 Less Enacted Div B P.L.114-254** OCO | FY 2017 Remaining Req with CR Adj Base + OCO | FY 2018 Base | FY 2018 OCO | FY 2018 Total | S e c |
|---------|------------------------|---|-----|---|--|--|---|-----------------|----------------|------------------|-------------|
| 207 | 0207573F | National Technical Nuclear Forensics | 07 | | | | | 2,307 | | 2,307 | U |
| 208 | 0207590F | Seek Eagle | 07 | 25,308 | 25,308 | | 25,308 | 25,397 | | 25,397 | U |
| 209 | 0207601F | USAF Modeling and Simulation | 07 | 16,666 | 16,666 | | 16,666 | 10,175 | | 10,175 | U |
| 210 | 0207605F | Wargaming and Simulation Centers | 07 | 4,245 | 4,245 | | 4,245 | 12,839 | | 12,839 | U |
| 211 | 0207697F | Distributed Training and Exercises | 07 | 3,886 | 3,886 | | 3,886 | 4,190 | | 4,190 | U |
| 212 | 0208006F | Mission Planning Systems | 07 | 71,785 | 71,785 | | 71,785 | 85,531 | | 85,531 | U |
| 213 | 0208007F | Tactical Deception | 07 | | | | | 3,761 | | 3,761 | U |
| 214 | 0208087F | AF Offensive Cyberspace Operations | 07 | 25,025 | 25,025 | | 25,025 | 35,693 | 4,000 | 39,693 | U |
| 215 | 0208088F | AF Defensive Cyberspace Operations | 07 | 29,439 | 29,439 | | 29,439 | 20,964 | | 20,964 | U |
| 218 | 0301017F | Global Sensor Integrated on Network (GSIN) | 07 | 3,470 | 3,470 | | 3,470 | 3,549 | | 3,549 | U |
| 219 | 0301112F | Nuclear Planning and Execution System (NPES) | 07 | 4,060 | 4,060 | | 4,060 | 4,371 | | 4,371 | U |
| 226 | 0301400F | Space Superiority Intelligence | 07 | 13,880 | 13,880 | | 13,880 | | | | U |
| 227 | 0301401F | Air Force Space and Cyber Non-Traditional ISR for Battlespace Awareness | 07 | | | | | 3,721 | | 3,721 | U |
| 228 | 0302015F | E-4B National Airborne Operations Center (NAOC) | 07 | 30,948 | 30,948 | | 30,948 | 35,467 | | 35,467 | U |
| 229 | 0303001F | Family of Advanced BLoS Terminals (FAB-T) | 07 | 42,378 | 52,578 | | 52,578 | | | | U |
| 230 | 0303131F | Minimum Essential Emergency Communications Network (MEECN) | 07 | 47,471 | 47,471 | | 47,471 | 48,841 | | 48,841 | U |
| 231 | 0303140F | Information Systems Security Program | 07 | 46,388 | 46,388 | | 46,388 | 42,973 | | 42,973 | U |

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Department of the Air Force
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04 May 2017

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|---------|------------------------|--|-----|--------------------|-------------------------------------|---|------------------------------------|--|--|---------------------------------------|---------|
| 232 | 0303141F | Global Combat Support System | 07 | | 52 | 52 | | | | | U |
| 233 | 0303142F | Global Force Management - Data Initiative | 07 | 2,470 | 2,099 | 2,099 | | | | | U |
| 234 | 0303601F | MILSATCOM Terminals | 07 | 9,000 | | | | | | | U |
| 236 | 0304260F | Airborne SIGINT Enterprise | 07 | 111,142 | 90,762 | 90,762 | | | | | U |
| 237 | 0304310F | Commercial Economic Analysis | 07 | | | | | | | | U |
| 240 | 0305020F | CCMD Intelligence Information Technology | 07 | | | | | | | | U |
| 241 | 0305099F | Global Air Traffic Management (GATM) | 07 | 4,089 | 4,354 | 4,354 | | | | | U |
| 242 | 0305110F | Satellite Control Network (SPACE) | 07 | 7,327 | 15,624 | 15,624 | | | | | U |
| 243 | 0305111F | Weather Service | 07 | 28,812 | 19,974 | 19,974 | | | | | U |
| 244 | 0305114F | Air Traffic Control, Approach, and Landing System (ATCALs) | 07 | 18,830 | 9,770 | 9,770 | | | | | U |
| 245 | 0305116F | Aerial Targets | 07 | 2,578 | 3,051 | 3,051 | | | | | U |
| 248 | 0305128F | Security and Investigative Activities | 07 | 455 | 405 | 405 | | | | | U |
| 249 | 0305145F | Arms Control Implementation | 07 | 9,116 | 4,844 | 4,844 | | | | | U |
| 250 | 0305146F | Defense Joint Counterintelligence Activities | 07 | 361 | 339 | 339 | | | | | U |
| 253 | 0305173F | Space and Missile Test and Evaluation Center | 07 | 3,490 | 3,989 | 3,989 | | | | | U |
| 254 | 0305174F | Space Innovation, Integration and Rapid Technology Development | 07 | 1,543 | 3,070 | 3,070 | 4,715 | 4,715 | | 4,715 | U |
| 255 | 0305179F | Integrated Broadcast Service (IBS) | 07 | 9,760 | 8,833 | 8,833 | | | | | U |

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|---------|------------------------|--|-----|--|---|--|--|--------------|-------------|---------------|----|
| 232 | 0303141F | Global Combat Support System | 07 | 52 | 52 | | 52 | 105 | | 105 | U |
| 233 | 0303142F | Global Force Management - Data Initiative | 07 | 2,099 | 2,099 | | 2,099 | 2,147 | | 2,147 | U |
| 234 | 0303601F | MILSATCOM Terminals | 07 | | | | | | | | U |
| 236 | 0304260F | Airborne SIGINT Enterprise | 07 | 90,762 | 90,762 | | 90,762 | 121,948 | | 121,948 | U |
| 237 | 0304310F | Commercial Economic Analysis | 07 | | | | | 3,544 | | 3,544 | U |
| 240 | 0305020F | CCMD Intelligence Information Technology | 07 | | | | | 1,542 | | 1,542 | U |
| 241 | 0305099F | Global Air Traffic Management (GATM) | 07 | 4,354 | 4,354 | | 4,354 | 4,453 | | 4,453 | U |
| 242 | 0305110F | Satellite Control Network (SPACE) | 07 | 15,624 | 15,624 | | 15,624 | | | | U |
| 243 | 0305111F | Weather Service | 07 | 19,974 | 19,974 | | 19,974 | 26,654 | | 26,654 | U |
| 244 | 0305114F | Air Traffic Control, Approach, and Landing System (ATCALs) | 07 | 9,770 | 9,770 | | 9,770 | 6,306 | | 6,306 | U |
| 245 | 0305116F | Aerial Targets | 07 | 3,051 | 3,051 | | 3,051 | 21,295 | | 21,295 | U |
| 248 | 0305128F | Security and Investigative Activities | 07 | 405 | 405 | | 405 | 415 | | 415 | U |
| 249 | 0305145F | Arms Control Implementation | 07 | 4,844 | 4,844 | | 4,844 | | | | U |
| 250 | 0305146F | Defense Joint Counterintelligence Activities | 07 | 339 | 339 | | 339 | 3,867 | | 3,867 | U |
| 253 | 0305173F | Space and Missile Test and Evaluation Center | 07 | 3,989 | 3,989 | | 3,989 | | | | U |
| 254 | 0305174F | Space Innovation, Integration and Rapid Technology Development | 07 | 7,785 | 7,785 | | 7,785 | | | | U |
| 255 | 0305179F | Integrated Broadcast Service (IBS) | 07 | 8,833 | 8,833 | | 8,833 | | | | U |

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|---------|------------------------|---|-----|--------------------|-------------------------------------|---|------------------------------------|--|--|---------------------------------------|---------|
| 256 | 0305182F | Spacelift Range System (SPACE) | 07 | 5,708 | 11,867 | 11,867 | | | | | U |
| 257 | 0305202F | Dragon U-2 | 07 | 34,471 | 37,217 | 37,217 | | | | | U |
| 258 | 0305205F | Endurance Unmanned Aerial Vehicles | 07 | 5,000 | | | | | | | U |
| 259 | 0305206F | Airborne Reconnaissance Systems | 07 | 61,742 | 3,841 | 3,841 | | | | | U |
| 260 | 0305207F | Manned Reconnaissance Systems | 07 | 13,245 | 20,975 | 20,975 | | | | | U |
| 261 | 0305208F | Distributed Common Ground/Surface Systems | 07 | 22,686 | 18,902 | 30,448 | | | | | U |
| 262 | 0305220F | RQ-4 UAV | 07 | 180,547 | 256,307 | 256,307 | | | | | U |
| 263 | 0305221F | Network-Centric Collaborative Targeting | 07 | 19,587 | 22,610 | 22,610 | | | | | U |
| 264 | 0305236F | Common Data Link Executive Agent (CDL EA) | 07 | 43,709 | | | | | | | U |
| 265 | 0305238F | NATO AGS | 07 | 131,900 | 38,904 | 38,904 | | | | | U |
| 266 | 0305240F | Support to DCGS Enterprise | 07 | 28,336 | 23,084 | 23,084 | | | | | U |
| 267 | 0305258F | Advanced Evaluation Program | 07 | | 116,143 | 116,143 | | | | | U |
| 268 | 0305265F | GPS III Space Segment | 07 | 147,398 | 141,888 | 179,188 | | | | | U |
| 269 | 0305600F | International Intelligence Technology and Architectures | 07 | 2,298 | 2,360 | 2,360 | | | | | U |
| 270 | 0305614F | JSPOC Mission System | 07 | 80,669 | 72,889 | 87,889 | | | | | U |
| 271 | 0305881F | Rapid Cyber Acquisition | 07 | 3,036 | 4,280 | 4,280 | | | | | U |
| 272 | 0305906F | NCMC - TW/AA System | 07 | | 4,951 | 4,951 | | | | | U |
| 273 | 0305913F | NUDET Detection System (SPACE) | 07 | 14,403 | 21,093 | 21,093 | | | | | U |

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|---------|------------------------|---|-----|--|---|--|--|--------------|-------------|---------------|----|
| 256 | 0305182F | Spacelift Range System (SPACE) | 07 | 11,867 | 11,867 | | 11,867 | | | | U |
| 257 | 0305202F | Dragon U-2 | 07 | 37,217 | 37,217 | | 37,217 | 34,486 | | 34,486 | U |
| 258 | 0305205F | Endurance Unmanned Aerial Vehicles | 07 | | | | | | | | U |
| 259 | 0305206F | Airborne Reconnaissance Systems | 07 | 3,841 | 3,841 | | 3,841 | 4,450 | | 4,450 | U |
| 260 | 0305207F | Manned Reconnaissance Systems | 07 | 20,975 | 20,975 | | 20,975 | 14,269 | | 14,269 | U |
| 261 | 0305208F | Distributed Common Ground/Surface Systems | 07 | 18,902 | 30,448 | | 30,448 | 27,501 | | 27,501 | U |
| 262 | 0305220F | RQ-4 UAV | 07 | 256,307 | 256,307 | | 256,307 | 214,849 | | 214,849 | U |
| 263 | 0305221F | Network-Centric Collaborative Targeting | 07 | 22,610 | 22,610 | | 22,610 | 18,842 | | 18,842 | U |
| 264 | 0305236F | Common Data Link Executive Agent (CDL EA) | 07 | | | | | | | | U |
| 265 | 0305238F | NATO AGS | 07 | 38,904 | 38,904 | | 38,904 | 44,729 | | 44,729 | U |
| 266 | 0305240F | Support to DCGS Enterprise | 07 | 23,084 | 23,084 | | 23,084 | 26,349 | | 26,349 | U |
| 267 | 0305258F | Advanced Evaluation Program | 07 | 116,143 | 116,143 | | 116,143 | | | | U |
| 268 | 0305265F | GPS III Space Segment | 07 | 141,888 | 179,188 | | 179,188 | | | | U |
| 269 | 0305600F | International Intelligence Technology and Architectures | 07 | 2,360 | 2,360 | | 2,360 | 3,491 | | 3,491 | U |
| 270 | 0305614F | JSPOC Mission System | 07 | 72,889 | 87,889 | | 87,889 | | | | U |
| 271 | 0305881F | Rapid Cyber Acquisition | 07 | 4,280 | 4,280 | | 4,280 | 4,899 | | 4,899 | U |
| 272 | 0305906F | NCCM - TW/AA System | 07 | 4,951 | 4,951 | | 4,951 | | | | U |
| 273 | 0305913F | NUDET Detection System (SPACE) | 07 | 21,093 | 21,093 | | 21,093 | | | | U |

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 (Dollars in Thousands)

04 May 2017

Appropriation: 3600F Research, Development, Test & Eval, AF

| Line No | Program Element Number | Item | Act | FY 2016 Base + OCO | FY 2017 PB Request with CR Adj Base | FY 2017 Total PB Requests* with CR Adj Base | FY 2017 PB Request with CR Adj OCO | FY 2017 Total PB Requests* with CR Adj OCO | FY 2017 Less Enacted Div B P.L.114-254** OCO | FY 2017 Remaining Req with CR Adj OCO | Req e c |
|---------|------------------------|--|-----|--------------------|-------------------------------------|---|------------------------------------|--|--|---------------------------------------|---------|
| 274 | 0305940F | Space Situation Awareness Operations | 07 | 23,416 | 35,002 | 93,802 | | | | | U |
| 275 | 0305984F | Personnel Recovery Command & Ctrl (PRC2) | 07 | | | | | | | | U |
| 276 | 0307577F | Intelligence Mission Data (IMD) | 07 | | | | | | | | U |
| 277 | 0308699F | Shared Early Warning (SEW) | 07 | 845 | 6,366 | 6,366 | | | | | U |
| 278 | 0401115F | C-130 Airlift Squadron | 07 | 33,962 | 15,599 | 15,599 | | | | | U |
| 279 | 0401119F | C-5 Airlift Squadrons (IF) | 07 | 22,766 | 66,146 | 66,146 | | | | | U |
| 280 | 0401130F | C-17 Aircraft (IF) | 07 | 36,082 | 12,430 | 12,430 | | | | | U |
| 281 | 0401132F | C-130J Program | 07 | 31,410 | 16,776 | 16,776 | | | | | U |
| 282 | 0401134F | Large Aircraft IR Countermeasures (LAIRCM) | 07 | 5,802 | 5,166 | 5,166 | | | | | U |
| 283 | 0401218F | KC-135s | 07 | | | | | | | | U |
| 284 | 0401219F | KC-10s | 07 | 1,597 | | | | | | | U |
| 285 | 0401314F | Operational Support Airlift | 07 | 46,453 | 13,817 | 13,817 | | | | | U |
| 286 | 0401318F | CV-22 | 07 | 26,821 | 16,702 | 28,702 | | | | | U |
| 287 | 0401840F | AMC Command and Control System | 07 | | | | | | | | U |
| 288 | 0408011F | Special Tactics / Combat Control | 07 | 7,665 | 7,164 | 7,164 | | | | | U |
| 289 | 0702207F | Depot Maintenance (Non-IF) | 07 | 1,514 | 1,518 | 1,518 | | | | | U |
| 290 | 0708055F | Maintenance, Repair & Overhaul System | 07 | | | | | | | | U |
| 291 | 0708610F | Logistics Information Technology (LOGIT) | 07 | 52,482 | 61,676 | 61,676 | | | | | U |

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 (Dollars in Thousands)

04 May 2017

Appropriation: 3600F Research, Development, Test & Eval, AF

| Line No | Program Element Number | Item | Act | FY 2017 Total PB Requests** with CR Adj Base+OCO+SAA | FY 2017 Total PB Requests* with CR Adj Base + OCO | FY 2017 Less Enacted Div B P.L.114-254** OCO | FY 2017 Remaining Req with CR Adj Base + OCO | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Se |
|---------|------------------------|--|-----|--|---|--|--|--------------|-------------|---------------|----|
| 274 | 0305940F | Space Situation Awareness Operations | 07 | 35,002 | 93,802 | | 93,802 | | | | U |
| 275 | 0305984F | Personnel Recovery Command & Ctrl (PRC2) | 07 | | | | | 2,445 | | 2,445 | U |
| 276 | 0307577F | Intelligence Mission Data (IMD) | 07 | | | | | 8,684 | | 8,684 | U |
| 277 | 0308699F | Shared Early Warning (SEW) | 07 | 6,366 | 6,366 | | 6,366 | | | | U |
| 278 | 0401115F | C-130 Airlift Squadron | 07 | 15,599 | 15,599 | | 15,599 | 10,219 | | 10,219 | U |
| 279 | 0401119F | C-5 Airlift Squadrons (IF) | 07 | 66,146 | 66,146 | | 66,146 | 22,758 | | 22,758 | U |
| 280 | 0401130F | C-17 Aircraft (IF) | 07 | 12,430 | 12,430 | | 12,430 | 34,287 | | 34,287 | U |
| 281 | 0401132F | C-130J Program | 07 | 16,776 | 16,776 | | 16,776 | 26,821 | | 26,821 | U |
| 282 | 0401134F | Large Aircraft IR Countermeasures (LAIRCM) | 07 | 5,166 | 5,166 | | 5,166 | 5,283 | | 5,283 | U |
| 283 | 0401218F | KC-135s | 07 | | | | | 9,942 | | 9,942 | U |
| 284 | 0401219F | KC-10s | 07 | | | | | 7,933 | | 7,933 | U |
| 285 | 0401314F | Operational Support Airlift | 07 | 13,817 | 13,817 | | 13,817 | 6,681 | | 6,681 | U |
| 286 | 0401318F | CV-22 | 07 | 16,702 | 28,702 | | 28,702 | 22,519 | | 22,519 | U |
| 287 | 0401840F | AMC Command and Control System | 07 | | | | | 3,510 | | 3,510 | U |
| 288 | 0408011F | Special Tactics / Combat Control | 07 | 7,164 | 7,164 | | 7,164 | 8,090 | | 8,090 | U |
| 289 | 0702207F | Depot Maintenance (Non-IF) | 07 | 1,518 | 1,518 | | 1,518 | 1,528 | | 1,528 | U |
| 290 | 0708055F | Maintenance, Repair & Overhaul System | 07 | | | | | 31,677 | | 31,677 | U |
| 291 | 0708610F | Logistics Information Technology (LOGIT) | 07 | 61,676 | 61,676 | | 61,676 | 33,344 | | 33,344 | U |

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04 May 2017

Appropriation: 3600F Research, Development, Test & Eval, AF

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|---------|------------------------|--|-----|--------------------|-------------------------------------|---|------------------------------------|--|--|---------------------------------------|-------|
| 292 | 0708611F | Support Systems Development | 07 | 13,987 | 9,128 | 9,128 | | | | | U |
| 293 | 0804743F | Other Flight Training | 07 | 1,770 | 1,653 | 1,653 | | | | | U |
| 294 | 0808716F | Other Personnel Activities | 07 | 117 | 57 | 57 | | | | | U |
| 295 | 0901202F | Joint Personnel Recovery Agency | 07 | 5,741 | 3,663 | 3,663 | | | | | U |
| 296 | 0901218F | Civilian Compensation Program | 07 | 3,475 | 3,735 | 3,735 | | | | | U |
| 297 | 0901220F | Personnel Administration | 07 | 4,416 | 5,157 | 5,157 | | | | | U |
| 298 | 0901226F | Air Force Studies and Analysis Agency | 07 | 1,064 | 1,523 | 1,523 | | | | | U |
| 299 | 0901538F | Financial Management Information Systems Development | 07 | 95,053 | 10,581 | 10,581 | | | | | U |
| 300 | 1201921F | Service Support to STRATCOM - Space Activities | 07 | | | | | | | | U |
| 301 | 1202247F | AF TENCAP | 07 | | | | | | | | U |
| 302 | 1203001F | Family of Advanced BLoS Terminals (FAB-T) | 07 | | | | | | | | U |
| 303 | 1203110F | Satellite Control Network (SPACE) | 07 | | | | | | | | U |
| 305 | 1203165F | NAVSTAR Global Positioning System (Space and Control Segments) | 07 | | | | | | | | U |
| 306 | 1203173F | Space and Missile Test and Evaluation Center | 07 | | | | | | | | U |
| 307 | 1203174F | Space Innovation, Integration and Rapid Technology Development | 07 | | | | | | | | U |
| 308 | 1203179F | Integrated Broadcast Service (IBS) | 07 | | | | | | | | U |
| 309 | 1203182F | Spacelift Range System (SPACE) | 07 | | | | | | | | U |

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|---------|------------------------|--|-----|--|---|--|--|--------------|-------------|---------------|----|
| 292 | 0708611F | Support Systems Development | 07 | 9,128 | 9,128 | | 9,128 | 9,362 | | 9,362 | U |
| 293 | 0804743F | Other Flight Training | 07 | 1,653 | 1,653 | | 1,653 | 2,074 | | 2,074 | U |
| 294 | 0808716F | Other Personnel Activities | 07 | 57 | 57 | | 57 | 107 | | 107 | U |
| 295 | 0901202F | Joint Personnel Recovery Agency | 07 | 3,663 | 3,663 | | 3,663 | 2,006 | | 2,006 | U |
| 296 | 0901218F | Civilian Compensation Program | 07 | 3,735 | 3,735 | | 3,735 | 3,780 | | 3,780 | U |
| 297 | 0901220F | Personnel Administration | 07 | 5,157 | 5,157 | | 5,157 | 7,472 | | 7,472 | U |
| 298 | 0901226F | Air Force Studies and Analysis Agency | 07 | 1,523 | 1,523 | | 1,523 | 1,563 | | 1,563 | U |
| 299 | 0901538F | Financial Management Information Systems Development | 07 | 10,581 | 10,581 | | 10,581 | 91,211 | | 91,211 | U |
| 300 | 1201921F | Service Support to STRATCOM - Space Activities | 07 | | | | | 14,255 | | 14,255 | U |
| 301 | 1202247F | AF TENCAP | 07 | | | | | 31,914 | | 31,914 | U |
| 302 | 1203001F | Family of Advanced BLoS Terminals (FAB-T) | 07 | | | | | 32,426 | | 32,426 | U |
| 303 | 1203110F | Satellite Control Network (SPACE) | 07 | | | | | 18,808 | | 18,808 | U |
| 305 | 1203165F | NAVSTAR Global Positioning System (Space and Control Segments) | 07 | | | | | 10,029 | | 10,029 | U |
| 306 | 1203173F | Space and Missile Test and Evaluation Center | 07 | | | | | 25,051 | | 25,051 | U |
| 307 | 1203174F | Space Innovation, Integration and Rapid Technology Development | 07 | | | | | 11,390 | | 11,390 | U |
| 308 | 1203179F | Integrated Broadcast Service (IBS) | 07 | | | | | 8,747 | | 8,747 | U |
| 309 | 1203182F | Spacelift Range System (SPACE) | 07 | | | | | 10,549 | | 10,549 | U |

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|--|----------------|--|-----|-----------------------|--|---|---|--|--|--|-------------|
| 310 | 1203265F | GPS III Space Segment | 07 | | | | | | | | U |
| 311 | 1203400F | Space Superiority Intelligence | 07 | | | | | | | | U |
| 312 | 1203614F | JSpOC Mission System | 07 | | | | | | | | U |
| 313 | 1203620F | National Space Defense Center | 07 | | | | | | | | U |
| 314 | 1203699F | Shared Early Warning (SEW) | 07 | | | | | | | | U |
| 315 | 1203906F | NCMC - TW/AA System | 07 | | | | | | | | U |
| 316 | 1203913F | NUDET Detection System (SPACE) | 07 | | | | | | | | U |
| 317 | 1203940F | Space Situation Awareness Operations | 07 | | | | | | | | U |
| 318 | 1206423F | Global Positioning System III - Operational Control Segment | 07 | | | | | | | | U |
| 9999 | 9999999999 | Classified Programs | | 12,052,624 | 13,091,557 | 13,243,393 | 27,765 | 84,865 | | 84,865 | U |
| | | Operational Systems Development | | 15,915,939 | 17,457,056 | 17,915,438 | 32,480 | 89,580 | | 89,580 | |
| 319 | 0901560F | Continuing Resolution Programs | 20 | | -2,965,689 | -2,965,689 | -15,805 | -15,805 | | -15,805 | U |
| | | Undistributed | | | -2,965,689 | -2,965,689 | -15,805 | -15,805 | | -15,805 | |
| Total Research, Development, Test & Eval, AF | | | | 25,243,981 | 25,146,562 | 25,988,644 | 17,100 | 89,900 | | 89,900 | |

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|--|----------------|---|-----|---|--|---|--|--------------|-------------|---------------|----|
| 310 | 1203265F | GPS III Space Segment | 07 | | | | | 243,435 | | 243,435 | U |
| 311 | 1203400F | Space Superiority Intelligence | 07 | | | | | 12,691 | | 12,691 | U |
| 312 | 1203614F | JSpOC Mission System | 07 | | | | | 99,455 | | 99,455 | U |
| 313 | 1203620F | National Space Defense Center | 07 | | | | | 18,052 | | 18,052 | U |
| 314 | 1203699F | Shared Early Warning (SEW) | 07 | | | | | 1,373 | | 1,373 | U |
| 315 | 1203906F | NCMC - TW/AA System | 07 | | | | | 5,000 | | 5,000 | U |
| 316 | 1203913F | NUDET Detection System (SPACE) | 07 | | | | | 31,508 | | 31,508 | U |
| 317 | 1203940F | Space Situation Awareness Operations | 07 | | | | | 99,984 | | 99,984 | U |
| 318 | 1206423F | Global Positioning System III - Operational Control Segment | 07 | | | | | 510,938 | | 510,938 | U |
| 9999 | 9999999999 | Classified Programs | | 13,119,322 | 13,328,258 | | 13,328,258 | 14,938,002 | 112,408 | 15,050,410 | U |
| | | Operational Systems Development | | 17,489,536 | 18,005,018 | | 18,005,018 | 20,585,302 | 122,158 | 20,707,460 | |
| 319 | 0901560F | Continuing Resolution Programs | 20 | -2,981,494 | -2,981,494 | | -2,981,494 | | | | U |
| | | Undistributed | | -2,981,494 | -2,981,494 | | -2,981,494 | | | | |
| Total Research, Development, Test & Eval, AF | | | | 25,163,662 | 26,078,544 | | 26,078,544 | 34,914,359 | 135,358 | 35,049,717 | |

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BA# 01: Basic Research

Cost (\$ in Millions)

| Line# | BA# | PE# | PE Title | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|------------------------------|-----|----------|--|-------------|---------|---------|--------------|-------------|---------------|
| 1 | 01 | 0601102F | Defense Research Sciences | - | 365.276 | 340.812 | 342.919 | 0.000 | 342.919 |
| 2 | 01 | 0601103F | University Research Initiatives | - | 132.526 | 145.044 | 147.923 | 0.000 | 147.923 |
| 3 | 01 | 0601108F | High Energy Laser Research Initiatives | - | 12.871 | 14.168 | 14.417 | 0.000 | 14.417 |
| Total: Basic Research | | | | - | 510.673 | 500.024 | 505.259 | 0.000 | 505.259 |

BA# 02: Applied Research

Cost (\$ in Millions)

| Line# | BA# | PE# | PE Title | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|-------|-----|----------|---|-------------|---------|---------|--------------|-------------|---------------|
| 4 | 02 | 0602102F | Materials | - | 132.768 | 126.152 | 124.264 | 0.000 | 124.264 |
| 5 | 02 | 0602201F | Aerospace Vehicle Technologies | - | 118.263 | 122.831 | 124.678 | 0.000 | 124.678 |
| 6 | 02 | 0602202F | Human Effectiveness Applied Research | 0.000 | 108.784 | 111.647 | 108.784 | 0.000 | 108.784 |
| 7 | 02 | 0602203F | Aerospace Propulsion | - | 184.498 | 185.671 | 192.695 | 0.000 | 192.695 |
| 8 | 02 | 0602204F | Aerospace Sensors | - | 151.264 | 155.174 | 152.782 | 0.000 | 152.782 |
| 9 | 02 | 0602298F | Science and Technology Management - Major Headquarters Activities | - | 0.000 | 0.000 | 8.353 | 0.000 | 8.353 |
| 10 | 02 | 0602601F | Space Technology | - | 107.442 | 117.915 | 116.503 | 0.000 | 116.503 |

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BA# 02: Applied Research

Cost (\$ in Millions)

| Line# | BA# | PE# | PE Title | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--------------------------------|-----|----------|---|-------------|-----------|-----------|--------------|-------------|---------------|
| 11 | 02 | 0602602F | Conventional Munitions | - | 105.296 | 109.649 | 112.195 | 0.000 | 112.195 |
| 12 | 02 | 0602605F | Directed Energy Technology | - | 122.835 | 127.163 | 132.993 | 0.000 | 132.993 |
| 13 | 02 | 0602788F | Dominant Information Sciences and Methods | - | 171.196 | 161.650 | 167.818 | 0.000 | 167.818 |
| 14 | 02 | 0602890F | High Energy Laser Research | - | 39.155 | 42.300 | 43.049 | 0.000 | 43.049 |
| Total: Applied Research | | | | 0.000 | 1,241.501 | 1,260.152 | 1,284.114 | 0.000 | 1,284.114 |

BA# 03: Advanced Technology Development (ATD)

Cost (\$ in Millions)

| Line# | BA# | PE# | PE Title | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|-------|-----|----------|---|-------------|---------|---------|--------------|-------------|---------------|
| 15 | 03 | 0603112F | Advanced Materials for Weapon Systems | - | 38.238 | 35.137 | 37.856 | 0.000 | 37.856 |
| 16 | 03 | 0603199F | Sustainment Science and Technology (S&T) | - | 17.323 | 20.636 | 22.811 | 0.000 | 22.811 |
| 17 | 03 | 0603203F | Advanced Aerospace Sensors | - | 39.794 | 40.945 | 40.978 | 0.000 | 40.978 |
| 18 | 03 | 0603211F | Aerospace Technology Dev/Demo | - | 95.266 | 130.950 | 115.966 | 0.000 | 115.966 |
| 19 | 03 | 0603216F | Aerospace Propulsion and Power Technology | - | 168.542 | 94.594 | 104.499 | 0.000 | 104.499 |
| 20 | 03 | 0603270F | Electronic Combat Technology | - | 45.359 | 58.250 | 60.551 | 0.000 | 60.551 |
| 21 | 03 | 0603401F | Advanced Spacecraft Technology | - | 62.278 | 61.593 | 58.910 | 0.000 | 58.910 |

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BA# 03: Advanced Technology Development (ATD)

Cost (\$ in Millions)

| Line# | BA# | PE# | PE Title | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|-----|----------|---|-------------|---------|---------|--------------|-------------|---------------|
| 22 | 03 | 0603444F | Maui Space Surveillance System (MSSS) | - | 12.303 | 11.681 | 10.433 | 0.000 | 10.433 |
| 23 | 03 | 0603456F | Human Effectiveness Advanced Technology Development | - | 24.094 | 26.492 | 33.635 | 0.000 | 33.635 |
| 24 | 03 | 0603601F | Conventional Weapons Technology | - | 42.204 | 102.009 | 167.415 | 0.000 | 167.415 |
| 25 | 03 | 0603605F | Advanced Weapons Technology | - | 37.301 | 39.064 | 45.502 | 0.000 | 45.502 |
| 26 | 03 | 0603680F | Manufacturing Technology Program | - | 51.467 | 46.344 | 46.450 | 0.000 | 46.450 |
| 27 | 03 | 0603788F | Battlespace Knowledge Development and Demonstration | - | 41.568 | 58.110 | 49.011 | 0.000 | 49.011 |
| Total: Advanced Technology Development (ATD) | | | | - | 675.737 | 725.805 | 794.017 | 0.000 | 794.017 |

BA# 04: Advanced Component Development & Prototypes (ACD&P)

Cost (\$ in Millions)

| Line# | BA# | PE# | PE Title | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|-------|-----|----------|-----------------------------------|-------------|---------|---------|--------------|-------------|---------------|
| 28 | 04 | 0603260F | Intelligence Advanced Development | - | 5.032 | 5.598 | 5.652 | 0.000 | 5.652 |
| 29 | 04 | 0603438F | Space Control Technology | - | 3.955 | 7.534 | 0.000 | 7.800 | 7.800 |
| 30 | 04 | 0603742F | Combat Identification Technology | - | 21.025 | 24.418 | 24.397 | 0.000 | 24.397 |
| 31 | 04 | 0603790F | NATO Research and Development | - | 4.566 | 4.333 | 3.851 | 0.000 | 3.851 |

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BA# 04: Advanced Component Development & Prototypes (ACD&P)

Cost (\$ in Millions)

| Line# | BA# | PE# | PE Title | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|-------|-----|----------|--|-------------|---------|-----------|--------------|-------------|---------------|
| 32 | 04 | 0603830F | Space Security and Defense Program | - | 30.771 | 32.399 | 0.000 | 0.000 | 0.000 |
| 33 | 04 | 0603851F | Intercontinental Ballistic Missile - Dem/Val | - | 34.765 | 108.663 | 10.736 | 0.000 | 10.736 |
| 34 | 04 | 0603859F | Pollution Prevention - Dem/Val | - | 0.000 | 0.000 | 0.002 | 0.000 | 0.002 |
| 35 | 04 | 0604015F | Long Range Strike - Bomber | - | 710.390 | 1,358.309 | 2,003.580 | 0.000 | 2,003.580 |
| 36 | 04 | 0604201F | Integrated Avionics Planning and Development | - | 0.000 | 0.000 | 65.458 | 0.000 | 65.458 |
| 37 | 04 | 0604257F | Advanced Technology and Sensors | - | 0.000 | 34.818 | 68.719 | 0.000 | 68.719 |
| 38 | 04 | 0604288F | National Airborne Ops Center (NAOC) Recap | - | 0.000 | 0.000 | 7.850 | 0.000 | 7.850 |
| 39 | 04 | 0604317F | Technology Transfer | - | 7.494 | 3.368 | 3.295 | 0.000 | 3.295 |
| 40 | 04 | 0604327F | Hard and Deeply Buried Target Defeat System (HDBTDS) Program | 440.671 | 62.034 | 74.308 | 17.365 | 0.000 | 17.365 |
| 41 | 04 | 0604414F | Cyber Resiliency of Weapon Systems-ACS | - | 0.000 | 40.000 | 32.253 | 0.000 | 32.253 |
| 42 | 04 | 0604422F | Weather System Follow-on | - | 46.307 | 118.953 | 0.000 | 0.000 | 0.000 |
| 43 | 04 | 0604425F | Space Situation Awareness Systems | - | 0.000 | 10.901 | 0.000 | 0.000 | 0.000 |
| 44 | 04 | 0604776F | Deployment & Distribution Enterprise R&D | - | 0.000 | 25.890 | 26.222 | 0.000 | 26.222 |
| 45 | 04 | 0604857F | Operationally Responsive Space | - | 22.123 | 17.921 | 0.000 | 0.000 | 0.000 |
| 46 | 04 | 0604858F | Tech Transition Program | - | 264.673 | 349.304 | 840.650 | 0.000 | 840.650 |
| 47 | 04 | 0605230F | Ground Based Strategic Deterrent | 0.000 | 64.966 | 113.919 | 215.721 | 0.000 | 215.721 |
| 48 | 04 | 0201184F | Counter Narco-Terrorism Program Office | - | 1.850 | 0.000 | 0.000 | 0.000 | 0.000 |

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BA# 04: Advanced Component Development & Prototypes (ACD&P)

Cost (\$ in Millions)

| Line# | BA# | PE# | PE Title | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|-------|-----|----------|--|-------------|---------|---------|--------------|-------------|---------------|
| 49 | 04 | 0207110F | Next Generation Air Dominance | - | 32.495 | 167.595 | 294.746 | 0.000 | 294.746 |
| 50 | 04 | 0207455F | Three Dimensional Long-Range Radar (3DELRR) | 91.723 | 7.865 | 49.491 | 10.645 | 0.000 | 10.645 |
| 51 | 04 | 0305164F | NAVSTAR Global Positioning System (User Equipment) (SPACE) | - | 143.118 | 278.147 | 0.000 | 0.000 | 0.000 |
| 52 | 04 | 0305236F | Common Data Link Executive Agent (CDL EA) | - | 0.000 | 42.338 | 41.509 | 0.000 | 41.509 |
| 53 | 04 | 0306250F | Cyber Operations Technology Development | - | 91.845 | 162.702 | 226.287 | 5.400 | 231.687 |
| 54 | 04 | 0306415F | Enabled Cyber Activities | - | 0.000 | 15.842 | 16.687 | 0.000 | 16.687 |
| 55 | 04 | 0408011F | Special Tactics / Combat Control | - | 0.000 | 0.000 | 4.500 | 0.000 | 4.500 |
| 56 | 04 | 0901410F | Contracting Information Technology System | - | 0.000 | 5.782 | 15.867 | 0.000 | 15.867 |
| 57 | 04 | 1203164F | NAVSTAR Global Positioning System (User Equipment) (SPACE) | 354.744 | 143.118 | 278.147 | 253.939 | 0.000 | 253.939 |
| 58 | 04 | 1203710F | EO/IR Weather Systems | - | 0.000 | 0.000 | 10.000 | 0.000 | 10.000 |
| 59 | 04 | 1206422F | Weather System Follow-on | 146.931 | 46.307 | 118.953 | 112.088 | 0.000 | 112.088 |
| 60 | 04 | 1206425F | Space Situation Awareness Systems | - | 0.000 | 10.901 | 34.764 | 0.000 | 34.764 |
| 61 | 04 | 1206434F | Midterm Polar MILSATCOM System | - | 0.000 | 0.000 | 63.092 | 0.000 | 63.092 |
| 62 | 04 | 1206438F | Space Control Technology | - | 3.955 | 7.534 | 7.842 | 7.800 | 15.642 |
| 63 | 04 | 1206730F | Space Security and Defense Program | - | 30.771 | 32.399 | 41.385 | 0.000 | 41.385 |
| 64 | 04 | 1206760F | Protected Tactical Enterprise Service (PTES) | - | 0.000 | 0.000 | 18.150 | 0.000 | 18.150 |

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BA# 04: Advanced Component Development & Prototypes (ACD&P)

Cost (\$ in Millions)

| Line# | BA# | PE# | PE Title | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|-----|----------|---|-------------|-----------|-----------|--------------|-------------|---------------|
| 65 | 04 | 1206761F | Protected Tactical Service (PTS) | - | 0.000 | 0.000 | 24.201 | 0.000 | 24.201 |
| 66 | 04 | 1206855F | Protected SATCOM Services (PSCS) - Aggregated | - | 0.000 | 0.000 | 16.000 | 0.000 | 16.000 |
| 67 | 04 | 1206857F | Operationally Responsive Space | - | 22.123 | 17.921 | 87.577 | 0.000 | 87.577 |
| Total: Advanced Component Development & Prototypes (ACD&P) | | | | 1,034.069 | 1,801.548 | 3,518.388 | 4,605.030 | 21.000 | 4,626.030 |

BA# 05: System Development & Demonstration (SDD)

Cost (\$ in Millions)

| Line# | BA# | PE# | PE Title | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|-------|-----|----------|--|-------------|---------|---------|--------------|-------------|---------------|
| 68 | 05 | 0604200F | Future Advanced Weapon Analysis & Programs | - | 0.000 | 0.000 | 5.100 | 0.000 | 5.100 |
| 69 | 05 | 0604201F | Integrated Avionics Planning and Development | - | 0.000 | 0.000 | 101.203 | 0.000 | 101.203 |
| 70 | 05 | 0604222F | Nuclear Weapons Support | - | 0.000 | 0.000 | 3.009 | 0.000 | 3.009 |
| 71 | 05 | 0604270F | Electronic Warfare Development | - | 0.813 | 12.476 | 2.241 | 0.000 | 2.241 |
| 72 | 05 | 0604281F | Tactical Data Networks Enterprise | - | 49.495 | 82.380 | 38.250 | 0.000 | 38.250 |
| 73 | 05 | 0604287F | Physical Security Equipment | - | 5.973 | 35.458 | 19.739 | 0.000 | 19.739 |
| 74 | 05 | 0604329F | Small Diameter Bomb (SDB) - EMD | 1,032.472 | 27.950 | 54.838 | 38.979 | 0.000 | 38.979 |

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BA# 05: System Development & Demonstration (SDD)

Cost (\$ in Millions)

| Line# | BA# | PE# | PE Title | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|-------|-----|----------|---|-------------|---------|---------|--------------|-------------|---------------|
| 75 | 05 | 0604421F | Counterspace Systems | - | 24.134 | 41.919 | 0.000 | 0.000 | 0.000 |
| 76 | 05 | 0604425F | Space Situation Awareness Systems | - | 30.116 | 23.945 | 0.000 | 0.000 | 0.000 |
| 77 | 05 | 0604426F | Space Fence | - | 240.692 | 168.364 | 0.000 | 0.000 | 0.000 |
| 78 | 05 | 0604429F | Airborne Electronic Attack | - | 8.067 | 9.187 | 7.091 | 0.000 | 7.091 |
| 79 | 05 | 0604441F | Space Based Infrared System (SBIRS) High EMD | - | 291.510 | 218.766 | 0.000 | 0.000 | 0.000 |
| 80 | 05 | 0604602F | Armament/Ordnance Development | - | 36.266 | 20.312 | 46.540 | 0.000 | 46.540 |
| 81 | 05 | 0604604F | Submunitions | - | 2.419 | 2.503 | 2.705 | 0.000 | 2.705 |
| 82 | 05 | 0604617F | Agile Combat Support | - | 56.178 | 53.680 | 31.240 | 0.000 | 31.240 |
| 83 | 05 | 0604618F | Joint Direct Attack Munition | 0.000 | 0.000 | 9.901 | 0.000 | 0.000 | 0.000 |
| 84 | 05 | 0604706F | Life Support Systems | - | 7.904 | 7.520 | 9.060 | 0.000 | 9.060 |
| 85 | 05 | 0604735F | Combat Training Ranges | - | 11.368 | 77.409 | 87.350 | 0.000 | 87.350 |
| 86 | 05 | 0604800F | F-35 - EMD | 21,111.851 | 575.932 | 450.467 | 292.947 | 0.000 | 292.947 |
| 87 | 05 | 0604853F | Evolved Expendable Launch Vehicle Program (SPACE) - EMD | - | 224.920 | 296.572 | 0.000 | 0.000 | 0.000 |
| 88 | 05 | 0604932F | Long Range Standoff Weapon | 10.274 | 16.143 | 95.604 | 451.290 | 0.000 | 451.290 |
| 89 | 05 | 0604933F | ICBM Fuze Modernization | 205.638 | 138.027 | 189.751 | 178.991 | 0.000 | 178.991 |
| 90 | 05 | 0605030F | Joint Tactical Network Center (JTNC) | - | 0.000 | 1.131 | 12.736 | 0.000 | 12.736 |
| 91 | 05 | 0605031F | Joint Tactical Network (JTN) | - | 0.000 | 0.000 | 9.319 | 0.000 | 9.319 |

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Cost (\$ in Millions)

| Line# | BA# | PE# | PE Title | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|-------|-----|----------|--|-------------|---------|---------|--------------|-------------|---------------|
| 92 | 05 | 0605213F | F-22 Modernization Increment 3.2B | 362.577 | 115.603 | 70.290 | 13.600 | 0.000 | 13.600 |
| 93 | 05 | 0605214F | Ground Attack Weapons Fuze Development | - | 3.477 | 0.937 | 0.000 | 0.000 | 0.000 |
| 94 | 05 | 0605221F | KC-46 | 5,319.514 | 572.118 | 261.724 | 93.845 | 0.000 | 93.845 |
| 95 | 05 | 0605223F | Advanced Pilot Training | 7.747 | 10.395 | 12.377 | 105.999 | 0.000 | 105.999 |
| 96 | 05 | 0605229F | Combat Rescue Helicopter | 472.534 | 150.341 | 319.331 | 354.485 | 0.000 | 354.485 |
| 97 | 05 | 0605431F | Advanced EHF MILSATCOM (SPACE) | - | 208.095 | 259.131 | 0.000 | 0.000 | 0.000 |
| 98 | 05 | 0605432F | Polar MILSATCOM (SPACE) | - | 71.867 | 50.815 | 0.000 | 0.000 | 0.000 |
| 99 | 05 | 0605433F | Wideband Global SATCOM (SPACE) | - | 49.954 | 41.632 | 0.000 | 0.000 | 0.000 |
| 100 | 05 | 0605458F | Air & Space Ops Center 10.2 RDT&E | 86.444 | 55.333 | 28.911 | 119.745 | 0.000 | 119.745 |
| 101 | 05 | 0605931F | B-2 Defensive Management System | 726.260 | 261.162 | 315.615 | 194.570 | 0.000 | 194.570 |
| 102 | 05 | 0101125F | Nuclear Weapons Modernization | 285.271 | 204.358 | 137.909 | 91.237 | 0.000 | 91.237 |
| 103 | 05 | 0207171F | F-15 EPAWSS | 0.000 | 174.439 | 256.669 | 209.847 | 0.000 | 209.847 |
| 104 | 05 | 0207328F | Stand In Attack Weapon | - | 0.000 | 0.000 | 3.400 | 0.000 | 3.400 |
| 105 | 05 | 0207701F | Full Combat Mission Training | - | 17.290 | 12.051 | 16.727 | 0.000 | 16.727 |
| 106 | 05 | 0303267F | Auctioned Spectrum Relocation Fund | - | 40.571 | 0.000 | 0.000 | 0.000 | 0.000 |
| 107 | 05 | 0303367F | Spectrum Access Research and Development | - | 0.383 | 0.000 | 0.000 | 0.000 | 0.000 |
| 108 | 05 | 0305176F | Combat Survivor Evader Locator | - | 0.958 | 29.253 | 0.000 | 0.000 | 0.000 |
| 109 | 05 | 0307581F | JSTARS Recap | 85.879 | 51.306 | 128.019 | 417.201 | 0.000 | 417.201 |

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BA# 05: System Development & Demonstration (SDD)

Cost (\$ in Millions)

| Line# | BA# | PE# | PE Title | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|-----|----------|---|-------------|-----------|-----------|--------------|-------------|---------------|
| 110 | 05 | 0401310F | C-32 Executive Transport Recapitalization | - | 0.000 | 0.000 | 6.017 | 0.000 | 6.017 |
| 111 | 05 | 0401319F | Presidential Aircraft Recapitalization (PAR) | 11.006 | 82.420 | 351.220 | 434.069 | 0.000 | 434.069 |
| 112 | 05 | 0701212F | Automated Test Systems | - | 14.422 | 19.062 | 18.528 | 0.000 | 18.528 |
| 113 | 05 | 1203176F | Combat Survivor Evader Locator | - | 0.958 | 29.253 | 24.967 | 0.000 | 24.967 |
| 114 | 05 | 1203940F | Space Situation Awareness Operations | - | 0.000 | 0.000 | 10.029 | 0.000 | 10.029 |
| 115 | 05 | 1206421F | Counterspace Systems | - | 24.134 | 34.819 | 66.370 | 0.000 | 66.370 |
| 116 | 05 | 1206425F | Space Situation Awareness Systems | 0.000 | 30.116 | 23.945 | 48.448 | 0.000 | 48.448 |
| 117 | 05 | 1206426F | Space Fence | 0.000 | 240.692 | 168.364 | 35.937 | 0.000 | 35.937 |
| 118 | 05 | 1206431F | Advanced EHF MILSATCOM (SPACE) | 372.471 | 208.095 | 259.131 | 145.610 | 0.000 | 145.610 |
| 119 | 05 | 1206432F | Polar MILSATCOM (SPACE) | 201.189 | 71.867 | 50.815 | 33.644 | 0.000 | 33.644 |
| 120 | 05 | 1206433F | WIDEBAND GLOBAL SATCOM (SPACE) | - | 49.954 | 41.632 | 14.263 | 0.000 | 14.263 |
| 121 | 05 | 1206441F | Space Based Infrared System (SBIRS) High EMD | 9,827.288 | 291.510 | 218.766 | 311.844 | 0.000 | 311.844 |
| 122 | 05 | 1206442F | Evolved SBIRS | - | 0.000 | 0.000 | 71.018 | 0.000 | 71.018 |
| 123 | 05 | 1206853F | Evolved Expendable Launch Vehicle Program (SPACE) - EMD | 259.600 | 224.920 | 296.572 | 297.572 | 0.000 | 297.572 |
| Total: System Development & Demonstration (SDD) | | | | 40,378.015 | 4,974.645 | 5,270.426 | 4,476.762 | 0.000 | 4,476.762 |

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BA# 06: RDT&E Management Support

Cost (\$ in Millions)

| Line# | BA# | PE# | PE Title | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|-------|-----|----------|--|-------------|---------|---------|--------------|-------------|---------------|
| 124 | 06 | 0604256F | Threat Simulator Development | - | 23.558 | 21.630 | 35.405 | 0.000 | 35.405 |
| 125 | 06 | 0604759F | Major T&E Investment | - | 70.894 | 71.385 | 82.874 | 0.000 | 82.874 |
| 126 | 06 | 0605101F | RAND Project Air Force | - | 33.943 | 34.641 | 34.346 | 0.000 | 34.346 |
| 127 | 06 | 0605502F | Small Business Innovation Research | - | 337.762 | 0.000 | 0.000 | 0.000 | 0.000 |
| 128 | 06 | 0605712F | Initial Operational Test & Evaluation | - | 11.172 | 11.529 | 15.523 | 0.000 | 15.523 |
| 129 | 06 | 0605807F | Test and Evaluation Support | - | 683.307 | 680.217 | 678.289 | 0.000 | 678.289 |
| 130 | 06 | 0605826F | Acq Workforce- Global Power | - | 0.000 | 0.000 | 219.809 | 0.000 | 219.809 |
| 131 | 06 | 0605827F | Acq Workforce- Global Vig & Combat Sys | - | 0.000 | 0.000 | 223.179 | 0.000 | 223.179 |
| 132 | 06 | 0605828F | Acq Workforce- Global Reach | - | 0.000 | 0.000 | 138.556 | 0.000 | 138.556 |
| 133 | 06 | 0605829F | Acq Workforce- Cyber, Network, & Bus Sys | - | 0.000 | 0.000 | 221.393 | 0.000 | 221.393 |
| 134 | 06 | 0605830F | Acq Workforce- Global Battle Mgmt | - | 0.000 | 0.000 | 152.577 | 0.000 | 152.577 |
| 135 | 06 | 0605831F | Acq Workforce- Capability Integration | - | 0.000 | 0.000 | 196.561 | 0.000 | 196.561 |
| 136 | 06 | 0605832F | Acq Workforce- Advanced Prgm Technology | - | 0.000 | 0.000 | 28.322 | 0.000 | 28.322 |
| 137 | 06 | 0605833F | Acq Workforce- Nuclear Systems | - | 0.000 | 0.000 | 126.611 | 0.000 | 126.611 |
| 138 | 06 | 0605860F | Rocket Systems Launch Program (SPACE) | - | 21.245 | 11.198 | 0.000 | 0.000 | 0.000 |
| 139 | 06 | 0605864F | Space Test Program (STP) | - | 28.143 | 27.070 | 0.000 | 0.000 | 0.000 |

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BA# 06: RDT&E Management Support

Cost (\$ in Millions)

| Line# | BA# | PE# | PE Title | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|-------|-----|----------|--|-------------|---------|---------|--------------|-------------|---------------|
| 140 | 06 | 0605898F | Management HQ - R&D | - | 0.000 | 0.000 | 9.154 | 0.000 | 9.154 |
| 141 | 06 | 0605976F | Facilities Restoration and Modernization - Test and Evaluation Support | - | 40.518 | 134.111 | 135.507 | 0.000 | 135.507 |
| 142 | 06 | 0605978F | Facilities Sustainment - Test and Evaluation Support | - | 27.895 | 28.091 | 28.720 | 0.000 | 28.720 |
| 143 | 06 | 0606017F | Requirements Analysis and Maturation | - | 21.922 | 129.100 | 35.453 | 0.000 | 35.453 |
| 144 | 06 | 0606116F | Space Test and Training Range Development | - | 18.465 | 18.528 | 0.000 | 0.000 | 0.000 |
| 145 | 06 | 0606392F | Space and Missile Center (SMC) Civilian Workforce | - | 169.196 | 176.666 | 0.000 | 0.000 | 0.000 |
| 146 | 06 | 0308602F | ENTEPRISE INFORMATION SERVICES (EIS) | - | 3.841 | 4.410 | 29.049 | 0.000 | 29.049 |
| 147 | 06 | 0702806F | Acquisition and Management Support | - | 16.358 | 14.613 | 14.980 | 0.000 | 14.980 |
| 148 | 06 | 0804731F | General Skill Training | - | 1.268 | 1.404 | 1.434 | 0.000 | 1.434 |
| 150 | 06 | 1001004F | International Activities | - | 2.315 | 4.784 | 4.569 | 0.000 | 4.569 |
| 151 | 06 | 1206116F | Space Test and Training Range Development | - | 18.465 | 22.228 | 25.773 | 0.000 | 25.773 |
| 152 | 06 | 1206392F | Space and Missile Center (SMC) Civilian Workforce | - | 169.196 | 176.666 | 169.887 | 0.000 | 169.887 |
| 153 | 06 | 1206398F | Space & Missile Systems Center - MHA | - | 0.000 | 0.000 | 9.531 | 0.000 | 9.531 |
| 154 | 06 | 1206860F | Rocket Systems Launch Program (SPACE) | - | 21.245 | 11.198 | 20.975 | 0.000 | 20.975 |
| 155 | 06 | 1206864F | Space Test Program (STP) | - | 28.143 | 27.070 | 25.398 | 0.000 | 25.398 |

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BA# 06: RDT&E Management Support

Cost (\$ in Millions)

| Line# | BA# | PE# | PE Title | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|-----|-----|----------|-------------|-----------|-----------|--------------|-------------|---------------|
| Total: RDT&E Management Support | | | | - | 1,748.851 | 1,606.539 | 2,663.875 | 0.000 | 2,663.875 |

BA# 07: Operational Systems Development

Cost (\$ in Millions)

| Line# | BA# | PE# | PE Title | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|-------|-----|----------|---|-------------|---------|---------|--------------|-------------|---------------|
| 156 | 07 | 0603423F | Global Positioning System III - Operational Control Segment | - | 344.226 | 513.268 | 0.000 | 0.000 | 0.000 |
| 157 | 07 | 0604222F | Nuclear Weapons Support | - | 0.000 | 0.000 | 27.579 | 0.000 | 27.579 |
| 158 | 07 | 0604233F | Specialized Undergraduate Flight Training | - | 7.742 | 15.427 | 5.776 | 0.000 | 5.776 |
| 159 | 07 | 0604445F | Wide Area Surveillance | 6.836 | 17.639 | 46.695 | 16.247 | 0.000 | 16.247 |
| 161 | 07 | 0605018F | AF Integrated Personnel and Pay System (AF-IPPS) | 199.827 | 30.334 | 10.368 | 21.915 | 0.000 | 21.915 |
| 162 | 07 | 0605024F | Anti-Tamper Technology Executive Agency | - | 25.857 | 31.952 | 33.150 | 0.000 | 33.150 |
| 163 | 07 | 0605117F | Foreign Materiel Acquisition and Exploitation | - | 41.689 | 42.960 | 66.653 | 0.000 | 66.653 |
| 164 | 07 | 0605278F | HC/MC-130 Recap RDT&E | 0.000 | 8.646 | 13.987 | 38.579 | 0.000 | 38.579 |
| 165 | 07 | 0606018F | NC3 Integration | - | 0.000 | 0.000 | 12.636 | 0.000 | 12.636 |
| 166 | 07 | 0101113F | B-52 SQUADRONS | - | 70.172 | 88.267 | 111.910 | 0.000 | 111.910 |

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 Master Exhibit R-1
 (Listing by Budget Activity, then Program Element Number)

BA# 07: Operational Systems Development

| Line# | BA# | PE# | PE Title | Cost (\$ in Millions) | | | | | |
|-------|-----|----------|---|-----------------------|---------|---------|--------------|-------------|---------------|
| | | | | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
| 167 | 07 | 0101122F | Air-Launched Cruise Missile (ALCM) | - | 0.451 | 0.453 | 0.463 | 0.000 | 0.463 |
| 168 | 07 | 0101126F | B-1B Squadrons | - | 2.174 | 5.830 | 62.471 | 0.000 | 62.471 |
| 169 | 07 | 0101127F | B-2 SQUADRONS | 0.000 | 105.914 | 152.458 | 193.108 | 0.000 | 193.108 |
| 170 | 07 | 0101213F | Minuteman Squadrons | 0.000 | 128.492 | 182.958 | 210.845 | 0.000 | 210.845 |
| 171 | 07 | 0101313F | Integrated Strategic Planning and Analysis Network (ISPAN) - USSTRATCOM | 207.933 | 26.954 | 39.148 | 25.736 | 0.000 | 25.736 |
| 172 | 07 | 0101314F | Night Fist - USSTRATCOM | - | 0.087 | 0.000 | 0.000 | 0.000 | 0.000 |
| 173 | 07 | 0101316F | Worldwide Joint Strategic Communications | - | 3.815 | 6.042 | 6.272 | 0.000 | 6.272 |
| 174 | 07 | 0101324F | Integrated Strategic Planning & Analysis Network | - | 0.000 | 0.000 | 11.032 | 0.000 | 11.032 |
| 176 | 07 | 0102110F | UH-1N Replacement Program | - | 0.000 | 14.116 | 108.617 | 0.000 | 108.617 |
| 177 | 07 | 0102326F | Region/Sector Operation Control Center Modernization Program | - | 0.000 | 10.868 | 3.347 | 0.000 | 3.347 |
| 178 | 07 | 0105921F | Service Support to STRATCOM - Space Activities | - | 9.388 | 8.674 | 0.000 | 0.000 | 0.000 |
| 179 | 07 | 0205219F | MQ-9 UAV | 958.691 | 124.695 | 151.373 | 201.394 | 0.000 | 201.394 |
| 180 | 07 | 0205671F | Joint Counter RCIED Electronic Warfare | - | 0.300 | 0.000 | 0.000 | 0.000 | 0.000 |
| 181 | 07 | 0207040F | Multi-Platform Electronic Warfare Equipment | - | 3.980 | 0.000 | 0.000 | 0.000 | 0.000 |
| 182 | 07 | 0207131F | A-10 Squadrons | - | 16.200 | 21.353 | 17.459 | 0.000 | 17.459 |

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 Master Exhibit R-1
 (Listing by Budget Activity, then Program Element Number)

BA# 07: Operational Systems Development

Cost (\$ in Millions)

| Line# | BA# | PE# | PE Title | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|-------|-----|----------|---|-------------|---------|---------|--------------|-------------|---------------|
| 183 | 07 | 0207133F | F-16 Squadrons | - | 153.611 | 147.795 | 246.578 | 0.000 | 246.578 |
| 184 | 07 | 0207134F | F-15E Squadrons | 0.000 | 210.029 | 356.717 | 320.271 | 0.000 | 320.271 |
| 185 | 07 | 0207136F | Manned Destructive Suppression | - | 14.400 | 14.773 | 15.106 | 0.000 | 15.106 |
| 186 | 07 | 0207138F | F-22A Squadrons | 3,674.494 | 224.550 | 387.564 | 610.942 | 0.000 | 610.942 |
| 187 | 07 | 0207142F | F-35 Squadrons | 61.782 | 51.990 | 153.045 | 334.530 | 0.000 | 334.530 |
| 188 | 07 | 0207161F | Tactical AIM Missiles | 96.110 | 33.615 | 52.898 | 34.952 | 0.000 | 34.952 |
| 189 | 07 | 0207163F | Advanced Medium Range Air-to-Air Missile (AMRAAM) | 459.428 | 44.335 | 62.470 | 61.322 | 0.000 | 61.322 |
| 190 | 07 | 0207224F | Combat Rescue and Recovery | - | 0.398 | 0.000 | 0.000 | 0.000 | 0.000 |
| 191 | 07 | 0207227F | Combat Rescue - Pararescue | - | 0.636 | 0.362 | 0.693 | 0.000 | 0.693 |
| 192 | 07 | 0207247F | AF TENCAP | - | 37.489 | 28.413 | 0.000 | 0.000 | 0.000 |
| 193 | 07 | 0207249F | Precision Attack Systems Procurement | - | 1.064 | 0.649 | 1.714 | 0.000 | 1.714 |
| 194 | 07 | 0207253F | Compass Call | - | 32.024 | 23.923 | 14.040 | 0.000 | 14.040 |
| 195 | 07 | 0207268F | Aircraft Engine Component Improvement Program | - | 104.092 | 109.859 | 109.243 | 0.000 | 109.243 |
| 196 | 07 | 0207277F | ISR Innovations | - | 0.000 | 0.000 | 0.000 | 5.750 | 5.750 |
| 197 | 07 | 0207325F | Joint Air-to-Surface Standoff Missile (JASSM) | 209.212 | 9.221 | 30.002 | 29.932 | 0.000 | 29.932 |
| 198 | 07 | 0207410F | Air & Space Operations Center (AOC) | 0.000 | 20.588 | 37.621 | 26.956 | 0.000 | 26.956 |
| 199 | 07 | 0207412F | Control and Reporting Center (CRC) | - | 0.557 | 13.292 | 2.450 | 0.000 | 2.450 |

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 Master Exhibit R-1
 (Listing by Budget Activity, then Program Element Number)

BA# 07: Operational Systems Development

Cost (\$ in Millions)

| Line# | BA# | PE# | PE Title | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|-------|-----|----------|--|-------------|---------|---------|--------------|-------------|---------------|
| 200 | 07 | 0207417F | Airborne Warning and Control System (AWACS) | - | 124.457 | 86.644 | 151.726 | 0.000 | 151.726 |
| 201 | 07 | 0207418F | Tactical Airborne Control Systems | - | 5.786 | 2.442 | 3.656 | 0.000 | 3.656 |
| 203 | 07 | 0207431F | Combat Air Intelligence System Activities | - | 6.793 | 10.911 | 13.420 | 0.000 | 13.420 |
| 204 | 07 | 0207444F | Tactical Air Control Party-Mod | - | 10.747 | 11.843 | 10.623 | 0.000 | 10.623 |
| 205 | 07 | 0207448F | C2ISR Tactical Data Link | - | 1.629 | 1.515 | 1.754 | 0.000 | 1.754 |
| 206 | 07 | 0207452F | DCAPES | 186.286 | 12.909 | 14.979 | 17.382 | 0.000 | 17.382 |
| 207 | 07 | 0207573F | National Technical Nuclear Forensics | - | 0.000 | 0.000 | 2.307 | 0.000 | 2.307 |
| 208 | 07 | 0207590F | Seek Eagle | - | 21.131 | 25.308 | 25.397 | 0.000 | 25.397 |
| 209 | 07 | 0207601F | USAF Modeling and Simulation | - | 20.358 | 16.666 | 10.175 | 0.000 | 10.175 |
| 210 | 07 | 0207605F | Wargaming and Simulation Centers | - | 5.819 | 4.245 | 12.839 | 0.000 | 12.839 |
| 211 | 07 | 0207697F | Distributed Training and Exercises | - | 4.202 | 3.886 | 4.190 | 0.000 | 4.190 |
| 212 | 07 | 0208006F | Mission Planning Systems | 338.582 | 54.176 | 71.785 | 85.531 | 0.000 | 85.531 |
| 213 | 07 | 0208007F | Tactical Deception | - | 0.000 | 0.000 | 3.761 | 0.000 | 3.761 |
| 214 | 07 | 0208087F | AF Offensive Cyberspace Operations | - | 14.939 | 25.025 | 35.693 | 4.000 | 39.693 |
| 215 | 07 | 0208088F | AF Defensive Cyberspace Operations | - | 7.414 | 29.439 | 20.964 | 0.000 | 20.964 |
| 218 | 07 | 0301017F | Global Sensor Integrated on Network (GSIN) | - | 5.803 | 3.470 | 3.549 | 0.000 | 3.549 |
| 219 | 07 | 0301112F | Nuclear Planning and Execution System (NPES) | 0.000 | 0.000 | 4.060 | 4.371 | 0.000 | 4.371 |

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 Master Exhibit R-1
 (Listing by Budget Activity, then Program Element Number)

BA# 07: Operational Systems Development

| Line# | BA# | PE# | PE Title | Cost (\$ in Millions) | | | | | |
|-------|-----|----------|---|-----------------------|---------|---------|--------------|-------------|---------------|
| | | | | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
| 226 | 07 | 0301400F | Space Superiority Intelligence | - | 13.965 | 13.880 | 0.000 | 0.000 | 0.000 |
| 227 | 07 | 0301401F | Air Force Space and Cyber Non-Traditional ISR for Battlespace Awareness | - | 0.000 | 0.000 | 3.721 | 0.000 | 3.721 |
| 228 | 07 | 0302015F | E-4B National Airborne Operations Center (NAOC) | - | 76.760 | 30.948 | 35.467 | 0.000 | 35.467 |
| 229 | 07 | 0303001F | Family of Advanced BLoS Terminals (FAB-T) | - | 12.313 | 52.578 | 0.000 | 0.000 | 0.000 |
| 230 | 07 | 0303131F | Minimum Essential Emergency Communications Network (MEECN) | - | 92.036 | 47.471 | 48.841 | 0.000 | 48.841 |
| 231 | 07 | 0303140F | Information Systems Security Program | - | 44.578 | 46.388 | 42.973 | 0.000 | 42.973 |
| 232 | 07 | 0303141F | Global Combat Support System | - | 0.000 | 0.052 | 0.105 | 0.000 | 0.105 |
| 233 | 07 | 0303142F | Global Force Management - Data Initiative | - | 2.470 | 2.099 | 2.147 | 0.000 | 2.147 |
| 234 | 07 | 0303601F | MILSATCOM Terminals | 2,216.097 | 9.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 236 | 07 | 0304260F | Airborne SIGINT Enterprise | - | 111.142 | 90.762 | 121.948 | 0.000 | 121.948 |
| 237 | 07 | 0304310F | Commercial Economic Analysis | - | 0.000 | 0.000 | 3.544 | 0.000 | 3.544 |
| 240 | 07 | 0305020F | CCMD Intelligence Information Technology | - | 0.000 | 0.000 | 1.542 | 0.000 | 1.542 |
| 241 | 07 | 0305099F | Global Air Traffic Management (GATM) | - | 4.089 | 4.354 | 4.453 | 0.000 | 4.453 |
| 242 | 07 | 0305110F | Satellite Control Network (SPACE) | - | 7.327 | 15.624 | 0.000 | 0.000 | 0.000 |
| 243 | 07 | 0305111F | Weather Service | - | 28.812 | 19.974 | 26.654 | 0.000 | 26.654 |

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Master Exhibit R-1

(Listing by Budget Activity, then Program Element Number)

BA# 07: Operational Systems Development

Cost (\$ in Millions)

| Line# | BA# | PE# | PE Title | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|-------|-----|----------|--|-------------|---------|---------|--------------|-------------|---------------|
| 244 | 07 | 0305114F | Air Traffic Control, Approach, and Landing System (ATCALs) | - | 18.830 | 9.770 | 6.306 | 0.000 | 6.306 |
| 245 | 07 | 0305116F | Aerial Targets | - | 2.578 | 3.051 | 21.295 | 0.000 | 21.295 |
| 248 | 07 | 0305128F | Security and Investigative Activities | - | 0.455 | 0.405 | 0.415 | 0.000 | 0.415 |
| 249 | 07 | 0305145F | Arms Control Implementation | - | 9.116 | 4.844 | 0.000 | 0.000 | 0.000 |
| 250 | 07 | 0305146F | Defense Joint Counterintelligence Activities | - | 0.361 | 0.339 | 3.867 | 0.000 | 3.867 |
| 253 | 07 | 0305173F | Space and Missile Test and Evaluation Center | - | 3.490 | 3.989 | 0.000 | 0.000 | 0.000 |
| 254 | 07 | 0305174F | Space Innovation, Integration and Rapid Technology Development | - | 1.543 | 3.070 | 0.000 | 0.000 | 0.000 |
| 255 | 07 | 0305179F | Integrated Broadcast Service (IBS) | - | 9.760 | 8.833 | 0.000 | 0.000 | 0.000 |
| 256 | 07 | 0305182F | Spacelift Range System (SPACE) | - | 5.708 | 11.867 | 0.000 | 0.000 | 0.000 |
| 257 | 07 | 0305202F | Dragon U-2 | - | 34.471 | 37.217 | 34.486 | 0.000 | 34.486 |
| 258 | 07 | 0305205F | Endurance Unmanned Aerial Vehicles | - | 5.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 259 | 07 | 0305206F | Airborne Reconnaissance Systems | - | 61.742 | 3.841 | 4.450 | 0.000 | 4.450 |
| 260 | 07 | 0305207F | Manned Reconnaissance Systems | - | 13.245 | 20.975 | 14.269 | 0.000 | 14.269 |
| 261 | 07 | 0305208F | Distributed Common Ground/Surface Systems | - | 22.686 | 30.448 | 27.501 | 0.000 | 27.501 |
| 262 | 07 | 0305220F | RQ-4 UAV | 686.056 | 180.547 | 256.307 | 214.849 | 0.000 | 214.849 |
| 263 | 07 | 0305221F | Network-Centric Collaborative Targeting | - | 19.587 | 22.610 | 18.842 | 0.000 | 18.842 |
| 264 | 07 | 0305236F | Common Data Link Executive Agent (CDL EA) | - | 43.709 | 0.000 | 0.000 | 0.000 | 0.000 |

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 (Listing by Budget Activity, then Program Element Number)

BA# 07: Operational Systems Development

Cost (\$ in Millions)

| Line# | BA# | PE# | PE Title | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|-------|-----|----------|---|-------------|---------|---------|--------------|-------------|---------------|
| 265 | 07 | 0305238F | NATO AGS | - | 131.900 | 38.904 | 44.729 | 0.000 | 44.729 |
| 266 | 07 | 0305240F | Support to DCGS Enterprise | - | 28.336 | 23.084 | 26.349 | 0.000 | 26.349 |
| 267 | 07 | 0305258F | Advanced Evaluation Program | - | 0.000 | 116.143 | 0.000 | 0.000 | 0.000 |
| 268 | 07 | 0305265F | GPS III Space Segment | - | 147.398 | 179.188 | 0.000 | 0.000 | 0.000 |
| 269 | 07 | 0305600F | International Intelligence Technology and Architectures | - | 2.298 | 2.360 | 3.491 | 0.000 | 3.491 |
| 270 | 07 | 0305614F | JSPOC Mission System | - | 80.669 | 87.889 | 0.000 | 0.000 | 0.000 |
| 271 | 07 | 0305881F | Rapid Cyber Acquisition | - | 3.036 | 4.280 | 4.899 | 0.000 | 4.899 |
| 272 | 07 | 0305906F | NCMC - TW/AA System | - | 0.000 | 4.951 | 0.000 | 0.000 | 0.000 |
| 273 | 07 | 0305913F | NUDET Detection System (SPACE) | - | 14.403 | 21.093 | 0.000 | 0.000 | 0.000 |
| 274 | 07 | 0305940F | Space Situation Awareness Operations | - | 23.416 | 93.802 | 0.000 | 0.000 | 0.000 |
| 275 | 07 | 0305984F | Personnel Recovery Command & Ctrl (PRC2) | - | 0.000 | 0.000 | 2.445 | 0.000 | 2.445 |
| 276 | 07 | 0307577F | Intelligence Mission Data (IMD) | - | 0.000 | 0.000 | 8.684 | 0.000 | 8.684 |
| 277 | 07 | 0308699F | Shared Early Warning (SEW) | - | 0.845 | 6.366 | 0.000 | 0.000 | 0.000 |
| 278 | 07 | 0401115F | C-130 Airlift Squadron | 0.000 | 33.962 | 15.599 | 10.219 | 0.000 | 10.219 |
| 279 | 07 | 0401119F | C-5 Airlift Squadrons (IF) | - | 22.766 | 66.146 | 22.758 | 0.000 | 22.758 |
| 280 | 07 | 0401130F | C-17 Aircraft (IF) | - | 36.082 | 12.430 | 34.287 | 0.000 | 34.287 |
| 281 | 07 | 0401132F | C-130J Program | 242.300 | 31.410 | 16.776 | 26.821 | 0.000 | 26.821 |

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 Master Exhibit R-1
 (Listing by Budget Activity, then Program Element Number)

BA# 07: Operational Systems Development

Cost (\$ in Millions)

| Line# | BA# | PE# | PE Title | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|-------|-----|----------|--|-------------|---------|---------|--------------|-------------|---------------|
| 282 | 07 | 0401134F | Large Aircraft IR Countermeasures (LAIRCM) | - | 5.802 | 5.166 | 5.283 | 0.000 | 5.283 |
| 283 | 07 | 0401218F | KC-135s | - | 0.000 | 0.000 | 9.942 | 0.000 | 9.942 |
| 284 | 07 | 0401219F | KC-10s | - | 1.597 | 0.000 | 7.933 | 0.000 | 7.933 |
| 285 | 07 | 0401314F | Operational Support Airlift | 0.000 | 46.453 | 13.817 | 6.681 | 0.000 | 6.681 |
| 286 | 07 | 0401318F | CV-22 | 37.698 | 26.821 | 28.702 | 22.519 | 0.000 | 22.519 |
| 287 | 07 | 0401840F | AMC Command and Control System | - | 0.000 | 0.000 | 3.510 | 0.000 | 3.510 |
| 288 | 07 | 0408011F | Special Tactics / Combat Control | - | 7.665 | 7.164 | 8.090 | 0.000 | 8.090 |
| 289 | 07 | 0702207F | Depot Maintenance (Non-IF) | - | 1.514 | 1.518 | 1.528 | 0.000 | 1.528 |
| 290 | 07 | 0708055F | Maintenance, Repair & Overhaul System | 0.000 | 0.000 | 0.000 | 31.677 | 0.000 | 31.677 |
| 291 | 07 | 0708610F | Logistics Information Technology (LOGIT) | 0.000 | 52.482 | 61.676 | 33.344 | 0.000 | 33.344 |
| 292 | 07 | 0708611F | Support Systems Development | - | 13.987 | 9.128 | 9.362 | 0.000 | 9.362 |
| 293 | 07 | 0804743F | Other Flight Training | - | 1.770 | 1.653 | 2.074 | 0.000 | 2.074 |
| 294 | 07 | 0808716F | Other Personnel Activities | - | 0.117 | 0.057 | 0.107 | 0.000 | 0.107 |
| 295 | 07 | 0901202F | Joint Personnel Recovery Agency | - | 5.741 | 3.663 | 2.006 | 0.000 | 2.006 |
| 296 | 07 | 0901218F | Civilian Compensation Program | - | 3.475 | 3.735 | 3.780 | 0.000 | 3.780 |
| 297 | 07 | 0901220F | Personnel Administration | - | 4.416 | 5.157 | 7.472 | 0.000 | 7.472 |
| 298 | 07 | 0901226F | Air Force Studies and Analysis Agency | - | 1.064 | 1.523 | 1.563 | 0.000 | 1.563 |

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Air Force • Budget Estimates FY 2018 • RDT&E Program
 Master Exhibit R-1
 (Listing by Budget Activity, then Program Element Number)

BA# 07: Operational Systems Development

| Line# | BA# | PE# | PE Title | Cost (\$ in Millions) | | | | | |
|-------|-----|----------|--|-----------------------|---------|---------|--------------|-------------|---------------|
| | | | | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
| 299 | 07 | 0901538F | Financial Management Information Systems Development | 496.071 | 95.053 | 10.581 | 91.211 | 0.000 | 91.211 |
| 300 | 07 | 1201921F | Service Support to STRATCOM - Space Activities | - | 9.388 | 8.674 | 14.255 | 0.000 | 14.255 |
| 301 | 07 | 1202247F | AF TENCAP | - | 37.489 | 28.413 | 31.914 | 0.000 | 31.914 |
| 302 | 07 | 1203001F | Family of Advanced BLoS Terminals (FAB-T) | - | 12.313 | 52.578 | 32.426 | 0.000 | 32.426 |
| 303 | 07 | 1203110F | Satellite Control Network (SPACE) | - | 7.327 | 15.624 | 18.808 | 0.000 | 18.808 |
| 305 | 07 | 1203165F | NAVSTAR Global Positioning System (Space and Control Segments) | - | 0.000 | 0.000 | 10.029 | 0.000 | 10.029 |
| 306 | 07 | 1203173F | Space and Missile Test and Evaluation Center | - | 3.490 | 3.989 | 25.051 | 0.000 | 25.051 |
| 307 | 07 | 1203174F | Space Innovation, Integration and Rapid Technology Development | - | 1.543 | 3.070 | 11.390 | 0.000 | 11.390 |
| 308 | 07 | 1203179F | Integrated Broadcast Service (IBS) | - | 9.760 | 8.833 | 8.747 | 0.000 | 8.747 |
| 309 | 07 | 1203182F | Spacelift Range System (SPACE) | - | 5.708 | 11.867 | 10.549 | 0.000 | 10.549 |
| 310 | 07 | 1203265F | GPS III Space Segment | 2,799.129 | 147.398 | 179.188 | 243.435 | 0.000 | 243.435 |
| 311 | 07 | 1203400F | Space Superiority Intelligence | - | 13.965 | 13.880 | 12.691 | 0.000 | 12.691 |
| 312 | 07 | 1203614F | JSpOC Mission System | 0.000 | 80.669 | 87.889 | 99.455 | 0.000 | 99.455 |
| 313 | 07 | 1203620F | National Space Defense Center | - | 0.000 | 0.000 | 18.052 | 0.000 | 18.052 |
| 314 | 07 | 1203699F | Shared Early Warning (SEW) | - | 0.845 | 6.366 | 1.373 | 0.000 | 1.373 |

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Air Force • Budget Estimates FY 2018 • RDT&E Program
 Master Exhibit R-1
 (Listing by Budget Activity, then Program Element Number)

BA# 07: Operational Systems Development

Cost (\$ in Millions)

| Line# | BA# | PE# | PE Title | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|-----|----------|---|-------------|-----------|-----------|--------------|-------------|---------------|
| 315 | 07 | 1203906F | NCMC - TW/AA System | - | 0.000 | 4.951 | 5.000 | 0.000 | 5.000 |
| 316 | 07 | 1203913F | NUDET Detection System (SPACE) | - | 14.403 | 21.093 | 31.508 | 0.000 | 31.508 |
| 317 | 07 | 1203940F | Space Situation Awareness Operations | - | 23.416 | 93.802 | 99.984 | 0.000 | 99.984 |
| 318 | 07 | 1206423F | Global Positioning System III - Operational Control Segment | 2,804.399 | 344.226 | 513.268 | 510.938 | 0.000 | 510.938 |
| Total: Operational Systems Development | | | | 15,680.931 | 4,575.255 | 5,725.530 | 5,647.300 | 9.750 | 5,657.050 |

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In the Fiscal Year (FY) 2018 Budget Estimates

RDT&E Exhibits in Budget Activity 7

are split into two books:

Vol-III Part 1

Vol-III Part 2

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The following Program Elements are not providing RDT&E exhibits due to classification:

0101815F ADVANCED STRATEGIC PROGRAM
0207424F EVALUATION AND ANALYSIS PROGRAM
0208161F SPECIAL EVALUATION SYSTEM
0208162F ADVANCED TECHNOLOGY PROGRAM
0301310F NATIONAL AIR INTELLIGENCE CENTER
0301314F COBRA BALL
0301315F MISSILE AND SPACE TECHICAL COLLECTION
0301324F FOREST GREEN
0301386F GDIP COLLECTION MANAGEMENT
0304111F SPECIAL ACTIVITES
0304311F SELECTED ACTIVITIES
0304348F ADVANCED GEOSPATIAL INTELLIGENCE (AGI)
0305124F SPECIAL APPLICATIONS PROGRAM
0305127F FOREIGN COUNTERINTELLIGENCE ACTIVITES
0305159F DEFENSE RECONNAISSANCE SUPPORT ACTIVITIES
0305172F COMBINED ADVANCED APPLICATIONS
0604446F WIDE AREA SURVEILLANCE - SP
0605798F ANALYSIS SUPPORT GROUP

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

| | |
|--|--|
| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0301017F I Global Sensor Integrated on Network (GSIN) |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 5.803 | 3.470 | 3.549 | 0.000 | 3.549 | 3.606 | 3.674 | 3.737 | 3.814 | Continuing | Continuing |
| 675368: GSIN (Global Integrated Sensor Network) | - | 5.803 | 3.470 | 3.549 | 0.000 | 3.549 | 3.606 | 3.674 | 3.737 | 3.814 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The mission of USSTRATCOM is to establish and provide full-spectrum, global strike, coordinated space and information operations capabilities to meet both deterrent and decisive national security objectives and to provide operational space support, integrated missile defense, Global Command Control, Communications, and Computers Intelligence Surveillance and Reconnaissance (C4ISR), and specialized planning expertise to the joint warfighter.

GSIN directly supports the above mission. It nets together selected systems and sensors (from tactical to strategic), including the Nation's most modern and capable assets, taking advantage of their larger numbers, improved algorithms, mobility, and forward deployment to provide earlier cross-cueing and expanded decision space when every second counts. Using these traditionally stove-piped systems and sensors, GSIN enables the warfighter in several ways. First it will enable creation of a User Defined Operating Picture (UDOP) to provide a single, unambiguous missile event picture allowing real-time collaboration for nuclear C2 and improved senior leader situational awareness (SA) for effective decision-making. Secondly, it will improve Space Situational Awareness (SSA) by tapping additional sensor capability. Finally, GSIN will dramatically improve the ingestion of non-traditional, but readily available non-US government and commercial data to the space catalog.

The Nation's strategic C2, sensors, and mission planning programs cannot rapidly exchange information across multiple missions creating ambiguity that delays time critical national C2 decision making processes. GSIN will develop and establish a unified schema that will integrate disparate Missile Warning/Missile Defense (MW/MD) data into a single exposed data set providing redundant and unambiguous MW/MD data to national leadership. GSIN also enables existing sensors to provide data in net-centric formats consumable by other authorized systems and mission areas, thus reducing the need to acquire more sensors. Activities also include studies and analysis to support both current program planning, execution, and future program planning.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0301017F I Global Sensor Integrated on Network (GSIN) |
|---|--|

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 5.974 | 3.470 | 3.539 | 0.000 | 3.539 |
| Current President's Budget | 5.803 | 3.470 | 3.549 | 0.000 | 3.549 |
| Total Adjustments | -0.171 | 0.000 | 0.010 | 0.000 | 0.010 |
| • 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 | -0.171 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 0.010 | 0.000 | 0.010 |

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
|---|----------------|----------------|----------------|

Title: GSIN Sensor Data Exposure: MASINT, other technical intelligence and Allied Systems

Description: Non traditional Data Pre Processor (NDPP): Designs, develops, exposes and integrates Space Situational Awareness (SSA) data from Commercial, Owner-Operator, and Allied non-traditional sensors into space production systems and Space Catalog via the Global Information Grid. Develops implementation plans to mature data exposure capabilities. Army Navy Transportable Radar (AN/TPY-2): Designs, develops, tests, exposes, and integrates SSA data from the missile defense AN/TPY-2 sensor into space production systems and the Global Information Grid. Develops implementation plans to mature data exposure capabilities. Measurement and Signals (MASINT)/Technical Intelligence (TI): Designs, develops, exposes, and integrates data from MASINT and Technical Intelligence sensors in regions of the world where we currently do not have coverage. Provides near real time data from sensors that previously reported hours or days after events.

FY 2016 Accomplishments:

- Tested and fielded NDPP to enable outbound SSA data sharing and make data available to authorized users for consumption. Integrate with Joint Space Operations Center (JSpOC) Mission System (JMS)
- Began development and testing of SSA Data Sharing Strategy to enhance NDPP
- Finalized development of TPY-2 and begin testing of the exposure of SSA data from the missile defense AN/TPY-2 sensor
- Continued development of C2BMC SSA capability, to include development of Net Centric Command and Control capability to enable exposure of PACOM, CENTCOM, and EUCOM data via C2BMC, providing them with same capability as NORTHCOM/ PACOM
- Began exposure of MASINT Phase 2

FY 2017 Plans:

| | | | |
|--|-------|-------|-------|
| | 4.236 | 1.635 | 2.664 |
|--|-------|-------|-------|

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0301017F / <i>Global Sensor Integrated on Network (GSIN)</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <ul style="list-style-type: none"> - Continue development and deployment of MASINT/Allied Project 2. Prep the community and begin design and deployment MASINT/Allied System Project 3. - Determine feasibility in integrating LRDR effort into GSIN supporting the SSA Mission. <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Enter Operational testing and Full Operational Capability (FOC) for MASINT/Allied sensors project 2. - Continue development to exposure data for MASINT/Allied system project 3. - Prep the community to begin MASINT/Allied System project 4. | | | | |
| <p>Title: GSIN Data Integration: Launch Characterization Data Services Net Centric Data Integration Schema Configuration Control Technical Outreach</p> <p>Description: Develop common XML net-enabled data schemas and configuration management processes and procedures for Missile Warning, Missile Defense, Space, MASINT/Technical Intelligence, and Sensor data to manage the XML schema and associated XML messaging and services. Develop technical outreach for potential new GSIN data consumers and providers who require GSIN sensor data. Upgrade GSIN capabilities as DISA Enterprise Services evolve. Continue modifications to data services. Support integration of GSIN sensor data into appropriate registries/catalogs. Continue development of GSIN data services to enable visualization in a common operating picture. Conduct studies and demonstrations of SSA capabilities, data correlation, launch event characterization and assessment services for risk reduction evaluations.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Developed common XML net-enabled data schemas to integrate additional sensor data, and continued to develop configuration control processes, technical outreach processes for new GSIN data consumers and providers. - Upgraded GSIN capabilities as DISA Enterprise Services evolve. - Continued modifications to data services. - Began design and development of MASINT Phase 2. - Test and delivery schema to correspond to NDPP delivery (Spiral 3), and begin initial schema updates/development for TPY-2 SSA capability (Spiral 4). <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Complete and deliver Common XML net-enabled schemas. - Continue developing and releasing periodic configuration control processes. - Continue technical outreach processes for new GSIN data consumers and providers. - Deliver new GSIN capabilities to match evolving DISA Enterprise Service updates. - Continue development of new and improved data services. Continued development and deployment of MASINT Phase 2 (including operational testing and fielding activities). | | 1.567 | 1.835 | 0.885 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0301017F / <i>Global Sensor Integrated on Network (GSIN)</i> |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| <ul style="list-style-type: none"> - Complete and test schema changes for TPY-2 SSA and data service updates (TPY-2 Spiral 4). - Complete development and deployment of Exercise Scenario Data Editor (ESDE). <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will develop and deliver Common XML net-enabled schemas. - Will continue developing and releasing periodic configuration control processes. - Will continue technical outreach processes for new GSIN data consumers and providers. - Will deliver new GSIN capabilities to match evolving DISA Enterprise Service updates. - Will continue development of new and improved data services. - Will complete development of MASINT Project 3 (including operational testing and fielding activities). - Will complete and test schema changes for TPY-2 SSA and data service updates (TPY-2 Spiral 4). | | | |
| Accomplishments/Planned Programs Subtotals | 5.803 | 3.470 | 3.549 |

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

N/A

Remarks

E. Acquisition Strategy

GSIN uses existing government contract vehicles (from agencies such as Missile Defense Agency (MDA) or Air Force Life Cycle Management Center (AFLCMC)) to develop and modernize the combined Space Situational Awareness/Missile Warning/Missile Defense data exposure architecture and solution. The contracts are managed by the relevant organizations contracting office. GSIN does not award or manage any contracts.

The Air Force Life Cycle Management Center at Hanscom AFB, (AFLCMC/HB) provides necessary program management, financial management, and other support as may be applicable for GSIN.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0301112F / <i>Nuclear Planning and Execution System (NPES)</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | 0.000 | 0.000 | 4.060 | 4.371 | 0.000 | 4.371 | 17.043 | 26.573 | 30.719 | 31.348 | 6.060 | 120.174 |
| 673768: <i>Nuclear Planning and Execution System (NPES)</i> | 0.000 | 0.000 | 4.060 | 4.371 | 0.000 | 4.371 | 17.043 | 26.573 | 30.719 | 31.348 | 6.060 | 120.174 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | - | - |

Program MDAP/MAIS Code: 523

A. Mission Description and Budget Item Justification

In FY17 Nuclear Planning and Execution System (NPES) PE 0301112F was a new start.

United States Strategic Command (USSTRATCOM) conducts global operations in partnership with other combatant commands, services and U.S. government agencies to deter and detect strategic attacks against the United States. USSTRATCOM is responsible for command of U.S. nuclear capabilities, space operations, global surveillance and reconnaissance, intelligence, communications, computers, global missile defense and combatting weapons of mass destruction. To enable completion of these missions, it is recapitalizing the Nuclear Planning and Execution System (NPES). NPES is a Chairman, Joint Chiefs of Staff system for nuclear operations and fulfillment of Nuclear Command and Control (NC2) responsibilities. NPES supports national strategic deterrence by providing a host of NC2 execution activities as well as contingency and crisis action planning capabilities to selected joint and combatant command staffs. NPES is operated by USSTRATCOM and other specified users performing missions to deter and dissuade threats, and, when directed, defeat adversaries.

The NPES system has evolved from several single-purpose command and control systems over the past 30 years and has reached a point where it requires recapitalization to meet national and strategic objectives and to comply with future concepts of operation. Additionally, recapitalization is needed to improve cybersecurity, system effectiveness, and supportability. Recapitalization will also seek to lower the total cost of ownership and sustainment. The modernization program will use proven/mature software engineering, technologies, and design tenets to provide a modern, secure, interoperable and reliable Nuclear Command and Control(NC2) software capability.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0301112F I Nuclear Planning and Execution System (NPES) |
|---|--|

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 4.060 | 4.358 | 0.000 | 4.358 |
| Current President's Budget | 0.000 | 4.060 | 4.371 | 0.000 | 4.371 |
| Total Adjustments | 0.000 | 0.000 | 0.013 | 0.000 | 0.013 |
| • 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 | 0.013 | 0.000 | 0.013 |

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Title: Nuclear Planning and Execution System (NPES) Modernization | 0.000 | 4.060 | 4.371 |
| Description: The NPES program will use proven and mature software engineering, technologies, and design tenets to provide a modern, secure, interoperable and reliable Nuclear Command and Control (NC2) capability for USSTRATCOM and other users as appropriate. It will update and/or replace existing system software and improve reliability and sustainability. It will also seek to reduce total ownership cost. | | | |
| FY 2016 Accomplishments: N/A | | | |
| FY 2017 Plans: Risk Reduction Activities will outline the software architecture for development activities and identify the software build and evaluation approach for NPES modernization. - Refine System / Subsystem Design Description (SSDD) draft - Conduct software reuse analysis - Evaluate user interface and data integration prototypes - Generate program milestone decision products and artifacts - Complete Preliminary Design Review preparation - Support RFP development - Conduct technical studies and analyses in support of software development | | | |
| FY 2018 Plans: Risk reduction activities will evaluate interface prototypes and source selection. | | | |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 030112F / <i>Nuclear Planning and Execution System (NPES)</i> |
|--|--|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| - Evaluate graphical user interface prototype - Generate program milestone decision products and artifacts - Support source selection process - Complete RFP development - Conduct technical studies and analyses in support of software development | | | |
| Accomplishments/Planned Programs Subtotals | 0.000 | 4.060 | 4.371 |

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

| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| • OPAF: BA03: Line Item #833140: <i>Strategic Command and Control</i> | 0.000 | 0.000 | 2.330 | 0.000 | 2.330 | 2.294 | 2.334 | 2.376 | 2.419 | Continuing | Continuing |

Remarks
 In FY18, PE 0303255F, Service Support to STRATCOM-C4, Project 833140, partial funding was transferred to PE 030112F, Nuclear Planning and Execution (NPES), for better transparency.

E. Acquisition Strategy
 NPES will develop, test, and field a renewed Nuclear Command and Control (NC2) capability for combatant commanders using an evolutionary (Spirals) acquisition approach with development contracts that are negotiated and awarded in a competitive environment. Additionally, select government agencies will be used to conduct relevant analyses and provide other required support.

The Air Force Life Cycle Management Center at Hanscom AFB, (AFLCMC/HB) and the 55th CONS at Offutt AFB will be the contracting authorities for NPES and provide necessary program management, contracts, legal, and financial management support.

F. Performance Metrics
 Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 030112F / Nuclear Planning and Execution System (NPES) | Project (Number/Name) 673768 / Nuclear Planning and Execution System (NPES) |
|--|---|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 Milestone B Risk Reduction | TBD | Various : Offutt AFB, NE | 0.000 | 0.000 | | 1.502 | Jun 2017 | 1.361 | Jan 2018 | 0.000 | | 1.361 | 0.000 | 2.863 | - |
| Primary Development | C/TBD | Various : Offutt AFB, NE | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 94.706 | 94.706 | - |
| Development Suites & Infrastructure | TBD | Various : Offutt AFB, NE | 0.000 | 0.000 | | 0.000 | | 0.687 | Feb 2018 | 0.000 | | 0.687 | 3.908 | 4.595 | - |
| Subtotal | | | 0.000 | 0.000 | | 1.502 | | 2.048 | | 0.000 | | 2.048 | 98.614 | 102.164 | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Technical Engineering Services | Various | Various : Offutt AFB, NE | 0.000 | 0.000 | | 1.285 | Jan 2017 | 1.038 | Jan 2018 | 0.000 | | 1.038 | 5.067 | 7.390 | - |
| Subtotal | | | 0.000 | 0.000 | | 1.285 | | 1.038 | | 0.000 | | 1.038 | 5.067 | 7.390 | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Certification and Accreditation | TBD | Various : Offutt AFB, NE | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 1.170 | 1.170 | - |
| Subtotal | | | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 1.170 | 1.170 | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 : Offutt AFB, NE | 0.000 | 0.000 | | 1.273 | Jan 2017 | 1.285 | Jan 2018 | 0.000 | | 1.285 | 6.791 | 9.349 | - |
| Subtotal | | | 0.000 | 0.000 | | 1.273 | | 1.285 | | 0.000 | | 1.285 | 6.791 | 9.349 | - |

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|--|--------------------|----------------|--|---------------------|--------------------|----------------------|---|-------------------|---------------------------------|--|--|
| Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force | | | | | | | Date: May 2017 | | | | |
| Appropriation/Budget Activity 3600 / 7 | | | R-1 Program Element (Number/Name) PE 0301112F / Nuclear Planning and Execution System (NPES) | | | | Project (Number/Name) 673768 / Nuclear Planning and Execution System (NPES) | | | | |
| | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract | | |
| Project Cost Totals | 0.000 | 0.000 | 4.060 | 4.371 | 0.000 | 4.371 | 111.642 | 120.073 | - | | |

Remarks

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0301112F / Nuclear Planning and Execution System (NPES) | Project (Number/Name) 673768 / Nuclear Planning and Execution System (NPES) |

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|---|---------|---|---|---|----------------------|---|---|---|---------|---|---|---|----------------------|---|---|---|----------------------|---|---|---|----------------------|---|---|---|----------------------|---|---|---|
| | 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 |
| Pre Milestone B Risk Reduction Analyses | | | | | ████████████████████ | | | | | | | | | | | | | | | | | | | | | | | |
| Development RFP Release Decision Point | | | | | | | | | ██ | | | | | | | | | | | | | | | | | | | |
| Milestone B Decision (Dec 2019) | | | | | ██ | | | | | | | | | | | | | | | | | | | | | | | |
| Spiral 1 Development and Test | | | | | | | | | | | | | ████████████████████ | | | | | | | | | | | | | | | |
| Spiral 2 Development and Test | | | | | | | | | | | | | | | | | ████████████████████ | | | | | | | | | | | |
| Spiral 3 Development and Test | | | | | | | | | | | | | | | | | | | | | ████████████████████ | | | | | | | |
| Spiral 4 Development and Test | | | | | | | | | | | | | | | | | | | | | | | | | ████████████████████ | | | |
| Post IOC Enhancements | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0301112F / <i>Nuclear Planning and Execution System (NPES)</i> | Project (Number/Name) 673768 / <i>Nuclear Planning and Execution System (NPES)</i> |

Schedule Details

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Pre Milestone B Risk Reduction Analyses | 1 | 2017 | 4 | 2018 |
| Development RFP Release Decision Point | 1 | 2018 | 1 | 2018 |
| Milestone B Decision (Dec 2019) | 2 | 2017 | 2 | 2017 |
| Spiral 1 Development and Test | 2 | 2019 | 4 | 2020 |
| Spiral 2 Development and Test | 4 | 2020 | 2 | 2021 |
| Spiral 3 Development and Test | 2 | 2021 | 1 | 2022 |
| Spiral 4 Development and Test | 4 | 2021 | 4 | 2022 |
| Post IOC Enhancements | 2 | 2022 | 4 | 2022 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0301400F / <i>Space Superiority Intelligence</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 13.965 | 13.880 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 67A051: <i>Space Superiority - Advanced Intelligence Systems</i> | - | 13.965 | 13.880 | 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

In FY2018, PE 0301400F, Space Superiority Intelligence efforts were transferred to PE 1203400F, Space Superiority Intelligence due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203400F.

| B. Program Change Summary (\$ in Millions) | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 13.965 | 13.880 | 0.000 | 0.000 | 0.000 |
| Total Adjustments | 13.965 | 13.880 | 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 | 13.965 | 13.880 | 0.000 | 0.000 | 0.000 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0301401F / Air Force Space and Cyber Non-Traditional ISR for Battlespace Awareness |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 0.000 | 0.000 | 3.721 | 0.000 | 3.721 | 6.683 | 3.602 | 2.930 | 3.208 | Continuing | Continuing |
| 67A051: Space Superiority - Advanced Intelligence Systems | - | 0.000 | 0.000 | 3.721 | 0.000 | 3.721 | 6.683 | 3.602 | 2.930 | 3.208 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

This program, BA 07 PE 0301401F, project 67A051, Cross Domain Tactical OPIR Processing, is a new start.

Air Force Space and Cyber Non-Traditional Intelligence, Surveillance & Reconnaissance (ISR) for Battlespace Awareness PE 0301401F – P-40A
 Cross Domain Overhead Persistent Infrared (OPIR): Cross Domain Tactical OPIR Processing delivers a mechanism providing reach-back support for battlespace awareness functions and manages the timely transfer of newly developed tools to operational users.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 0.000 | 0.000 | 3.721 | 0.000 | 3.721 |
| Total Adjustments | 0.000 | 0.000 | 3.721 | 0.000 | 3.721 |
| • 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 | 3.721 | 0.000 | 3.721 |

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

| | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> |
|---|----------------|----------------|----------------|
| Title: Cross Domain OPIR | - | - | 2.400 |
| Description: Cross Domain OPIR delivers a mechanism providing reach-back support for battlespace awareness functions and manages the timely transfer of newly developed tools to operational users; specifically by developing tools & tradecraft on a | | | |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

| | |
|---|---|
| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0301401F I Air Force Space and Cyber Non-Traditional ISR for Battlespace Awareness |
|---|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| flexible architecture allowing easy integration of new capabilities into air component operations and by providing advanced "state of art" algorithms and tools for the warfighter FY 2018 Plans: Cross Domain OPIR delivers a mechanism providing reach-back support for battlespace awareness functions and manages the timely transfer of newly developed tools to operational users; specifically by developing tools & tradecraft on a flexible architecture allowing easy integration of new capabilities into air component operations and by providing advanced "state of art" algorithms and tools for the warfighter. | | | |
| Title: TAC OPIR Processing Description: Tactical OPIR processing is comprised of software development, controlled multi-level security interface, dissemination and core maintenance support providing data access and processing services to a robust and flexible architecture network to operational users. FY 2018 Plans: Tactical OPIR processing is comprised of software development, controlled multi-level security interface, dissemination and core maintenance support providing data access and processing services to a robust and flexible architecture network to operational users. | - | - | 1.321 |
| Accomplishments/Planned Programs Subtotals | - | - | 3.721 |

| D. Other Program Funding Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| Line Item • N/A: N/A | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - |

Remarks

E. Acquisition Strategy
N/A

F. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0302015F I E-4B National Airborne Operations Center (NAOC) |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|-------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 76.760 | 30.948 | 35.467 | 0.000 | 35.467 | 13.283 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 674777: E-4B Aircraft Modernization | - | 76.760 | 30.948 | 35.467 | 0.000 | 35.467 | 13.283 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note
 FY18 E-4B Recapitalization efforts are executed under PE0604288F Project 646507 BA4.

A. Mission Description and Budget Item Justification

The four (4) aircraft E-4B National Airborne Operations Center (NAOC) fleet satisfies the military need for an airborne operations center with communications capabilities permitting military and civilian leadership to monitor and control military and civil national assets during all phases of conflict (nuclear and non-nuclear) or natural disaster. The E-4B NAOC fleet also satisfies the military requirement to provide a highly survivable node of the National Military Command System (NMCS).

This program's developmental modifications include, but are not limited to, upgrades and enhancements to aircraft structures, propulsion system, fuel system, environmental control system, electrical generation and distribution systems, flight safety and navigation systems (with their associated communications equipment). Additionally, modifications may enhance the aircraft's operations center facilities, to include but not limited to those necessary for the Senior Leadership Command, Control and Communications System (SL3CS), National Leadership Command Capability (NLCC), Nuclear Command, Control, and Communications (NC3) and other communications necessary for the E-4B fleet to execute its mission. Funds may also be used to explore and develop modifications, upgrades, and future systems required to meet evolving mission requirements. Developmental modifications and studies/projects currently underway or planned for accomplishment under this program include:

- The Advanced Extremely High Frequency (AEHF) Compatible Terminal/ Presidential National Voice Conferencing (PNVC) Program integrates AEHF Compatible Command Post Terminals and PNVC capability onto the E-4B NAOC platform. This integration is necessary to replace the legacy Military Strategic, Tactical and Relay (MILSTAR) terminal, and provide access to protected wideband AEHF satellite networks. PNVC replaces the Survivable Emergency Conferencing Network (SECN), which will not be supported once the AEHF satellite network is in place.
- The Low Frequency Transmit System (LFTS) program replaces the currently installed Very Low Frequency/Low Frequency (VLF/LF) Transmit system, which is no longer sustainable after over 35 years of operation. In order to meet existing Presidential Policy Directive (PPD)-35 requirements and ensure there is assured connectivity between civilian and military leadership and military forces during real world situations, this system must be replaced. The transmit system consists of three primary equipment groups: a Control/Monitor group, a Power Amplifier/Coupler (PA/C) group, and a Trailing Wire Antenna (TWA) group.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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|--|--|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0302015F / <i>E-4B National Airborne Operations Center (NAOC)</i> |
|--|--|

This program element may include necessary civilian pay expenses required to manage, execute, and deliver E-4 weapon system capability

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 76.760 | 30.948 | 20.563 | 0.000 | 20.563 |
| Current President's Budget | 76.760 | 30.948 | 35.467 | 0.000 | 35.467 |
| Total Adjustments | 0.000 | 0.000 | 14.904 | 0.000 | 14.904 |
| • 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 | 14.904 | 0.000 | 14.904 |

Change Summary Explanation

FY18 funding increased by a total of \$14.904M, with adjustment to the AEHF/PNVC (\$11.442M) & LFTS (\$21.288M) modernization programs and the transfer of E-4B Recap funds (\$17.827M) to PE0604288F Project 646507 BA4.

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| Title: Advanced Extremely High Frequency (AEHF) Compatible Terminal/Presidential National Voice Capability (PNVC) | 24.660 | 5.233 | 15.438 | 0.000 | 15.438 |
| Description: Integrate AEHF Compatible Terminal/PNVC capability onto the E-4B NAOC platform, to replace the existing MILSTAR/SECN system. | | | | | |
| FY 2016 Accomplishments: | | | | | |
| - Conducted full year of design and development efforts, to include non-recurring engineering, development of parts and labor for a systems integration lab, early prototyping, and some hardware qualification testing. | | | | | |
| - Completed risk reduction studies and awarded development contract. | | | | | |
| - Developed integrated system to install capability onto first aircraft. | | | | | |
| - Conducted a System Requirements Review (SRR) and prepared for Preliminary Design Review (PDR). | | | | | |
| FY 2017 Plans: | | | | | |
| - Conduct PDR and Critical Design Review (CDR). | | | | | |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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|--|--|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0302015F / <i>E-4B National Airborne Operations Center (NAOC)</i> |
|--|--|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|---------|---------|--------------|-------------|---------------|
|---|---------|---------|--------------|-------------|---------------|

| | | | | | |
|--|--|--|--|--|--|
| <ul style="list-style-type: none"> - Continue integration activities to include interface design and development of A-kit wiring harnesses. - Begin planning for prototype install in depot. <p>FY 2018 Base Plans:</p> <ul style="list-style-type: none"> - Prepare for Milestone C decision, including determining entrance/exit criteria, update to Acquisition Strategy and draft Capabilities Production Document; continue efforts in preparation of installation and testing of prototype kit onto aircraft. <p>FY 2018 OCO Plans: N/A</p> | | | | | |
|--|--|--|--|--|--|

| | | | | | |
|---|--------|--------|--------|-------|--------|
| <p>Title: E-4B Low Frequency Transmit System (LFTS)</p> <p>Description: Replaces the E-4B's legacy Very Low Frequency/Low Frequency (VLF/LF) Transmit System, which is over 35 years old and is past its useful life. This capability is required to comply with Presidential Policy Directive (PPD)-35 to ensure there is assured connectivity between civilian and military leadership and military forces during all stages of conflict and/or national emergencies.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Continued design and development efforts, to include non-recurring engineering, development of parts and labor for a systems integration lab, early prototyping, and some hardware qualification testing. - Conducted PDR. - Conducted CDR and prepared for Material Readiness Review (MRR). - Purchased prototype kit, test equipment, and RDT&E support equipment in preparation for FY18 installation and testing. <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Continue development efforts which include assembly, delivery and integration testing of prototype kit in preparation for FY18 installation and activities. Prepare for and conduct Milestone C. <p>FY 2018 Base Plans:</p> <ul style="list-style-type: none"> - Install prototype kit and conduct last activities leading up to production contract award. <p>FY 2018 OCO Plans: N/A</p> | 51.950 | 17.794 | 20.029 | 0.000 | 20.029 |
|---|--------|--------|--------|-------|--------|

| | | | | | |
|--|-------|-------|-------|-------|-------|
| <p>Title: E-4B Recapitalization</p> | 0.150 | 7.921 | 0.000 | 0.000 | 0.000 |
|--|-------|-------|-------|-------|-------|

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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|--|--|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0302015F / <i>E-4B National Airborne Operations Center (NAOC)</i> |
|--|--|

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

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|---------|---------|--------------|-------------|---------------|
| <p>Description: Recapitalization efforts include those activities related the replacement of the current E-4B NAOC fleet. Efforts will involve early acquisition activities, to include but not limited to, preparation for a Materiel Development Decision (MDD), an Analysis of Alternatives (AoA), development of initial requirements/acquisition strategy, risk reduction activities, and other efforts necessary to initiate a recapitalization program.</p> <p>FY 2016 Accomplishments: - Initiated requirements development.</p> <p>FY 2017 Plans: - Initiate requirements development. - Conduct pre-AoA risk reduction activities to include E-4B Sustainment Study and Concept of Operations (CONOPS) development. - Continue concept generation and acquisition strategy development.</p> <p>FY 2018 Base Plans: Effort moved to PE 0604288F, NAOC Recap Development.</p> <p>FY 2018 OCO Plans: N/A</p> | | | | | |
| Accomplishments/Planned Programs Subtotals | 76.760 | 30.948 | 35.467 | 0.000 | 35.467 |

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| • RDT&E: PE0604288F BA04: <i>National Airborne Operations Center (NAOC) Recap</i> | 0.000 | 0.000 | 7.850 | 0.000 | 7.850 | 9.813 | 19.696 | 101.772 | 136.513 | Continuing | Continuing |
| • APAF: BA05: Line Item # E00400: <i>E-4B Nat Airborne Ops Center (NAOC)</i> | 22.071 | 53.348 | 30.493 | 0.000 | 30.493 | 57.551 | 52.462 | 24.304 | 7.960 | Continuing | Continuing |
| • APAF: BA05: Line Item # 833140: <i>Worldwide Joint Strategic Communication</i> | 0.700 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 | 11.975 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0302015F / <i>E-4B National Airborne Operations Center (NAOC)</i> |
|--|--|

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • APAF: BA06: Line Item # 000999: <i>Initial Spares/Repair Parts</i> | 0.000 | 5.338 | 1.072 | 0.000 | 1.072 | 1.070 | 0.335 | 0.342 | 0.349 | Continuing | Continuing |

Remarks

E. Acquisition Strategy

Acquisition Strategy: The acquisition strategy for each specific modification differs based on the urgency of the requirement, definition of the capability, and technology readiness level of the components.

Management Strategy: Program management for all aircraft modifications is executed by The Commercial Derivative Aircraft program office at Tinker AFB. The Program Executive Officer (PEO) for Mobility provides management oversight.

Contracting Strategy: Contracting strategy differs for each individual modification, but normally includes an initial engineering study contract followed by a development contract. Production installations and sustainment are typically accomplished with the E-4B Contractor Logistics Support (CLS) contract.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0302015F / E-4B National Airborne Operations Center (NAOC) | Project (Number/Name) 674777 / E-4B Aircraft Modernization |
|--|---|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| AEHF Compatible Terminal-Risk Study 2 | C/CPFF | Raytheon : Largo, FL | - | 0.810 | Oct 2015 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | 2.489 |
| AEHF/PNVC Integration | C/CPFF | Raytheon : Largo, FL | - | 23.781 | Dec 2016 | 5.233 | Aug 2017 | 15.438 | Nov 2017 | 0.000 | | 15.438 | Continuing | Continuing | 44.471 |
| LFTS Development | SS/CPIF | Boeing : OKC, OK | - | 51.750 | Dec 2015 | 17.794 | Dec 2016 | 20.029 | Nov 2017 | 0.000 | | 20.029 | Continuing | Continuing | 103.857 |
| E-4B Recapitalization | TBD | TBD : TBD | - | 0.150 | Nov 2016 | 7.921 | Apr 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Subtotal | | | - | 76.491 | | 30.948 | | 35.467 | | 0.000 | | 35.467 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 (Travel, Support) | Various | Various : TBD | - | 0.269 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Subtotal | | | - | 0.269 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | - | - | - |

| | | | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|--|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| Project Cost Totals | | | - | 76.760 | 30.948 | 35.467 | 0.000 | 35.467 | - | - | - |

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|--|------------------------|----------------|--|-------------------------|------------------------|--|-----------------------------|-----------------------|---|--|
| Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force | | | | | | | Date: May 2017 | | | |
| Appropriation/Budget Activity 3600 / 7 | | | R-1 Program Element (Number/Name) PE 0302015F / E-4B National Airborne Operations Center (NAOC) | | | Project (Number/Name) 674777 / E-4B Aircraft Modernization | | | | |
| | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract | |

Remarks
 FY18 E-4B Recapitalization efforts include those activities related to the replacement of the E-4B NAOC fleet, and are executed under PE0604288F Project 646507 BA4.

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0302015F / E-4B National Airborne Operations Center (NAOC) | Project (Number/Name) 674777 / E-4B Aircraft Modernization |

Schedule Details

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| AEHF Compatible Terminal/PNVC Risk Reduction | 1 | 2016 | 4 | 2016 |
| AEHF Compatible Terminal/PNVC Integration | 1 | 2017 | 4 | 2020 |
| AEHF Compatible Terminal/PNVC Milestone Decision B | 1 | 2017 | 1 | 2017 |
| AEHF Compatible Terminal/PNVC PDR | 1 | 2018 | 1 | 2018 |
| AEHF Compatible Terminal/PNVC CDR | 1 | 2018 | 1 | 2018 |
| AEHF Compatible Terminal/PNVC Integration DT | 3 | 2019 | 3 | 2019 |
| AEHF Compatible Terminal/PNVC Milestone Decision C | 1 | 2019 | 1 | 2019 |
| LFTS Modification Design and Development | 1 | 2016 | 2 | 2017 |
| LFTS Modification PDR | 1 | 2016 | 1 | 2016 |
| LFTS Modification CDR | 2 | 2016 | 2 | 2016 |
| LFTS Modification Integration and Testing | 1 | 2017 | 3 | 2019 |
| LFTS Modification Milestone Decision C | 3 | 2017 | 3 | 2017 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date: May 2017**

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| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0303001F / Family of Advanced BLoS Terminals (FAB-T) |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 12.313 | 52.578 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 672490: Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) | - | 12.313 | 52.578 | 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

In FY2018, PE 0303001F, Family of Advanced BLoS Terminals (FAB-T) efforts were transferred to PE 1203001F, Family of Advanced BLoS Terminals (FAB-T) due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203001F.

B. Program Change Summary (\$ in Millions)

| | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|-------------------------------------|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 12.313 | 52.578 | 0.000 | 0.000 | 0.000 |
| Total Adjustments | 12.313 | 52.578 | 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 | 12.313 | 52.578 | 0.000 | 0.000 | 0.000 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

| | |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 92.036 | 47.471 | 48.841 | 0.000 | 48.841 | 82.603 | 52.532 | 46.828 | 6.248 | Continuing | Continuing |
| 672832: <i>MEECN System Improvements</i> | - | 20.233 | 0.903 | 0.923 | 0.000 | 0.923 | 0.937 | 0.955 | 0.973 | 0.994 | Continuing | Continuing |
| 672835: <i>Common VLF/LF Receiver Inc 2</i> | - | 1.485 | 15.545 | 22.526 | 0.000 | 22.526 | 64.702 | 46.519 | 40.707 | 0.000 | Continuing | Continuing |
| 676029: <i>Global Aircrew Strategic Network Terminal</i> | - | 67.282 | 19.835 | 10.026 | 0.000 | 10.026 | 0.162 | 0.044 | 0.047 | 0.048 | Continuing | Continuing |
| 676030: <i>Global ASNT Inc 2</i> | - | 3.036 | 11.188 | 15.366 | 0.000 | 15.366 | 16.802 | 5.014 | 5.101 | 5.206 | Continuing | Continuing |

A. Mission Description and Budget Item Justification

Nuclear Deterrence Operations (NDO) is an Air Force Core Function. Within this core function, Nuclear Command and Control (NC2) is the exercise of authority and direction by the President, as Commander in Chief, through established command lines, over nuclear weapon operations of military forces. The President's authority and direction are exercised through the Nuclear Command and Control System (NCCS). The NCCS is the designated combination of flexible and enduring elements including facilities, equipment, communications, procedures, personnel, and the structure in which these elements are integrated, all of which are essential for planning, directing, and controlling nuclear weapon operations.

The Minimum Essential Emergency Communications Network (MEECN) portfolio modernizes the systems necessary to effectively provide assured communications connectivity between the President and the strategic deterrence forces in stressed environments.

MEECN System Improvements (MSI) is a long-range planning process with users (Air Force Global Strike Command (AFGSC), Air Combat Command (ACC), Air Force Space Command (AFSPC), Air Mobility Command (AMC), Air Force Special Operations Command (AFSOC), US Strategic Command (USSTRATCOM), and the Navy) to monitor and assess the performance of Nuclear Command, Control, and Communications (NC3) systems and develop recommendations for current and future strategic and tactical architectures, requirements, and issues based on available and emerging technologies. MSI is used to conduct technology testing; analyze technology strategies; conduct requirement trade space analysis, technology maturation and risk reduction efforts, and mission analysis; and build technology roadmaps as proactive support to the NC3 community. MSI performs analysis, integration, and testing activities for the NC3 Weapon System.

Common Very Low Frequency/Low Frequency (VLF/LF) Receiver (CVR) Increment 2 (CVR Inc 2) will deliver a survivable, beyond-line-of-sight path for Emergency Action Message (EAM) reception. The intent of CVR Inc 2 is to develop and produce a common VLF/LF receiver, capable of implementing an interoperable waveform, to integrate into current and future airborne and ground based platforms, improve system performance, and reduce supportability costs through commonality. The program will also lead the development of the Uniform MEECN Mode (UMM) waveform also expected to be used by the United States Navy.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i> |
|--|---|

Global Aircrew Strategic Network Terminal (Global ASNT) replaces inadequate, unsustainable strategic communications equipment at bomber, tanker and reconnaissance Wing Command Posts (WCPs), Nuclear Task Forces, Munitions Support Squadrons (MUNSS), and for Mobile Support Teams (MSTs). Global ASNT is a ground-based system that will provide survivable, secure communication paths to receive Emergency Action Messages (EAMs), Force Management messages, and Force Direction messages and disseminate them to bomber, tanker, and reconnaissance aircrews.

Global ASNT is being fielded in separate capability increments. Global ASNT Increment 1 (Inc 1) includes early system engineering support for the planning and development for the future Global ASNT Increments.

Global ASNT Inc 1 fields required Extremely High Frequency/Advanced Extremely High Frequency (EHF/AEHF) capabilities and replaces inadequate, unsustainable strategic mobile and fixed-site Single Channel Anti-jam Man-Portable (SCAMP) terminals and Secure, Mobile, Anti-Jam, Reliable, Tactical – Terminal (SMART-T) equipment.

Global ASNT Increment 2 delivers a replacement Aircrew Alerting System (AAS) consisting of personal and general alerting equipment, and High Frequency (HF) and Ultra High Frequency (UHF) capabilities. Increment 2 replaces inadequate, unsustainable Electromagnetic Pulse Hardened Dispersal Communication (EHDC) systems and Aircrew Alerting Communications Electromagnetic Pulse (AACE) systems.

This program is in Budget Activity 07, Operational System Development, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal years.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 74.712 | 47.471 | 74.680 | 0.000 | 74.680 |
| Current President's Budget | 92.036 | 47.471 | 48.841 | 0.000 | 48.841 |
| Total Adjustments | 17.324 | 0.000 | -25.839 | 0.000 | -25.839 |
| • 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 | 19.839 | 0.000 | | | |
| • SBIR/STTR Transfer | -2.515 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | -25.839 | 0.000 | -25.839 |

Change Summary Explanation

FY16 funding increased by \$19.339M for BPAC 672832 to stand up NC3 Program Executive Officer (PEO) and by \$0.500M for CVR Inc 2 BPAC 672835.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force Date: May 2017

Appropriation/Budget Activity
3600: *Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development*

R-1 Program Element (Number/Name)
PE 0303131F / *Minimum Essential Emergency Communications Network (MEECN)*

FY18 funding request increased by \$9.4M for Global ASNT Inc 1 to complete development due to Critical Design Review (CDR) technical delays. \$35.314M CVR Inc 2 funding rephased to FY21.

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i> | | | | Project (Number/Name) 672832 / <i>MEECN System Improvements</i> | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 672832: <i>MEECN System Improvements</i> | - | 20.233 | 0.903 | 0.923 | 0.000 | 0.923 | 0.937 | 0.955 | 0.973 | 0.994 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

MEECN System Improvements (MSI) is a long-range planning process with users (Air Force Global Strike Command (AFGSC), Air Combat Command (ACC), Air Force Space Command (AFSPC), Air Mobility Command (AMC), Air Force Special Operations Command (AFSOC), US Strategic Command (USSTRATCOM), and the Navy) to monitor and assess the performance of Nuclear Command, Control, and Communications (NC3) systems and develop recommendations for current and future strategic and tactical architectures, requirements, and issues based on available and emerging technologies. MSI is used to conduct technology testing; analyze technology strategies; conduct requirement trade space analysis, technology maturation and risk reduction efforts, and mission analysis; and build technology roadmaps as proactive support to the NC3 enterprise. MSI performs analysis, integration, and testing activities for the NC3 Weapon System.

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

| | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Title: MEECN System Improvements | 20.233 | 0.903 | 0.923 |
| Description: Conduct Nuclear Command, Control, and Communications (NC3) technology testing, integrate the NC3 Weapon System, build comprehensive technology strategies and roadmaps. Conduct VLF/LF tradeoff analysis. Deliver results of analytic tasks in an annual NC3 report. | | | |
| FY 2016 Accomplishments: Refreshed NC3 Architecture Roadmap Conducted integration and test planning for the NC3 Weapon System Performed VLF/LF coverage analysis Tested Transverse Electric/Transverse Magnetic (TE/TM) antenna performance Performed Electromagnetic Interference (EMI) coverage impact analysis Conducted antenna obsolescence investigation Continued model improvement efforts Established AFNWC NC3 Integration Directorate Assessed AF NC3 WS integration status Identified, planned and developed AF NC3 WS analysis, integration, and testing activities Consolidated and expanded upon previously stove-piped management of the weapon system | | | |
| FY 2017 Plans: | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i> | Project (Number/Name) 672832 / <i>MEECN System Improvements</i> |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Continue to refresh NC3 Architecture Roadmap Analyze ground and bomber coverage and connectivity performance Assess impact of NC3 concepts on aircraft refueling requirements Perform technology maturation and risk reduction activities in support of the NC3 enterprise Continue planning and initiate integration, analysis, and testing activities for NC3 WS Continue assessment of NC3 weapon system Develop AF NC3 WS test plans | | | |
| <i>FY 2018 Plans:</i> Continue to refresh NC3 Architecture Roadmap Analyze VLF/LF timing Conduct NC3 Connectivity Assessment Perform technology maturation and risk reduction activities in support of the NC3 enterprise | | | |
| Accomplishments/Planned Programs Subtotals | 20.233 | 0.903 | 0.923 |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| • None: <i>None</i> | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 | 0.000 |

Remarks

D. Acquisition Strategy
MSI will continue to evaluate the performance of the NC3 Weapon System, by assessing performance and technology areas for improvement with the assistance of expert technical support from FFRDCs, UARCs, and may include competitively awarded technical support contracts with industry. Johns Hopkins University/Applied Physics Laboratory will support NC3 Weapon System Architecture Roadmap updates.

E. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|----------------|--|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i> | | | | | Project (Number/Name) 672835 / <i>Common VLF/LF Receiver Inc 2</i> | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 672835: <i>Common VLF/LF Receiver Inc 2</i> | - | 1.485 | 15.545 | 22.526 | 0.000 | 22.526 | 64.702 | 46.519 | 40.707 | 0.000 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note
This program, BA 07 PE 0303131F, project 672835, CVR Inc. 2, is an FY17 new start (\$15.545M).

A. Mission Description and Budget Item Justification

Common Very Low Frequency/Low Frequency (VLF/LF) Receiver (CVR) Increment 2 (CVR Inc 2) will deliver a survivable, beyond-line-of-sight path for Emergency Action Message (EAM) reception. The intent of CVR Inc 2 is to develop and produce a common VLF/LF receiver, capable of implementing an interoperable waveform, for future platform integration to include airborne and ground based nodes, improve system performance, and reduce supportability costs through commonality. The program will also lead development of the Unified MEECN Mode (UMM) waveform.

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

| | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Title: CVR Inc 2 | 1.485 | 15.545 | 22.526 |
| Description: Pre-Milestone B Activities | | | |
| FY 2016 Accomplishments: Initiated pre-development and upfront system engineering activities Initiated program office stand-up | | | |
| FY 2017 Plans: Continue pre-development and upfront system engineering activities Perform requirements and technology analysis and market research Develop new VLF/LF waveform standard Perform inspection/modification of Waveguide Integrated Series of Programs (WISP) model Conduct VLF/LF antenna characterization performance assessment Begin Validated Online Lifecycle Threat (VOLT) Assessment. Issue Broad Agency Announcement (BAA) and provide responses to AFGSC Establish VLF/LF and UMM working groups Complete Materiel Development Decision (MDD) and obtain Acquisition Decision Memorandum (ADM) Work towards UMM Waveform Reference Architecture | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i> | Project (Number/Name) 672835 / <i>Common VLF/LF Receiver Inc 2</i> |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Work on Milestone B Documentation Build-out program office to appropriate size Continue program office stand-up <i>FY 2018 Plans:</i> Develop acquisition strategy in preparation for Milestone B Draft system requirements documentation and validate requirements Continue work on UMM VLF/LF waveform standard Conduct Platform Interface Assessments Plan for and participate in AFGSC High Performance Team (HPT) Complete BAA Continue to develop Milestone B documentation | | | |
| Accomplishments/Planned Programs Subtotals | 1.485 | 15.545 | 22.526 |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
| • APAF: BA03 Line Item # 672835: CVR Inc 2 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 3.795 | 45.677 | 52.022 | Continuing | Continuing |

Remarks

D. Acquisition Strategy
CVR Inc 2 will use a full and open competitive source selection to award an EMD contract for increment 2. CVR Inc 2 will use a competitive approach to fulfill the overall requirements of the program.

E. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

| | | |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i> | Project (Number/Name) 672835 / <i>Common VLF/LF Receiver Inc 2</i> |
|--|---|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| CVR Inc 2 - Early Development | Various | Various : TBD | - | 1.105 | May 2017 | 12.847 | Jul 2017 | 14.646 | Feb 2018 | 0.000 | | 14.646 | Continuing | Continuing | - |
| UMM Development | TBD | TBD : TBD | - | 0.000 | | 0.600 | Jun 2017 | 0.600 | Jun 2018 | 0.000 | | 0.600 | Continuing | Continuing | - |
| Subtotal | | | - | 1.105 | | 13.447 | | 15.246 | | 0.000 | | 15.246 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| GFE | Various | Not specified : TBD | - | 0.000 | | 0.000 | | 2.292 | Jun 2018 | 0.000 | | 2.292 | Continuing | Continuing | - |
| Subtotal | | | - | 0.000 | | 0.000 | | 2.292 | | 0.000 | | 2.292 | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Government Test Planning | TBD | Not Specified : TBD | - | 0.000 | | 0.000 | | 0.354 | Feb 2018 | 0.000 | | 0.354 | Continuing | Continuing | - |
| Subtotal | | | - | 0.000 | | 0.000 | | 0.354 | | 0.000 | | 0.354 | - | - | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| PSC (Eng/Acq Spt/Travel/IMPAC) | Various | Various : TBD | - | 0.042 | Oct 2016 | 1.760 | Jun 2017 | 2.822 | Oct 2017 | 0.000 | | 2.822 | Continuing | Continuing | - |
| PSC - MITRE | SS/CPFF | MITRE : Bedford, MA | - | 0.338 | Nov 2016 | 0.338 | May 2017 | 1.812 | Oct 2017 | 0.000 | | 1.812 | Continuing | Continuing | - |
| Subtotal | | | - | 0.380 | | 2.098 | | 4.634 | | 0.000 | | 4.634 | - | - | - |

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i> | Project (Number/Name) 672835 / <i>Common VLF/LF Receiver Inc 2</i> |

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| Early Systems Engineering | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Requirements Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Matériel Development Decision (MDD) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RFP Release | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Milestone B Decision | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Contract Award | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Engineering and Manufacturing Development (EMD) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i> | Project (Number/Name) 672835 / <i>Common VLF/LF Receiver Inc 2</i> |

Schedule Details

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Early Systems Engineering | 4 | 2016 | 1 | 2019 |
| Requirements Development | 1 | 2017 | 3 | 2018 |
| Materiel Development Decision (MDD) | 3 | 2017 | 3 | 2017 |
| RFP Release | 1 | 2019 | 1 | 2019 |
| Milestone B Decision | 3 | 2019 | 3 | 2019 |
| Contract Award | 2 | 2020 | 2 | 2020 |
| Engineering and Manufacturing Development (EMD) | 2 | 2020 | 4 | 2022 |

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|---|--------------------|----------------|----------------|---|--------------------|----------------------|----------------|---|----------------|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i> | | | | Project (Number/Name) 676029 / <i>Global Aircrew Strategic Network Terminal</i> | | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 676029: <i>Global Aircrew Strategic Network Terminal</i> | - | 67.282 | 19.835 | 10.026 | 0.000 | 10.026 | 0.162 | 0.044 | 0.047 | 0.048 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

Global ASNT replaces inadequate, unsustainable strategic communications equipment at bomber, tanker and reconnaissance Wing Command Posts (WCPs), Nuclear Task Forces, Munitions Support Squadrons (MUNSS), and for Mobile Support Teams (MSTs). Global ASNT is a ground-based system that will provide survivable, secure communication paths to receive Emergency Action Messages (EAMs), Force Management messages, and Force Direction messages and disseminate them to bomber, tanker, and reconnaissance aircrews.

Global ASNT is being fielded in separate capability increments. Global ASNT Increment 1 (Inc 1) includes early system engineering support for the planning and development for the future Global ASNT Increments.

Global ASNT Inc 1 fields required Extremely High Frequency/Advanced Extremely High Frequency (EHF/AEHF) capabilities and replaces inadequate, unsustainable strategic mobile and fixed-site Single Channel Anti-jam Man-Portable (SCAMP) terminals and Secure, Mobile, Anti-Jam, Reliable, Tactical – Terminal (SMART-T) equipment.

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

| | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Title: Global ASNT Inc 1 | 67.282 | 19.835 | 10.026 |
| Description: Engineering & Manufacturing Development (EMD) | | | |
| FY 2016 Accomplishments: Continued development of EHF and AEHF integration of modem, cryptographic equipment, software development, antenna integration Initiated contractor integration of system level hardware and software Prepared for Government Developmental Testing/Operational Testing (DT/OT) in advance of Milestone C Initiated MS C documentation and implemented Engineering Change Orders (ECOs) Conducted satellite network simulations and associated MITRE Lab analytic activities through Direct Mission Support (DMS)/ Program Support Costs (PSC) | | | |
| FY 2017 Plans: Complete Contractor integration and test of system level hardware and software | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i> | Project (Number/Name) 676029 / <i>Global Aircrew Strategic Network Terminal</i> |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Continue preparation for Government Developmental Testing/Operational Testing (DT/OT) for Milestone C Continue MS C documentation and Engineering Change Orders (ECOs) Continue satellite network simulations and associated MITRE lab analytic activities through DMS/PSC | | | |
| <i>FY 2018 Plans:</i> Complete Government Developmental Testing/Operational Testing (DT/OT) in preparation for Milestone C. Resolve any Deficiency Reports (DRs) identified in DT/OT testing Complete MS C documentation and Engineering Change Orders (ECOs) Complete satellite network simulations and associated MITRE lab analytic activities through DMS/PSC | | | |
| Accomplishments/Planned Programs Subtotals | 67.282 | 19.835 | 10.026 |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|---|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| • OPAF: BA03: Line item # 834210: <i>Global ASNT Inc 1</i> | 5.232 | 198.925 | 0.292 | 0.000 | 0.292 | 172.062 | 11.912 | 0.000 | 12.347 | Continuing | Continuing |

Remarks

D. Acquisition Strategy
Global ASNT used a full and open competitive approach to award an EMD contract for Increment 1. Global ASNT will continue to use a competitive incremental approach to fulfill the overall requirements for Increments 2 and 3.

E. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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| Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force | | | | | | | | | | | Date: May 2017 | | | | |
| Appropriation/Budget Activity 3600 / 7 | | | | R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i> | | | | | Project (Number/Name) 676029 / <i>Global Aircrew Strategic Network Terminal</i> | | | | | | |

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Global ASNT Inc 1 - Engineering & Manufacturing Development | C/FPIF | Raytheon : Marlborough, MA | - | 44.046 | Oct 2015 | 19.095 | Jun 2017 | 1.210 | Mar 2018 | 0.000 | | 1.210 | Continuing | Continuing | - |
| Global ASNT Inc 1 - Satellite Simulations | SS/FFP | MIT/Lincoln Laboratory : Lexington, MA | - | 2.955 | Nov 2015 | 0.000 | | 1.636 | Oct 2017 | 0.000 | | 1.636 | Continuing | Continuing | - |
| Subtotal | | | - | 47.001 | | 19.095 | | 2.846 | | 0.000 | | 2.846 | - | - | - |

Remarks

- Raytheon Global ASNT Inc 1 EMD contract is an incrementally funded continuing effort on the existing contract.

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Global ASNT Inc 1 - MITRE Lab | SS/CPFF | MITRE : Bedford, MA | - | 0.694 | Oct 2015 | 0.000 | | 0.303 | Oct 2017 | 0.000 | | 0.303 | Continuing | Continuing | - |
| Global ASNT Inc 1 - Software Support | Various | Various : TBD | - | 5.557 | Oct 2015 | 0.000 | | 0.831 | Mar 2018 | 0.000 | | 0.831 | Continuing | Continuing | - |
| Global ASNT Inc 1 - GFE | Various | Various : TBD | - | 0.002 | Aug 2016 | 0.002 | May 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Subtotal | | | - | 6.253 | | 0.002 | | 1.134 | | 0.000 | | 1.134 | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Global ASNT Inc 1 - Government Test and Evaluation | Various | Various : TBD | - | 2.662 | Nov 2015 | 0.000 | | 0.986 | Jan 2018 | 0.000 | | 0.986 | Continuing | Continuing | - |

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i> | Project (Number/Name) 676029 / <i>Global Aircrew Strategic Network Terminal</i> |

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|------------|--|------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Global ASNT Inc 1 - Engineering and Manufacturing Development | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Global ASNT Inc 1 - Test | | | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | |
| Global ASNT Inc 1 - Milestone C Decision | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Global ASNT Inc 1 - Production and Deployment | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Global ASNT Inc 1 - IOC | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Global ASNT Inc 1 - Interim Contractor Support | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i> | Project (Number/Name) 676029 / <i>Global Aircrew Strategic Network Terminal</i> |

Schedule Details

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Global ASNT Inc 1 - Engineering and Manufacturing Development | 1 | 2016 | 2 | 2019 |
| Global ASNT Inc 1 - Test | 4 | 2016 | 1 | 2019 |
| Global ASNT Inc 1 - Milestone C Decision | 2 | 2019 | 2 | 2019 |
| Global ASNT Inc 1 - Production and Deployment | 2 | 2019 | 4 | 2022 |
| Global ASNT Inc 1 - IOC | 4 | 2020 | 4 | 2020 |
| Global ASNT Inc 1 - Interim Contractor Support | 2 | 2020 | 4 | 2022 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i> | | | | | Project (Number/Name) 676030 / <i>Global ASNT Inc 2</i> | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost | |
| 676030: <i>Global ASNT Inc 2</i> | - | 3.036 | 11.188 | 15.366 | 0.000 | 15.366 | 16.802 | 5.014 | 5.101 | 5.206 | Continuing | Continuing | |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | | |

A. Mission Description and Budget Item Justification

Global ASNT replaces inadequate, unsustainable strategic communications equipment at bomber, tanker and reconnaissance Wing Command Posts (WCPs), Nuclear Task Forces, Munitions Support Squadrons (MUNSS), and for Mobile Support Teams (MSTs). Global ASNT is a ground-based system that will provide survivable, secure communication paths to receive Emergency Action Messages (EAMs), Force Management messages, and Force Direction messages and disseminate them to bomber, tanker, and reconnaissance aircrews.

Global ASNT is being fielded in separate capability increments.

Global ASNT Increment 2 delivers a replacement Aircrew Alerting System (AAS) consisting of personal and general alerting equipment, and High Frequency (HF) and Ultra High Frequency (UHF) capabilities. Increment 2 replaces inadequate, unsustainable Electromagnetic Pulse Hardened Dispersal Communication (EHDC) systems and Aircrew Alerting Communications Electromagnetic Pulse (AACE) systems.

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

| | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Title: Global ASNT Inc 2 | 3.036 | 11.188 | 15.366 |
| Description: Pre-Milestone B Activities | | | |
| FY 2016 Accomplishments: Completed development and system engineering activities in preparation for Milestone B Initiated draft of drafting system requirements documentation Initiated acquisition strategy development in preparation for Milestone B Completed draft of system requirements documentation and validation process | | | |
| FY 2017 Plans: Continue pre-development and system engineering activities in preparation for Milestone B Continue to develop system requirements documentation Develop EMD Phase request for proposal (RFP) Develop acquisition strategy in preparation for Milestone B Complete system requirements documentation and validate requirements | | | |
| FY 2018 Plans: | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i> | Project (Number/Name) 676030 / <i>Global ASNT Inc 2</i> |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Finalize documentation for Request for Proposal (RFP) release | | | |
| Review proposal submissions and engage in Source Selection/Technical Evaluation Activities | | | |
| Complete preparation for Milestone B and Contract Award | | | |
| Accomplishments/Planned Programs Subtotals | 3.036 | 11.188 | 15.366 |

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

| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| • OPAF: BA03: Line item # 834210: <i>Global ASNT Inc 2</i> | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 13.112 | 25.477 | 13.590 | Continuing | Continuing |

Remarks

D. Acquisition Strategy

Global ASNT used a full and open competitive approach to award an EMD contract for Increment 1. Global ASNT will continue to use a competitive incremental approach to fulfill the overall requirements for Increments 2 and 3.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i> | Project (Number/Name) 676030 / <i>Global ASNT Inc 2</i> |
|--|---|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Global ASNT Inc 2 - Pre Milestone B Activities | TBD | Not specified. : TBD | - | 0.000 | | 7.300 | Jul 2017 | 11.705 | Sep 2018 | 0.000 | | 11.705 | Continuing | Continuing | - |
| Subtotal | | | - | 0.000 | | 7.300 | | 11.705 | | 0.000 | | 11.705 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Global ASNT Inc 2 - MITRE Lab | Various | MITRE : Bedford, MA | - | 0.000 | | 0.236 | Jul 2017 | 0.243 | Nov 2017 | 0.000 | | 0.243 | Continuing | Continuing | - |
| Global ASNT Inc 2 - GFE | Various | Various : TBD | - | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Subtotal | | | - | 0.000 | | 0.236 | | 0.243 | | 0.000 | | 0.243 | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Global ASNT Inc 2 - Test Planning | Various | Various : TBD | - | 0.040 | Oct 2016 | 0.160 | Jul 2017 | 0.208 | Jan 2018 | 0.000 | | 0.208 | Continuing | Continuing | - |
| Subtotal | | | - | 0.040 | | 0.160 | | 0.208 | | 0.000 | | 0.208 | - | - | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Global ASNT Inc 2 - PSC (Eng/Acq Support, Travel) | Various | Various : TBD | - | 0.860 | Oct 2016 | 0.772 | Jun 2017 | 1.831 | Nov 2017 | 0.000 | | 1.831 | Continuing | Continuing | - |
| Global ASNT Inc 2 - PSC (MITRE) | SS/CPFF | MITRE : Bedford, MA | - | 2.136 | Jan 2017 | 2.720 | Sep 2017 | 1.379 | Sep 2018 | 0.000 | | 1.379 | Continuing | Continuing | - |

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i> | Project (Number/Name) 676030 / <i>Global ASNT Inc 2</i> |
|--|---|---|

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | 2.996 | | 3.492 | | 3.210 | | 0.000 | | 3.210 | - | - | - |
| Project Cost Totals | | | - | 3.036 | | 11.188 | | 15.366 | | 0.000 | | 15.366 | - | - | - |

Remarks
 FY17 funding was decreased by \$7.3M due to congressional mark as a result of contract award delay.

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i> | Project (Number/Name) 676030 / <i>Global ASNT Inc 2</i> |

Schedule Details

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Global ASNT Inc 2 Pre-Milestone B Activities | 1 | 2016 | 3 | 2018 |
| Global ASNT Inc 2 - Release Request for Proposal | 1 | 2018 | 1 | 2018 |
| Global ASNT Inc 2 - Milestone B Decision | 4 | 2018 | 4 | 2018 |
| Global ASNT Inc 2 - Contract Award | 1 | 2019 | 1 | 2019 |
| Global ASNT Inc 2 - Engineering and Manufacturing Development | 1 | 2019 | 1 | 2021 |
| Global ASNT Inc 2 - Preliminary Design Review (PDR) | 2 | 2019 | 2 | 2019 |
| Global ASNT Inc 2 - Critical Design Review (CDR) | 4 | 2019 | 4 | 2019 |
| Global ASNT Inc 2 - Test | 4 | 2019 | 1 | 2021 |
| Global ASNT Inc 2 - Milestone C Decision | 1 | 2021 | 1 | 2021 |
| Global ASNT Inc 2 - Production & Deployment | 1 | 2021 | 4 | 2022 |
| Global ASNT Inc 2 - IOC | 4 | 2022 | 4 | 2022 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 44.578 | 46.388 | 42.973 | 0.000 | 42.973 | 34.871 | 30.010 | 11.239 | 12.469 | Continuing | Continuing |
| 674861: <i>EKMS (Electronic Key Management System)</i> | - | 0.516 | 0.922 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.438 |
| 675100: <i>Cryptographic Modernization</i> | - | 29.453 | 38.729 | 39.712 | 0.000 | 39.712 | 33.407 | 30.010 | 11.239 | 12.469 | Continuing | Continuing |
| 675231: <i>AF Key Management Infrastructure (AF KMI)</i> | - | 14.609 | 6.737 | 3.261 | 0.000 | 3.261 | 1.464 | 0.000 | 0.000 | 0.000 | 0.000 | 26.071 |

A. Mission Description and Budget Item Justification

The Information Systems Security Program (ISSP) Element provides cradle-to-grave research, development, acquisitions, supply, sustainment, depot maintenance, and demilitarization of the Air Force (AF) cryptographic and key distribution/management systems (known as the Key Management Enterprise (KME)). Additionally, ISSP funds the AF operation of its AF KME, one of two Department of Defense (DoD) Tier 1 key distribution centers. ISSP delivers on rising national, DoD, and AF priorities to address cybersecurity threats and increasing warfighter dependence on cyberspace. The AF and the DoD require the capability to secure, collect, process, store, and disseminate an uninterrupted flow of information, while denying an adversary the ability to intercept, collect, destroy, interpret, or manipulate our information flows. Secure communication allows the DoD to achieve and maintain decision superiority, the key to successful application of the military instrument of national power in modern, high-tempo, full spectrum operations. AF Communications Security (COMSEC) equipment protects information such as warfighter positions, mission planning, target strikes, commanders' orders, intelligence, force strength, and force readiness and ensures adversaries cannot interpret, manipulate, or destroy information. When an adversary is capable of interpretation, manipulation, or destruction of the information used by the warfighter, DoD military forces will suffer significant and/or devastating mission degradation that can result in loss of life and resources and/or exceptionally grave damage to national security.

The overall focus of the Research, Development, Test, and Evaluation (RDT&E) efforts within this program is to transform electronic key delivery and cryptographic devices to meet the next generation warfighting requirements. These efforts are driven by the National Security Agency's (NSA) mandates to address decertifications, new requirements, and end of life issues. NSA's first tenet calls for an AF KME that permits a totally "man-out-of-the-loop" electronic crypto key distribution system from the generation of the key in the key processor all the way into the using End Crypto Unit (ECU). This eliminates the current key vulnerability of compromise/interruption by individuals transporting or loading the key. NSA's second tenet requires an inventory of cryptographic devices that are more robust, modular, scalable, capable, net-centric, and durable. This enables more effective and efficient performance including reduced inventory, expanded data rates, simplified upgrades, lower life cycle costs, and ensured global information grid-compatibility.

This program is in Budget Activity 7, Operational System Development, as these budget activities include development efforts, including the AF KME, to upgrade systems currently fielded or have approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i> |
|--|---|

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 46.303 | 46.388 | 36.477 | 0.000 | 36.477 |
| Current President's Budget | 44.578 | 46.388 | 42.973 | 0.000 | 42.973 |
| Total Adjustments | -1.725 | 0.000 | 6.496 | 0.000 | 6.496 |
| • 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 | -1.725 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 6.496 | 0.000 | 6.496 |

Change Summary Explanation

Increase in FY18 funding to support crypto modernization requirements.

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i> | | | | Project (Number/Name) 674861 / <i>EKMS (Electronic Key Management System)</i> | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 674861: <i>EKMS (Electronic Key Management System)</i> | - | 0.516 | 0.922 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.438 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The Air Force Electronic Key Management System (AFEKMS) consists of multiple developments supporting the Air Force requirements portion of the DoD EKMS Program. The National Security Agency (NSA) acts as the Executive Agent for the DoD EKMS Program. AFEKMS, as part of the AF Key Management Enterprise (KME) and in concert with the overarching DoD EKMS program, provides a secure and flexible capability for the electronic generation, distribution, accounting, and management of key material, with users across DoD Command, Control, Communications, Computers, and Intelligence (C4I) and all AF weapon systems. AFEKMS supports U.S. DoD Information Assurance. Information Assurance emphasizes confidentiality, access control, multi-level secure databases, trusted computing, and information integrity. DoD EKMS has a three-tier hierarchical structure. This tiered structure provides capability to distribute, manage, and account for COMSEC keying material. Tier 1 installations comprise the key material generation and control capability. Tier 2 installations comprise the local distribution network (COMSEC accounts) and Tier 3 is where keying material is transferred from the EKMS infrastructure to the consumers End Cryptographic Units (ECUs). Additionally, AFEKMS resources provide maintenance/distribution of AF Communications Security (COMSEC) publications for all AF users.

EKMS improves protection of national security-related information by substantially enhancing confidentiality, integrity, and non-repudiation characteristics over the legacy manual key management systems. EKMS has and continues to greatly accelerate availability of crypto key materials through electronic transmission via Public Switched Telephone Network (PSTN) versus the manual handling and shipping of materials. While the current EKMS level-of-effort is directed at enhancing current and developing systems, the ultimate goal is for it to seamlessly transition to the net-centric DoD Key Management Infrastructure (KMI). The AFEKMS Program continues to provide software development to support emerging requirements during the KMI transition period. Activities include studies and analysis to support both current program planning and execution as well as development activities to extend life of the Simple Key Loader to bridge the gap between EKMS and the KMI implementation.

NOTE: AF KME Software development (e.g., Data Management Device - DMD, Common User Application Software - CUAS, and Simple Key Loader - SKL) is rolled up into Tier 2/Tier 3 Development. Software upgrades can be bundled and tracked as a unit, thereby allowing less management overhead and more focus on configuration management and control.

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

| | | | |
|---|----------------|----------------|----------------|
| | FY 2016 | FY 2017 | FY 2018 |
| Title: Fill /Load Device Post Production SW Development | 0.516 | 0.922 | 0.000 |
| Description: AF KME Post Production software development focuses on extending life of EKMS through transition to Key Management Infrastructure (KMI) capabilities. This will be accomplished via the Intermediary Application (iApp) software and Tri-Service development of KOV-21 replacement chip through Communications-Electronics Research, Development and Engineering Center (CERDEC) by U.S. Army. The iApp is designed to include all major Data Management Device (DMD) | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i> | Project (Number/Name) 674861 / <i>EKMS (Electronic Key Management System)</i> |
|--|---|---|

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|---------|---------|---------|
| capabilities. The iApp is designed to meet certification and accreditation requirements and iApp user interface is designed for ease of adoption and minimal user training for EKMS DMD, Consolidated Tier 3 Testing Infrastructure (CETTI) User Application Software (UAS), and Simple Key Loader (SKL). The CERDEC effort develops a replacement KOV-21 Card for current Simple Key Loader (SKL) to extend life of SKL until KMI compatible key loader is available. | | | |
| <i>FY 2016 Accomplishments:</i> - Continued Post Production software for extending life of EKMS through transition to DOD-Level Key Management Infrastructure (KMI) capabilities | | | |
| <i>FY 2017 Plans:</i> - Continued Post Production software for extending life of EKMS through transition to DOD-Level Key Management Infrastructure (KMI) capabilities. | | | |
| <i>FY 2018 Plans:</i> - None. No investment activity. | | | |
| Accomplishments/Planned Programs Subtotals | 0.516 | 0.922 | 0.000 |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | | |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|------------|
| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To Complete</u> | <u>Total Cost</u> | |
| • OPAF:BA03: 831010: <i>COMSEC Equipment</i> | 4.991 | 10.509 | 9.127 | 0.000 | 9.127 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |

Remarks
Other Program Funding reflects Air Force Electronic Key Management System (AFEKMS) portion of Information Systems Security Program (ISSP) OPAF total.

D. Acquisition Strategy
Implement AF portion of the DoD's Cryptographic Modernization(CM) Initiative through modernization/modification efforts, in varying stages of the acquisition cycle, with focus on minimizing life cycle costs. All major contracts within this Project are open to full and open competition with technology knowledge, expertise, and prior experience on similar projects weighted heavily in the evaluation process.

E. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i> | | | | Project (Number/Name) 675100 / <i>Cryptographic Modernization</i> | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 675100: <i>Cryptographic Modernization</i> | - | 29.453 | 38.729 | 39.712 | 0.000 | 39.712 | 33.407 | 30.010 | 11.239 | 12.469 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The AF Cryptographic Modernization Effort modernizes cryptographic devices protecting critical national security information across cyber domain operations. In September 2000, the Defense Review Board (DRB) tasked National Security Agency (NSA) to evaluate the security posture of the cryptographic inventory. Systems with aging algorithms, those approaching non-sustainability, and those generally incompatible with modern key management systems were also identified and have been replaced or are in the process of being replaced. Priority systems that required immediate replacement were also identified. In addition, NSA documented the need to modernize the cryptographic inventory with capabilities designed to enable network-centric operations. Replacements/Modernization of the near term vulnerable systems must occur within the timeframe specified by device and algorithm in Chairman Joint Chiefs of Staff Notice (CJCSN) 6510. The DoD Cryptographic Modernization Program was established to develop a modern cryptographic base that provides this assured security robustness, interoperability, advanced algorithms, releasability, programmability, and compatibility with the future Key Management Infrastructure (KMI-See PE 0303140F, BPAC 67523, AF KMI for a full description). This AF effort supports an integrated effort across the cyber domain to transform to next-generation cryptographic capabilities. It provides U.S. forces and multinational and interagency partners the security needed to protect the flow and exchange of operational decision making information in accordance with national and international policy/standards, the validated operational requirements of the warfighters, and the intelligence communities.

The AF Cryptographic Modernization Effort is a collection of projects accomplished in three phases: replacement, modernization, and transformation. The replacement phase of the program focused on updating and/or replacing out-of-date algorithms along with unsustainable cryptographic products. The modernization phase provides crypto devices with common solutions that are more robust, modular, scalable, and provide the durability to existing cryptographic end items, as well as updating mid-term aging/unsupportable crypto equipment. Manpower and logistics requirements will be reduced and manpower efficiencies gained, while incremental capability enhancements and footprint reduction are provided. The third phase of the Cryptographic Modernization Program, transformation, provides common joint solutions which enable secure, transparent, network-centric capabilities across the cyber domain. Activities also include studies and analysis to support both current program planning/execution and future program planning.

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

| | | | |
|--|----------------|----------------|----------------|
| | FY 2016 | FY 2017 | FY 2018 |
| Title: VINSON/ANDVT Cryptographic Modernization (VACM) | 1.107 | 0.265 | - |
| Description: VINSON (VHF(Very High Frequency)/UHF(Ultra High Frequency) Wideband Tactical Secure Voice System Cryptographic Equipment)/ANDVT (Advanced Narrowband Digital Voice Terminal) Cryptographic Modernization (VACM) will develop and acquire cryptographic capability to replace the legacy capability on VINSON/ANDVT secure voice communications on aircraft, ships, and ground fixed and mobile platforms (Devices: KY-57/58, KY-99/100, KYV-5 and ARC-234 (with Embedded Crypto)). | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i> | Project (Number/Name) 675100 / <i>Cryptographic Modernization</i> | | |
| B. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>FY 2016 Accomplishments: Completed Force Development Evaluation</p> <p>FY 2017 Plans: Completed Force Development Evaluation</p> | | | | |
| <p>Title: Space Telemetry Tracking & Commanding (TT&C) Aerospace Vehicle Equipment Increment 1 (AVE Inc 1)</p> <p>Description: Space Telemetry Tracking & Commanding (TT&C) Aerospace Vehicle Equipment Increment 1 (AVE Inc 1) develops and delivers space qualified cryptographic products to satellite platforms for securing the TT&C link</p> <p>FY 2016 Accomplishments: - Completed development activities on Space TT&C AVE Inc 1 Carousel Cryptographic Engine (CCE) contract</p> | | 0.606 | - | - |
| <p>Title: Technology Development (TD)</p> <p>Description: Technical Development (TD) conducts concept development and early systems engineering activities to analyze evolving threats and Communications Security (COMSEC) capability gaps across AF and DoD mission areas. Develops, plans and executes foundational technology demonstration efforts to inform COMSEC requirements, build capability roadmaps and support cost estimates prior to Materiel Development Decision (MDD). Mitigates risk for thousands of AF and DoD users affected by algorithm security issues and ensures required security upgrades can be integrated into the AF and DoD enterprise. Works closely with NSA and other services to develop standards that increase security of communication and information products and facilitate efficient crypto and COMSEC enterprise management. Includes but is not limited to: Secure Micro-digital Data Link (SMDDL), Common Encryption Management (CEMENT), Remote Integrated Toolkit (REMIT), Distributed Common Ground System (DCGS) Crypto, Transmission Security (TRANSEC) modernization, Trusted Sensors, Crypto Enterprise Tracking (CET), Advanced Crypto Capabilities (ACC), Trusted Systems Network (TSN)/Supply Chain Risk Management (SCRM), Ground Operating Equipment (GOE) and MILSATCOM Crypto Mod (MCM).</p> <p>FY 2016 Accomplishments: - Completed development of common crypto management software for integration with Army CHIMERA effort to demonstrate the remote crypto management under CEMENT for disparate families of Internet Protocol (IP) encryptors - Continued analysis for the replacement or upgrade of 150,000 Air Force devices in support of the Advanced Cryptographic Capabilities (ACC) program - Continued analysis of TRANSEC capability gaps and initiate concept characterization study for requirements refinement</p> <p>FY 2017 Plans: - Continue analysis of TRANSEC capability gaps and CCTDs for requirements refinement</p> | | 3.086 | 0.250 | 0.269 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i> | Project (Number/Name) 675100 / <i>Cryptographic Modernization</i> |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| <ul style="list-style-type: none"> - Continue to refine analysis for the replacement or upgrade of 150,000 Air Force devices in support of the Advanced Cryptographic Capabilities (ACC) program - Continue to analyze parts obsolescence, determine crypto modernization requirements, and recommend specific materiel solutions - Assist CCSD Programs with developing their system security documentation (OPSEC Plans, Cybersecurity Plans, Security Classification Guidance (SCG), Integrated Threat Assessments (ITAs), Anti-Tamper Planning and Program Protection Planning. - Continue to evaluate Trusted Sensor candidate solutions for network intrusion detection and prevention. - Develop the necessary TSN processes to deliver a trusted system (integrating all source supply chain information, threat to risk methodologies, mapping of both SCRM Key Practices and RMF mitigations, risk strategies, and technical mitigations for both H/W and S/W). - Provide both counterfeit detection (H/W analysis) and Malware Analysis (S/W analysis). - Assist CCSD programs with TSN contract language and clauses to effectively acquire trusted systems. - Continue to refine analysis for the replacement or upgrade of Ground Operating Equipment (GOE) devices in support of the GOE Initiative and associated activities in support of preparation for Decision Point 2 (DP 2) - Conduct analysis for the replacement or upgrade of legacy MILSATCOM crypto devices in support of the MILSATCOM Crypto Modernization (MCM) Initiative and associated activities in support of preparation for Decision Point 1 (DP1) <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will provide technical guidance in support of ACC operational, testing and evaluation (OT&E) - Will analyze ACC impacts to AF users and provide technical guidance in support of user integration and test - Will refine development/acquisition strategies in support of REMIT phase 3 - Will continue support of AF DCGS network growth and provide technical support to the Program Office - Assist CCSD Programs with developing their system security documentation (OPSEC Plans, Cybersecurity Plans, Security Classification Guidance (SCG), Integrated Threat Assessments (ITAs), Anti-Tamper Planning and Program Protection Planning. - Develop the necessary TSN processes to deliver a trusted system (integrating all source supply chain information, threat to risk methodologies, mapping of both SCRM Key Practices and RMF mitigations, risk | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i> | Project (Number/Name) 675100 / <i>Cryptographic Modernization</i> | | |
| B. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>strategies, and technical mitigations for both H/W and S/W).</p> <ul style="list-style-type: none"> - Provide both counterfeit detection (H/W analysis) and Malware Analysis (S/W analysis). - Assist CCSD programs with TSN contract language and clauses to effectively acquire trusted systems. - Will refine development/acquisition strategies in support of GOE Initiative Materiel Development Decision (MDD) - Continue to refine analysis for the replacement or upgrade of legacy MILSATCOM crypto devices in support of the MCM Initiative and associated activities in support of preparation for Decision Point 2 (DP 2), as well as refinement of development/acquisition strategies in support of MCM Initiative MDD. | | | | |
| <p>Title: Mini Crypto (MC)</p> <p>Description: Mini Crypto (MC) is developing a Tactical Key Management (TKM) miniaturized cryptographic solution to protect Secret and Below (SaB) Command and Control (C2) and mission data for Size, Weight, and Power (SWaP) constrained platforms which currently have no cryptographic capability and transmit in the clear. MC's TKM solution has a self-generating key which removes the requirement for pre-placed keys and has the ability to add or remove users as tactical situation dictates.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Awarded EMD contract. - Completed Integrated Baseline Review (IBR) - Completed System Requirements Review (SRR)/System Functional Review (SFR) - Conducted Preliminary Design Review (PDR) - Delivered prototypes for initial test activities in support of integrated testing <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Continue to execute the EMD contract - Complete Critical Design Review (CDR) - Accept Production Representative Engineering Development Models (PREDMs) to support Government Integrated - Plan and execute Development/Operational Testing and Operational Assessment - Use PREDMs during this period for Security Verification Testing (SVT) as the program works toward NSA Type 1 Certification. - Update documentation for Milestone C <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Seek Milestone C approval from PEO - Begin operational testing | | 5.094 | 7.777 | 2.599 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i> | Project (Number/Name) 675100 / <i>Cryptographic Modernization</i> | | |
| B. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| - Prepare Engineering Change Proposals to address deficiencies identified in testing | | | | |
| <p>Title: Space Modular Common Crypto (SMCC)</p> <p>Description: Space Modular Common Crypto (SMCC) provides Information Assurance (IA) services for new satellite architectures via a family of common crypto solutions that integrate Tracking, Telemetry, & Commanding (TT&C), Mission Data (MD), and/or Transmission Security (TRANSEC) key stream functions for the Air Force and Intelligence Community space systems.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Continued Technology Maturation Risk Reduction (TMRR) activities - Achieved MS B in Nov 15 - Awarded SMCC AES-256 Crypto Engine (ACE) Common Solution (ACS) development contract in Apr 16 <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Continue TMRR and SMCC ACS development contract activities - Awarded SMCC Medium/Largesat Common Solution (MLCS) development contract in Feb 17 <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will ramp down TMRR activities - Will complete SMCC ACS development contract activities - Will continue SMCC MLCS development contract activities | | 11.955 | 28.052 | 34.837 |
| <p>Title: Algorithm Transition Compliance and Support</p> <p>Description: Supports AF Space Command (AF Cyber Core Function Lead) in Algorithm Transition Compliance and Support provides Information Assurance (IA) support that performs transition and governance efforts to effectively analyze 30 classified algorithms, thousands of associated COMSEC keying material short titles, and hundreds of equipment types. This effort also tracks and reports algorithm/device integration across the AF. Analysis determines and monitors mitigation strategies; develops and plans technology demonstration efforts to ensure new algorithms can be integrated into the AF enterprise. Assesses current state of AF crypto across the enterprise. Develops and maintains a classified CM database system that tracks status of AF crypto device types that is accessible by the CM community via SIPRNET. Efforts support NC3, ISR, all AF platforms, and most ground networks.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Supported algorithm transition and governance efforts to effectively track, analyze, and report on AF use of 30 classified algorithms in over 270,000 devices across the AF enterprise comprised of over 300 equipment types/families and requiring thousands of associated COMSEC keying material short titles | | 1.193 | 0.883 | 2.007 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i> | Project (Number/Name) 675100 / <i>Cryptographic Modernization</i> |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| <ul style="list-style-type: none"> - Continued analysis and development of a method and/or process to accurately transition, track, and manage crypto assets and COMSEC across the AF - Provided Crypto-Mod analysis database to AF community to assist in annual assessments during long term effort to develop enterprise capabilities based assessment (CBA) to identify management capability gaps - Conducted annual assessment of the state of the AF cryptographic enterprise - Continued to evaluate NSA recommendations for Advanced Cryptographic Capabilities suite of algorithms and identify related tasks which affect the AF <p><i>FY 2017 Plans:</i></p> <ul style="list-style-type: none"> - Continue to support algorithm transition and governance efforts to effectively track, analyze, and report on AF use of 30 classified algorithms in over 270,000 devices across the AF enterprise comprised of over 300 equipment types/families and requiring thousands of associated COMSEC keying material short titles - Continue analysis and development of a method and/or process to accurately transition, track, and manage crypto assets and COMSEC across the AF - Provide Crypto-Mod analysis database to AF community to assist in annual assessments during long term effort to develop enterprise capabilities based assessment (CBA) to identify management capability gaps - Conduct annual assessment of the state of the AF cryptographic enterprise - Continue to evaluate NSA recommendations for Advanced Cryptographic Capabilities suite of algorithms and identify related tasks which affect the AF <p><i>FY 2018 Plans:</i></p> <ul style="list-style-type: none"> - Will continue to analyze the AF Crypto and Cyber enterprise and provide situational awareness to significant risks related to aging inventory and vulnerabilities to the key exchange process - Will provide assessment of Commercial Solutions for Classified (CSfC) and Quantum Resistance Encryption impacts | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i> | Project (Number/Name) 675100 / <i>Cryptographic Modernization</i> | | |
| B. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| - Will continue to provide analysis of adequacy of COMSEC and Cyber products in support of NSA requirements, sustainment issues and the state of technology | | | | |
| <p>Title: Missile Electronic Encryption Device (MEED) Modification</p> <p>Description: The MEED Modification upgrades the legacy Missile Entry Control System (MECS) devices used to securely authenticate personnel attempting access to this Nation's ground-based Intercontinental Ballistic Missile (ICBM) facilities. This effort will bring the MEED equipment into compliance with current NSA information assurance (IA) security design guidance.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Awarded MEED Modification EMD contract (First Quarter FY16) <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Continue to execute the EMD FFP contract - Complete Operational Testing - Release Production RFP for Production contract | | 4.886 | 1.402 | - |
| <p>Title: Classified Data At Rest (CDAR)</p> <p>Description: CDAR plans to develop and procure an NSA approved modernized cryptographic solution(s) for use in ISR, C2, and EW platforms exposed to hostile/uncontrolled environments. The enterprise cryptographic solution will encrypt/decrypt Top Secret and Below (TSAB) data at rest residing in a variety of data storage environments.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Continued early systems engineering activities to include market research, platform requirements investigation, studies and analysis, and concept exploration and refinement for potential CDAR solutions <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Complete early systems engineering and concept development activities leading to Materiel Development Decision (MDD) - Conduct material solution analysis and complete Analysis of Alternatives (AoA) | | 0.616 | 0.000 | - |
| <p>Title: Integrated Data Denial (IDD) Crypto</p> <p>Description: The United States Nuclear Detonation (NUDET) Detection System (USNDS) Program and Air Force Space Command have identified a need to replace the Integrated Data Denial (IDD) crypto devices within the USNDS architecture. The primary purpose of USNDS is to detect, locate, and report nuclear detonation in Earth's atmosphere or near space in near real time. IDD is a cryptographic component within the USNDS ground systems and is currently facing obsolescence issues.</p> <p>FY 2016 Accomplishments:</p> | | 0.910 | 0.100 | - |

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i> | Project (Number/Name) 675100 / <i>Cryptographic Modernization</i> |
|--|---|---|

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|---------|---------|---------|
| <ul style="list-style-type: none"> - Initiative Integrated Product Team (IIPT) formed to refine IDD program objectives, submit funding requirements, conduct studies and analyses, perform risk assessment - Collaborated with SMC/GPGN (USNDS SPO and supported customer) and AFSPC/A5C and CYSS/CYZ to validate IDD modification requirement <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Continue to analyze parts obsolescence, determine crypto modernization requirements, and recommend specific materiel solution - Conduct IDD Modernization Materiel Development Decision (MDD) - Brief Acquisition Strategy Panel (ASP) | | | |
| Accomplishments/Planned Programs Subtotals | 29.453 | 38.729 | 39.712 |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
| • OPAF: BA03: 831010: <i>COMSEC Equipment</i> | 30.538 | 21.775 | 17.780 | 0.000 | 17.780 | 21.957 | 16.550 | 24.034 | 0.000 | Continuing | Continuing |

Remarks
Remarks: Other Program Funding reflects Crypto Modernization (CM) portion of Information Systems Security Program (ISSP) OPAF total.

D. Acquisition Strategy
Implement AF portion of the DoD's Cryptographic Modernization(CM) Initiative through modernization/modification efforts, in varying stages of the acquisition cycle, with focus on minimizing life cycle costs. The CM portfolio of component acquisition projects is executing using a variety of approaches that vary from an evolutionary acquisition strategy using spiral development (for new component development) to incremental improvement leveraging leading-edge, certified non-developmental items (for modernization). Contract type is selected for each of the individual projects based upon its acquisition approach and its unique technology risks. A mixture of fixed-price and cost-reimbursement contracts have been selected which maximize the best value for the Government.

E. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i> | Project (Number/Name) 675100 / <i>Cryptographic Modernization</i> |
|--|---|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| VINSON/ANDVT Cryptographic Modernization (VACM) | C/CPIF | Raytheon Company : Ft Wayne, IN | - | 0.992 | Dec 2017 | 0.240 | Dec 2017 | 0.000 | | 0.000 | | 0.000 | 0.000 | 1.232 | 47.863 |
| VINSON/ANDVT/ Cryptographic Modernization (ARC-234) | MIPR | Defense Microelectronic Activity : Sacramento, CA | - | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.000 | 32.737 |
| Space Telemetry, Tracking & Commanding (TT&C) Aerospace Vehicle Equipment (AVE Inc 1) | C/CPFF | General Dynamics C4 Systems : Scottsdale, AZ | - | 0.235 | May 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Tech Development | Various | MULTIPLE : MULTIPLE | - | 1.369 | Jan 2016 | 0.250 | Jan 2017 | 0.269 | Jan 2018 | 0.000 | | 0.269 | Continuing | Continuing | - |
| Mini Crypto | C/CPIF | VIASAT, INC : Carlsbad, CA | - | 4.380 | Oct 2015 | 6.359 | Apr 2017 | 1.717 | Apr 2018 | 0.000 | | 1.717 | 0.000 | 12.456 | - |
| Space Modular Common Crypto (SMCC) | C/CPIF | MULTIPLE : MULTIPLE | - | 7.082 | Apr 2016 | 23.766 | Feb 2017 | 27.166 | Dec 2017 | 0.000 | | 27.166 | Continuing | Continuing | - |
| Missile Electronic Encryption Device (MEED) Modernization | C/FFP | SAIC : Tampa, FL | - | 3.323 | Feb 2016 | 0.472 | Aug 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Algorithm Transition, Compliance and Support | C/TBD | MULTIPLE : MULTIPLE | - | 0.000 | | 0.183 | Apr 2017 | 0.189 | Apr 2017 | 0.000 | | 0.189 | Continuing | Continuing | - |
| Integrated Data Denial (IDD) Crypto | C/TBD | MULTIPLE : MULTIPLE | - | 0.336 | Apr 2017 | 0.100 | Apr 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Subtotal | | | - | 17.717 | | 31.370 | | 29.341 | | 0.000 | | 29.341 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

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| Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force | | | | | | | | | | | | Date: May 2017 | | | |
|---|------------------------|--------------------------------|-------------|--|------------|---------|------------|--------------------------------------|------------|-------------|------------|----------------|------------------|------------|--------------------------|
| Appropriation/Budget Activity | | | | R-1 Program Element (Number/Name) | | | | Project (Number/Name) | | | | | | | |
| 3600 / 7 | | | | PE 0303140F / Information Systems Security Program | | | | 675100 / Cryptographic Modernization | | | | | | | |
| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 |
| VINSON/ANDVT Crypto Mod (VACM) | MIPR | MULTIPLE : MULTIPLE | - | 0.115 | Dec 2015 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.115 | 5.001 |
| Space Telemetry, Tracking & Commanding (TT&C) Aerospace Vehicle Equipment Increment 1 (AVE Inc 1) | Various | MULTIPLE : MULTIPLE | - | 0.330 | Nov 2015 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.330 | - |
| Mini Crypto | Various | MULTIPLE : MULTIPLE | - | 0.339 | Mar 2016 | 0.656 | Mar 2017 | 0.441 | Mar 2018 | 0.000 | | 0.441 | Continuing | Continuing | - |
| Space Modular Common Crypto (SMCC) | Various | MULTIPLE : MULTIPLE | - | 1.457 | Dec 2015 | 0.360 | Oct 2016 | 2.153 | Dec 2017 | 0.000 | | 2.153 | Continuing | Continuing | - |
| Missile Electronic Encryption Device (MEED) Modernization | MIPR | MULTIPLE : MULTIPLE | - | 0.554 | Jul 2016 | 0.234 | Feb 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Subtotal | | | - | 2.795 | | 1.250 | | 2.594 | | 0.000 | | 2.594 | - | - | - |
| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 (PMA) | Various | Various : Various | - | 8.941 | Dec 2015 | 6.109 | Dec 2016 | 7.777 | Dec 2017 | 0.000 | | 7.777 | Continuing | Continuing | - |
| Subtotal | | | - | 8.941 | | 6.109 | | 7.777 | | 0.000 | | 7.777 | - | - | - |
| Project Cost Totals | | | - | 29.453 | | 38.729 | | 39.712 | | 0.000 | | 39.712 | - | - | - |
| Remarks | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i> | Project (Number/Name) 675100 / <i>Cryptographic Modernization</i> |

Schedule Details

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Space Telemetry Tracking and Commanding (TT&C) Aerospace Vehicle Equipment Increment 1 (AVE Inc 1) | 1 | 2016 | 3 | 2016 |
| Technology Development (TD) | 1 | 2016 | 4 | 2022 |
| Mini Crypto (MC) | 1 | 2016 | 1 | 2018 |
| Space Modular Common Crypto (SMCC) | 1 | 2016 | 3 | 2019 |
| Algorithm Transition, Compliance and Information Assurance (IA) Support | 1 | 2016 | 4 | 2022 |
| Missile Electronic Encryption Device (MEED) Modernization | 1 | 2016 | 1 | 2018 |
| Classified Data at Rest (CDAR) | 1 | 2016 | 3 | 2021 |
| Integrated Data Denial (IDD) | 1 | 2016 | 4 | 2020 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i> | | | | Project (Number/Name) 675231 / <i>AF Key Management Infrastructure (AF KMI)</i> | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 675231: <i>AF Key Management Infrastructure (AF KMI)</i> | - | 14.609 | 6.737 | 3.261 | 0.000 | 3.261 | 1.464 | 0.000 | 0.000 | 0.000 | 0.000 | 26.071 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The Air Force Key Management Infrastructure (AF KMI) Program consists of multiple developments supporting the AF requirements/portion of the DoD Key Management Infrastructure (KMI). The National Security Agency (NSA) acts as the Executive Agent for the DoD KMI Program. AF KMI, in concert with this overarching DoD KMI Program, will provide a secure and flexible capability for the electronic generation, distribution, accounting, and management of key material and other communications security (COMSEC) materials for all DoD Command, Control, Communications, Computers, and Intelligence (C4I) systems and for the Services' weapon systems. KMI represents a broad-scale replacement of the current Electronic Key Management System (EKMS). KMI will provide capabilities that will allow networked operation in consonance with the AF Information Network and other DoD, fellow Service, and AF enterprise objectives. It thereby will assure a viable support infrastructure for future weapons and C4I programs to incorporate key management into their system designs.

The DoD KMI will greatly improve protection of national, security-related information by substantially enhancing confidentiality, integrity, and non-repudiation characteristics over the legacy EKMS. KMI will greatly accelerate the availability of crypto key materials through electronic transmission versus shipping of materials, will enhance mission responsiveness and flexibility, and will eventually take the man "out-of-the-loop" in the distribution of crypto key materials.

The AF KMI Program in concert with the DoD KMI Program is transitioning the Air Force from the legacy EKMS to modern DoD KMI and building the AF KMI Last Mile architecture. This Research and Development effort includes system engineering, development and testing to successfully implement the AF KMI Last Mile architecture as part of the AF Key Management Enterprise (KME). The AF KMI Last Mile program is a holistic solution integrating the legacy and new and evolving cryptographic programs, materials, products, sources and consumers. The AF KMI Last Mile capabilities include as part of the AF KME distribution, management, and load of cryptographic materials from the KMI (COMSEC account) to the end cryptographic unit (ECU). It builds the linkage interfaces that will allow KMI systems to communicate and integrates other related developments to meet operational needs. AF KMI Last Mile is currently in the Development Phase. Activities also include studies and analysis to support both current program planning and execution and future program planning.

In parallel with AF KMI, DoD and the Services are addressing the need for a new generation of future KMI-aware ECU that will be capable of direct interaction with the DoD KMI Enterprise, under the Joint Crypto Modernization Initiative (PE0303140F, BPAC 675100, Cryptographic Modernization, supports this initiative). In some cases these new ECUs, although needing to be supported by KMI, will not be KMI network-connected. "Last mile" transport of black (aka benign, or encrypted) and red (unencrypted) keying material from a KMI client to a new generation ECU or current legacy ECU will need to be handled in the early years by one of two data transfer devices. Initial early systems engineering must also be addressed to accommodate future connectivity between the DoD KMI and future KMI Aware/Enabled ECUs. This enabling form factor functionally defined as a common ECU KMI aware/enabled key load module. This is targeted to be a standardized module to be provided to ECU developers and, as such, it must precede any future ECU developments.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i> | Project (Number/Name) 675231 / <i>AF Key Management Infrastructure (AF KMI)</i> | | |
| B. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>Title: Air Force KMI Last Mile Space & Naval Warfare Systems Command (SPAWAR) Support(Tier 3)</p> <p>Description: Support includes architectural planning, systems engineering, testing and studies and analyses for migration to the Key Management Infrastructure (KMI) (includes acquisition planning, systems integration, engineering support and System Program Office (SPO) support). Transitioned existing key management capabilities to AF KMI Last Mile Tier 3.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Continued to provide annual resources to SPAWAR to plan and execute specific profiles testing for all Air Force ECUs - Initiated Management Station Application (MS App) development based upon the existing Intermediary Application (iApp) software <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Continue to provide annual resources to SPAWAR to plan and execute specific profile testing for all Air Force ECUs - Continue MS App development based upon the existing iAPP software <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will continue to provide annual resources to SPAWAR to plan and execute specific profile testing for all Air Force ECUs - Will integrate and test MS App with existing Tier 3 key loaders. | | 1.637 | 2.116 | 3.261 |
| <p>Title: Air Force KMI Last Mile (Tier 3)</p> <p>Description: Air Force KMI Last Mile Tier 3 early system engineering, risk reduction and engineering development to include: concept development for distribution, load and management elements of last mile; studies and analyses for technology possibilities and prototyping efforts for the last mile; and development of a certified KMI-aware, Product Delivery Enclave - enabled key load device.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Achieved Critical Design Review for the Portable Key Loader (PKL) EMD contract <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - PKL contract terminated for convenience. <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Contract terminated in FY17. | | 12.972 | 4.621 | 0.000 |
| Accomplishments/Planned Programs Subtotals | | 14.609 | 6.737 | 3.261 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i> | Project (Number/Name) 675231 / <i>AF Key Management Infrastructure (AF KMI)</i> |

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> | <u>FY 2018</u> | <u>FY 2018</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> | |
|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|-------------------|
| | | | <u>Base</u> | <u>OCO</u> | <u>Total</u> | | | | | <u>Complete</u> | <u>Total Cost</u> |
| • OPAF: BA03: 831010: <i>COMSEC Equipment</i> | 4.452 | 4.148 | 8.679 | 0.000 | 8.679 | 9.805 | 11.242 | 11.277 | 12.932 | Continuing | Continuing |

Remarks

Remarks: Other Program Funding reflects AF Key Management Infrastructure (KMI) portion of Information Systems Security Program (ISSP) OPAF total.

D. Acquisition Strategy

Implement AF portion of the DoD's Cryptographic Modernization (CM) Initiative through modernization/modification efforts, in varying stages of the acquisition cycle, with focus on minimizing life cycle costs. All major contracts within this project are open to full and open competition with technology knowledge, expertise, and prior experience on similar projects weighted heavily in the evaluation process.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0303141F / <i>Global Combat Support System</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 0.000 | 0.052 | 0.105 | 0.000 | 0.105 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 675046: <i>Systems Engineering & Integration</i> | - | 0.000 | 0.052 | 0.105 | 0.000 | 0.105 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

Enterprise Protection Risk Management (EPRM) is an automated risk management framework to assess and mitigate cyber and other threats to Air Force information technology and mission assets. This capability eliminates stove pipes and provides commanders with better situational awareness of vulnerabilities. Additionally, this capability promotes efficiency and sound resource allocation by enabling commanders to make better decisions when selecting risk reduction counter measures.

This program is in Budget Activity 7, Operational System Development, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.052 | 0.105 | 0.000 | 0.105 |
| Current President's Budget | 0.000 | 0.052 | 0.105 | 0.000 | 0.105 |
| Total Adjustments | 0.000 | 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 | 0.000 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Change Summary Explanation

Termination and/or Completion Action: EPRM will no longer require RDT&E funding past FY 2018.

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Title: Develop Enterprise Protection Risk Management (EPRM) | 0.000 | 0.052 | 0.105 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0303141F / <i>Global Combat Support System</i> |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| <p>Description: Enterprise Protection Risk Management (EPRM) is an automated and standardized risk management application designed to support the Defense Security Enterprise in mitigating security risks to Air Force assets. EPRM addresses cyber, physical, information, industrial security, as well as program protection planning. EPRM prioritizes Courses of Action (COAs) for relative value to protect multiple assets from multiple threat tactics, techniques, and procedures. EPRM received certification and accreditation and hosting was established at DISA.</p> <p>FY 2016 Accomplishments: N/A</p> <p>FY 2017 Plans: - Continue with integration efforts and support of mission assurance systems</p> <p>FY 2018 Plans: - Will continue with integration efforts and support of mission assurance systems and testing of the Extract Transform and Load process</p> | | | |
| Accomplishments/Planned Programs Subtotals | 0.000 | 0.052 | 0.105 |

| D. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
| • N/A: N/A | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - |

Remarks

E. Acquisition Strategy
EPRM RDT&E funding is placed on a cost-plus fixed fee contract to support continued development and enhancement of COTS software.

F. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0303142F I Global Force Management - Data Initiative |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|-------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 2.470 | 2.099 | 2.147 | 0.000 | 2.147 | 2.186 | 2.227 | 2.265 | 2.312 | Continuing | Continuing |
| 676027: Global Force Mgt Initiative | - | 2.470 | 2.099 | 2.147 | 0.000 | 2.147 | 2.186 | 2.227 | 2.265 | 2.312 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The Global Force Management Data Initiative (GFM DI) is a Joint Staff and the Office of the Secretary of Defense (OSD) initiative to standardize force structure data, making it visible, accessible, and understandable across the Department of Defense (DoD). This initiative is accomplished through each service's Organizational Server. The Air Force Organizational Server (AFOS) consumes data from various Air Force Authoritative Data Sources (ADSs), validates it, formats it in a consistent force structure data standard, and publishes it for consumption by programs of record that use force structure data. The AFOS is the ADS for Air Force Authorized Force Structure and provides critical unit, billet, crew platform, vehicle, and command relationship data within the Air Force to the Joint Staff (J8) for war and contingency planning, by providing visibility of the entire force structure as a function of time: past, present and future.

The AFOS produces consistent force structure data in the Global Force Management Information Exchange Model format that is well defined, centrally managed, and interoperable as a standardized representation of the organization's hierarchy in all other programs of record that use force structure data. The end goal of the GFM-DI AFOS is to integrate the four force management processes (Assignment, Manpower & Personnel, Readiness, and Allocation), and ensure the data is available to meet the needs of all users, systems and functions.

This program is in Budget Activity 7, Operational System Development, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 2.470 | 2.099 | 2.141 | 0.000 | 2.141 |
| Current President's Budget | 2.470 | 2.099 | 2.147 | 0.000 | 2.147 |
| Total Adjustments | 0.000 | 0.000 | 0.006 | 0.000 | 0.006 |
| • 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 | 0.006 | 0.000 | 0.006 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0303142F / <i>Global Force Management - Data Initiative</i> |
|--|--|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Title: Global Force Management - Data Initiative Description: The GFM-DI is a combination of net-centric services designed to provide access to information on the operational availability of USAF forces and equipment. GFM-DI is part of a Joint GFM, (each service has a GFM-DI), directed by OSD and the JCS. FY 2016 Accomplishments: - Completed activities leading to the Material Development Decision (MDD) Milestone - Completed actions required for the release of the Development Request For Proposals (DEV RFP) FY 2017 Plans: - Completing activities leading to the release of the Development Request for Proposal supporting GFM-DI Inc. 2 development effort - Completing Milestone B actions required before entry into the Engineering and Manufacturing Development Phase - Completing activities leading to award of development contract - Re-Hosting the Air Force Organizational Service (AFOS) in NIPR/SIPR to comply with Federal Data Center Initiative (FDCCI), Common Computing Environment (CCE) and Integrated Baseline (IB) compliant data center requirements FY 2018 Plans: - Add the ability to manually add/change Combatant Commander Assignments and COCOM assignment dates - Add the capability to link Air Force readiness posture data for personnel and platforms to authorizations - Add the ability to match the DODID to the DCPDS or MilPDS position Number - Add automated interface between GFM-DI and MilPDS - Add automated interface between GFM-DI and DCPDS - Add automated interface between GFM-DI and DMDC | 2.470 | 2.099 | 2.147 |
| Accomplishments/Planned Programs Subtotals | 2.470 | 2.099 | 2.147 |

| D. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
| • N/A: N/A | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - |
| Remarks | | | | | | | | | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0303142F / <i>Global Force Management - Data Initiative</i> | |
| E. Acquisition Strategy The program will utilize an incremental acquisition strategy resulting in the migration to a Joint Information Environment (JIE)-compliant platform, replacement of system Commercial-Off-the-Shelf (COTS) components with newer, more capable elements, and additional software releases to implement additional requirements. The anticipated contract structure will be Firm-Fixed Price contract. The Air Force Organizational Server (AFOS) PMO will utilize a mix of Service Level Agreements (SLA) and Interface Requirement Agreements with AFOS stakeholders and support agencies as part of its management strategy. SLAs will be developed with the Lead Developmental Test Organization and the Capabilities Integration Environment at Maxwell AFB-Gunter Annex. The AFOS PMO also maintains Memorandum of Agreements (MOAs) with several AFOS input and output systems, including Manpower Programming & Execution Systems, Air Force Directory Services, Air Force Equipment Management System, and Force Structure Data Management. | | |
| F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission. | | |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0303601F / MILSATCOM Terminals |
|--|---|

| COST (\$ in Millions) | Prior Years ⁽⁺⁾ | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|----------------------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | 2,216.097 | 9.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 2,225.097 |
| 672490: <i>Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)</i> | 180.602 | 9.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 189.602 |

Program MDAP/MAIS Code: 199

⁽⁺⁾ The sum of all Prior Years is \$2035.495 million less than the represented total due to several projects ending

Note

In FY2016, PE 0303601F, MILSATCOM Terminals, Project 672490, Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) was transferred to PE 0303001F, FAB-T, Project 672490 FAB-T for improved visibility of ACAT I programs.

FAB-T was funded FY13 and prior in PE 0303601F, Project Number 672487 and Project Number 672489. In FY14 it was transferred to Project Number 672490 in the same PE.

A. Mission Description and Budget Item Justification

The Military Satellite Communications (MILSATCOM) terminals program develops and fields equipment enabling users to communicate via legacy and future systems to include Milstar, Advanced Extremely High Frequency (AEHF), Ultra High Frequency (UHF) Follow-On (UFO), Wideband Global SATCOM (WGS), Defense Satellite Communication System (DSCS), Enhanced Polar Systems (EPS), and other military and commercial satellites, to support tactical Air and Space Expeditionary Force requirements and maintain essential connectivity for strategic forces. Program RDT&E currently includes the following efforts:

- 1) Development work to identify commercial/military technology solutions to improve MILSATCOM terminal capabilities for the warfighters. Focus includes, but is not limited to, increasing throughput, facilitating sustainability, reducing footprint on existing user platforms and future concept terminals to provide more resilient and/or higher data rate satellite communications to warfighters.
- 2) The Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) program replaces legacy Milstar Command Post Terminals (CPT) and will provide Extremely High Frequency (EHF), protected high data rate communication for nuclear and conventional forces to include Presidential National Voice Conferencing (PNVC). FAB-T will provide this new, highly secure, state-of-the-art capability for DoD platforms to include strategic platforms and airborne/ground command posts via Milstar, AEHF, and Enhanced Polar System (EPS) satellites. FAB-T terminals will also support the critical command and control (C2) of the Milstar, AEHF, and EPS satellite constellations. In FY15, the Air Force continued development of the FAB-T terminal.
- 3) The Presidential and National Voice Conferencing (PNVC) capability is a critical element of the Nuclear Command, Control, and Communications (NC3) System. PNVC is the Survivable Emergency Conferencing Network (SECN) replacement capability which provides anti-jam, anti-scintillation, survivable, and endurable

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0303601F / <i>MILSATCOM Terminals</i> |
|--|--|

voice communications through the AEHF satellite system for national and strategic users. There are several components being developed and procured by other organizations that must be synchronized to expeditiously field this capability. The PNVC Integrator is responsible for end-to-end integration of these components, to include requirements traceability, end-to-end system testing, site installation and checkout activities, training and technical manuals, network transition support, identification of deficiencies in overall PNVC system capability, and logistics support for PNVC components. The AFPEO/SP approved entry into the acquisition lifecycle as a post MS-A ACAT III Program of Record in January 2016.

4) The Joint Terminal Engineering Office (JTEO) provides tri-service coordination of terminal development, acquisition and fielding activities.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|---|-----------------------|-----------------------|----------------------------|---------------------------|-----------------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 9.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Total Adjustments | 9.000 | 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 | 9.000 | 0.000 | | | |
| • SBIR/STTR Transfer | 0.000 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Change Summary Explanation

Presidential and National Voice Conferencing (PNVC) Integrator received \$9M in FY2016 for program activities.

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|--|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0303601F / MILSATCOM Terminals | | | | Project (Number/Name) 672490 / Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 672490: Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) | 180.602 | 9.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 189.602 |
| Quantity of RDT&E Articles | | - | - | - | - | - | - | - | - | - | | |

Note

In FY2016, PE 0303601F, MILSATCOM Terminals, Project 672490, Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) was transferred to PE 0303001F, FAB-T, Project 672490 FAB-T for improved visibility of ACAT I programs.

FAB-T was funded FY13 and prior in PE 0303601F, Project Number 672487 and Project Number 672489. In FY14 it was transferred to Project Number 672490 in the same PE.

A. Mission Description and Budget Item Justification

The Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) program replaces legacy Milstar Command Post Terminals (CPT) and will provide Extremely High Frequency (EHF), protected high data rate communication for nuclear and conventional forces to include Presidential National Voice Conferencing (PNVC). FAB-T will provide this new, highly secure, state-of-the-art capability for DoD platforms to include strategic platforms and airborne/ground command posts via Milstar, AEHF, and Enhanced Polar System (EPS) satellites. FAB-T terminals will also support the critical command and control (C2) of the Milstar, AEHF, and EPS satellite constellations.

The Presidential and National Voice Conferencing (PNVC) capability is a critical element of the Nuclear Command, Control, and Communications (NC3) System. PNVC is the Survivable Emergency Conferencing Network (SECN) replacement capability which provides anti-jam, anti-scintillation, survivable, and endurable voice communications through the AEHF satellite system for national and strategic users. There are several components being developed and procured by other organizations that must be synchronized to expeditiously field this capability. The PNVC Integrator is responsible for end-to-end integration of these components, to include requirements traceability, end-to-end system testing, site installation and checkout activities, training and technical manuals, network transition support, identification of deficiencies in overall PNVC system capability, and logistics support for PNVC components. The AFPEO/SP approved entry into the acquisition lifecycle as a post MS-A ACAT III Program of Record in January 2016.

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

| | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Title: FAB-T Development | 0.000 | - | - |
| Description: The FAB-T program will provide EHF voice and data MILSATCOM for nuclear and conventional forces as well as airborne and ground command posts with connectivity to Milstar, AEHF, and EPS satellites. | | | |
| FY 2016 Accomplishments: | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303601F / MILSATCOM Terminals | Project (Number/Name) 672490 / Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| In FY2016, FAB-T was transferred from PE 0303601F to PE 0303001F | | | |
| Title: PNVC Integrator | 9.000 | - | - |
| Description: The Presidential and National Voice Conferencing (PNVC) capability is a critical element of the Nuclear Command, Control, and Communications (NC3) System. PNVC is the Survivable Emergency Conferencing Network (SECN) replacement capability which provides anti-jam, anti-scintillation, survivable, and endurable voice communications through the AEHF satellite system for national and strategic users. There are several components being developed and procured by other organizations that must be synchronized to expeditiously field this capability. The PNVC Integrator is responsible for end-to-end integration of these components, to include requirements traceability, end-to-end system testing, site installation and checkout activities, training and technical manuals, network transition support, identification of deficiencies in overall PNVC system capability, and logistics support for PNVC components. | | | |
| FY 2016 Accomplishments: In FY2016 PNVC Integrator completed end-to-end integration activities for the entire system-level PNVC architecture. Specifically, funding is required for Requirements Traceability Contract, FFRDC (MITRE) support and test activities. The contract will support the Air Force's integrator role for requirements traceability, system configuration, and test definition for the PNVC architecture. | | | |
| Accomplishments/Planned Programs Subtotals | 9.000 | - | - |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| • APAF: BA05, OTHACF: Other Aircraft | 32.106 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| • OPAF: BA03, 836700: MILSATCOM Space | 60.230 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| • OPAF: BA05, 86190A: Spares and Repair Parts | 12.112 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| • APAF: BA05: FBLOST | 21.784 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| • APAF: BA06: Aircraft Spares and Repair Parts | 5.540 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| • RDT&E: BA07: PE 0303001F | 3.633 | 42.378 | 21.152 | 0.000 | 21.152 | 21.862 | 23.495 | 17.859 | 18.480 | 0.000 | 148.589 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303601F / MILSATCOM Terminals | Project (Number/Name) 672490 / Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) |

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|

Remarks

Other program funding listed in FY14-15 is only for the FAB-T program. In FY16, all of the listed Other Program Funding in PE 030601F transferred to PE 0303001F.

D. Acquisition Strategy

In September 2002 the program office awarded Boeing the System Development and Demonstration (SDD) Cost Plus Award Fee (CPAF) contract; in April 2012 the contract was converted to a Firm Fixed Price (FFP). In 2012 the government introduced competition into the acquisition strategy to reduce risk in delivering this capability as well as to drive down production costs. In September 2012 the program office awarded a System Development and Demonstration (SDD) contract to Raytheon, Firm Fixed Price (FFP). To ensure best value to the government, the Air Force awarded production contracts in September 2013 to both contractors (Boeing and Raytheon). The production contracts began with production planning for both contractors. In June 2014, the Air Force down-selected to Raytheon for development and production of FAB-T Command Post Terminals. Production contract options to produce CPT terminals will be exercised after a successful Milestone C.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

| | | |
|--|---|--|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303601F / MILSATCOM Terminals | Project (Number/Name) 672490 / Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) |
|--|---|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| FAB-T Development (Prior down-select) | C/FFP | Boeing : Huntington Beach, CA | 12.536 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 12.536 | - |
| FAB-T Development | C/FFP | Raytheon : Marlborough, MA | 112.906 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| PNVC Integrator Technical Mission Analysis (FFRDC) | C/CPAF | MITRE : Bedford, MA | 0.000 | 2.197 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 2.197 | - |
| PNVC Integrator Enterprise SE&I | C/CPAF | Aerospace : Los Angeles, CA | 0.000 | 0.450 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.450 | - |
| PNVC Integrator | C/FP | Raytheon : TBD | 0.000 | 5.295 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 5.295 | - |
| Subtotal | | | 125.442 | 7.942 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Engineering DMS (FFRDC) | SS/CPAF | MITRE : Bedford, MA | 9.362 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| GFE DMS | MIPR | Various : Various | 0.596 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Engineering DMS | MIPR | Linquest : El Segundo, CA | 1.945 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| SW Engineering DMS (FFRDC) | SS/CPAF | SEI : Pittsburgh, PA | 0.400 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Crypto Support DMS | MIPR | NSA : Ft Meade, MD | 2.892 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| SATSIM | SS/TBD | MIT Lincoln Labs : Lexington, MA | 4.735 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Depot Activation DMS | PO | 517 SMXS : HILL AFB, UT | 0.431 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.431 | - |
| Subtotal | | | 20.361 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | - | - | - |

Remarks
SATSIM contract is Cost Reimbursable, it is not in drop-down menu.

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|--|--|--|--|---|--|--|--|--|--|--|-----------------------|--|--|--|--|
| Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force | | | | | | | | | | | Date: May 2017 | | | | |
| Appropriation/Budget Activity 3600 / 7 | | | | R-1 Program Element (Number/Name) PE 0303601F / MILSATCOM Terminals | | | | Project (Number/Name) 672490 / Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) | | | | | | | |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 & RTO Support | Various | Various : Various | 3.551 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Developmental Test Support | SS/CPAF | MIT/LL : Bedford, MA | 18.827 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| PNVC Integrator Test Support | PO | 46 Test Squadron : TBD | 0.000 | 0.700 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.700 | - |
| Subtotal | | | 22.378 | 0.700 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | - | - | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 Support | C/CPAF | MITRE : Bedford, MA | 5.280 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 5.280 | - |
| FFRDC SE Support | MIPR | Aerospace : Los Angeles, CA | 1.428 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| ETASS (Engineering & Technology Acq Spt Services) (PMA) | C/CPFF | TBD : TBD | 2.101 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| PASS (Professional Acq Spt Services) (PMA) | C/CPFF | BTAS : Bever Creek, OH | 2.532 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| SCS (Specialized Cost Services) (PMA) | C/CPFF | Tecolote : Bedford, MA | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| SPO Cost & Indirect (PMA) | Various | Various : Various | 1.080 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| PNVC Integrator ETASS | C/CPFF | Various : TBD | 0.000 | 0.358 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.358 | - |
| Subtotal | | | 12.421 | 0.358 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | - | - | - |

Remarks
 PASS awarded 2st quarter FY15.
 ETASS recompile 4th quarter FY15.

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|--|--------------------|----------------|----------------|---|--------------------|----------------------|--|-----------------------|---------------------------------|--|
| Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | R-1 Program Element (Number/Name) PE 0303601F / MILSATCOM Terminals | | | Project (Number/Name) 672490 / Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) | | | |
| | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract | |
| Project Cost Totals | 180.602 | 9.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - | - | |

Remarks

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303601F / MILSATCOM Terminals | Project (Number/Name) 672490 / Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) |

| FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 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 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------------|------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| FAB-T Raytheon Development Contract | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------------|------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0303601F / MILSATCOM Terminals | Project (Number/Name) 672490 / Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) |

Schedule Details

| Events | Start | | End | |
|-------------------------------------|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| FAB-T Raytheon Development Contract | 1 | 2016 | 1 | 2016 |

Note

Raytheon development contract awarded 4Q FY12.
Production planning contracts awarded 4Q FY13.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

| | |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0304260F / <i>Airborne SIGINT Enterprise</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 111.142 | 90.762 | 121.948 | 0.000 | 121.948 | 122.883 | 119.275 | 120.648 | 123.118 | Continuing | Continuing |
| 675180: <i>RC-135 (Airborne SIGINT Development - RC-135 Rivet Joint)</i> | - | 43.046 | 39.756 | 59.706 | 0.000 | 59.706 | 50.958 | 41.002 | 42.513 | 43.383 | Continuing | Continuing |
| 675182: <i>MQ-1/MQ-9 (Airborne SIGINT Development - Predator)*</i> | - | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | Continuing | Continuing |
| 675183: <i>Common Development (Airborne SIGINT Development - Common Development)</i> | - | 54.178 | 38.779 | 19.485 | 0.000 | 19.485 | 55.865 | 56.506 | 55.987 | 57.132 | Continuing | Continuing |
| 675185: <i>Non-Traditional SIGINT (NTS)</i> | - | 10.988 | 8.875 | 18.063 | 0.000 | 18.063 | 11.110 | 14.342 | 14.593 | 14.892 | Continuing | Continuing |
| 675186: <i>Special Programs (Airborne SIGINT Development - Special Platforms)</i> | - | 2.930 | 3.352 | 24.694 | 0.000 | 24.694 | 4.950 | 7.425 | 7.555 | 7.709 | Continuing | Continuing |

*This project's R-2a exhibit has been suppressed due to funding not beginning until after FY 2018

A. Mission Description and Budget Item Justification

This Program provides signals intelligence (SIGINT) development efforts for all USAF airborne platforms. The funds in this Program are distributed among all Airborne SIGINT Enterprise (ASE) projects based on the development priorities established by the USAF SIGINT Capabilities Working Group (SCWG) in order to build a total SIGINT capability. As a result, the USAF will move funds between projects periodically to develop the highest priority projects in response to urgent and emerging warfighter needs. This PE will participate in the development, integration, testing, and implementation of international and Air Force standards (to include North Atlantic Treaty Organization standardization agreements) to ensure joint, allied, and coalition interoperability. Modernization efforts include sensors for the platforms and where appropriate, Air Force Distributed Common Ground System interfaces to the sensor. This approach supports a synergistic development effort providing a true Air Force-wide capability.

This enterprise will use the Air Force SIGINT Architecture for planning and decision-making and, in turn, employ open architecture standards whenever possible to allow maximum ease of future upgrades and system interoperability. The primary goal of the ASE is to produce an architecture-based, capability-focused SIGINT investment strategy for the USAF. Funds in any project may be used to fund initiatives in other projects within this Program at the discretion of the SCWG. Funds in any project can also cover activities to include studies and analysis to support both current program planning and execution and future program planning.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0304260F / <i>Airborne SIGINT Enterprise</i> |
|--|---|

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 112.775 | 90.762 | 128.599 | 0.000 | 128.599 |
| Current President's Budget | 111.142 | 90.762 | 121.948 | 0.000 | 121.948 |
| Total Adjustments | -1.633 | 0.000 | -6.651 | 0.000 | -6.651 |
| • 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 | -1.633 | 0.000 | | | |
| • SBIR/STTR Transfer | 0.000 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | -6.651 | 0.000 | -6.651 |

Change Summary Explanation

- In FY 2016, \$1.633M was reprogrammed to higher Air Force priorities
- In FY 2018, \$6.651M was reprogrammed to higher Air Force priorities.

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|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|--|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise | | | | Project (Number/Name) 675180 / RC-135 (Airborne SIGINT Development - RC-135 Rivet Joint) | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 675180: RC-135 (Airborne SIGINT Development - RC-135 Rivet Joint) | - | 43.046 | 39.756 | 59.706 | 0.000 | 59.706 | 50.958 | 41.002 | 42.513 | 43.383 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

This project supports design studies, engineering analysis, non-recurring engineering, and other efforts associated with the integration and modification of the RC-135 Signals Intelligence (SIGINT) sensors and their associated air and ground components. Through extensive utilization of commercial-off-the-shelf (COTS) based solutions to field needed capabilities, it also incurs a need for continuous identification of suitable replacements for components affected by Diminishing Manufacturing Sources and integration efforts consistent with the COTS technology cycle. These efforts provide required engineering for preliminary assessments of technical feasibility, operability, or military utility as well as specific engineering implementations integrated into the various baseline modifications. These funds will be split between the RC-135V/W RIVET JOINT, the RC-135U COMBAT SENT, and the RC-135S COBRA BALL programs. Funding reflects the SIGINT Capabilities Working Group priorities and the accomplishment of other Airborne SIGINT Enterprise initiatives.

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

| | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Title: RC-135 SIGINT Development | 43.046 | 39.756 | 59.706 |
| Description: Non-Recurring Engineering for the RC-135 signals intelligence Systems. See Classified Budget Exhibits (PE 0305207F) | | | |
| FY 2016 Accomplishments: - Continued SIGINT development efforts for the RC-135 fleet to include new signal sets and upgrades to current capabilities. | | | |
| FY 2017 Plans: - Continues SIGINT development efforts for the RC-135 fleet to include new signal sets and upgrades to current capabilities. | | | |
| FY 2018 Plans: - Will continue SIGINT development efforts for the RC-135 fleet to include new signal sets and upgrades to current capabilities. | | | |
| Accomplishments/Planned Programs Subtotals | 43.046 | 39.756 | 59.706 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise | Project (Number/Name) 675180 / RC-135 (Airborne SIGINT Development - RC-135 Rivet Joint) |

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

| Line Item | FY 2016 | FY 2017 | FY 2018 | FY 2018 | FY 2018 | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To | |
|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|------------|------------|
| | | | Base | OCO | Total | | | | | Complete | Total Cost |
| • APAF: BA05: Line Item # DARPO1: RC-135 | 217.673 | 259.172 | 280.734 | 0.000 | 280.734 | 234.706 | 239.037 | 243.443 | 248.318 | Continuing | Continuing |

Remarks

The funds within the PE 0305207F procure all necessary aircraft modifications for the RC-135 program and include those funds necessary to field Signals Intelligence (SIGINT) capabilities developed under Project 675180 of this Airborne SIGINT Enterprise (ASE). Not all procurement funds in #DARPO1: RC-135 are for ASE SIGINT projects.

D. Acquisition Strategy

Aircraft, aircraft sensor systems, and associated ground support system modifications planned include the procurement, fielding and logistical support for future RC-135V/W RIVET JOINT, RC-135U COMBAT SENT and RC-135S COBRA BALL baseline configurations. Development and integration is managed by the Big Safari Systems Group. They employ evolutionary acquisition approaches to field incremental capability improvements.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise | Project (Number/Name) 675180 / RC-135 (Airborne SIGINT Development - RC-135 Rivet Joint) |
|--|--|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| RC-135 SIGINT Development | SS/ Various | L3COM : Greenville, TX | - | 43.046 | Jan 2016 | 39.756 | Jan 2017 | 59.706 | Jan 2018 | 0.000 | | 59.706 | Continuing | Continuing | - |
| Subtotal | | | - | 43.046 | | 39.756 | | 59.706 | | 0.000 | | 59.706 | - | - | - |

Remarks
Above contract method/type will be CPFF and FFP

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| | | | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|--|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| Project Cost Totals | | | - | 43.046 | 39.756 | 59.706 | 0.000 | 59.706 | - | - | - |

Remarks

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise | Project (Number/Name) 675180 / RC-135 (Airborne SIGINT Development - RC-135 Rivet Joint) |

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 of RIVET JOINT mission sensors (see 0305207F for classified details) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Development of COMBAT SENT mission sensors (see 0305207F for classified details) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Development of COBRA BALL mission sensors (see 0305207F for classified details) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise | Project (Number/Name) 675180 / RC-135 (Airborne SIGINT Development - RC-135 Rivet Joint) |

Schedule Details

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Development of RIVET JOINT mission sensors (see 0305207F for classified details) | 1 | 2016 | 4 | 2022 |
| Development of COMBAT SENT mission sensors (see 0305207F for classified details) | 1 | 2016 | 4 | 2022 |
| Development of COBRA BALL mission sensors (see 0305207F for classified details) | 1 | 2016 | 4 | 2022 |

Note

Details are classified and are shown in the classified portion of PE 0305207F

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|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|--|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise | | | | Project (Number/Name) 675183 / Common Development (Airborne SIGINT Development - Common Development) | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 675183: Common Development (Airborne SIGINT Development - Common Development) | - | 54.178 | 38.779 | 19.485 | 0.000 | 19.485 | 55.865 | 56.506 | 55.987 | 57.132 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

This project supports design studies, engineering analysis, non-recurring engineering, program management administration and other efforts associated with the insertion of new capabilities integrated into Airborne Signals Intelligence Payload (ASIP) and other sensors and their associated air and ground components that will be used on/by more than one platform. The common development Signals Intelligence (SIGINT) project also supports development of new sensors capabilities, normalization of quick reaction capabilities, and identifies suitable replacements for components affected by diminishing manufacturing sources. New capabilities are developed by separate projects. This project also supports the development of projects common to the Airborne SIGINT Enterprise Program overall to include, but not limited to: the Air Force SIGINT Architecture maintenance, modeling and simulation efforts, and North Atlantic Treaty Organization SIGINT efforts.

Development supports ASIP system upgrades. The ASIP sensor is designed to be a common SIGINT system that will allow for for maximum coverage of the electromagnetic spectrum through the use of an integrated high and low band system.

Capability improvements will be inserted into the ASIP sensor through individual development efforts that exploit signals of interest identified as service priorities by the Air Force SIGINT Capabilities Working Group (SCWG). This project provides the warfighter near term increased combat capability. Enhancements are implemented as soon as technology and risk achieve satisfactory levels. Compatability improvements will be inserted into the ASIP through individual development efforts that exploit signals of interest identified as Service priorities by the USAF SCWG. Sensors will be integrated and tested on the various platforms as funding permits.

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

| | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Title: Airborne Signals Intelligence Payload-Increment 1 | 54.178 | 38.779 | 19.485 |
| Description: Develop and test a common Signals Intelligence (SIGINT) system for multiple SIGINT platforms including Airborne Signals Intelligence Payload (ASIP) incremental upgrades using an open system architecture to the maximum extent possible. | | | |
| FY 2016 Accomplishments: | | | |
| - Continued new signals capabilities and enhancements for the ASIP Family of Systems (FoS) | | | |
| - Continued integration activities and incorporate upgrades as appropriate. Details are classified. | | | |
| FY 2017 Plans: | | | |
| - Continues new signals capabilities and enhancements for the ASIP FoS | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise | Project (Number/Name) 675183 / Common Development (Airborne SIGINT Development - Common Development) |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| - Continues integration activities and incorporate upgrades as appropriate. Details are classified. | | | |
| <i>FY 2018 Plans:</i> | | | |
| - Will continue new signals capabilities and enhancements for the ASIP FoS. | | | |
| - Will continue integration activities and incorporate upgrades as appropriate. Details are classified. | | | |
| Accomplishments/Planned Programs Subtotals | 54.178 | 38.779 | 19.485 |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| • APAF: BA05 Line Item # HAWK00: RQ-4 Mods | 50.022 | 32.045 | 43.968 | 0.000 | 43.968 | 76.511 | 22.590 | 132.710 | 143.228 | 167.265 | 668.339 |

Remarks
Not all funds are associated with Signals Intelligence (SIGINT). However, the Airborne Signals Intelligence Payload production is included in FY18/FY19.

D. Acquisition Strategy
SIGINT capabilities will be developed and integrated onto various platforms using an incremental acquisition approach. In response to requirements as validated by the SIGINT Capabilities Working Group, an incremental acquisition strategy plan will be executed, contracting with appropriate vendor(s) to deliver capability while encouraging competition where possible.

E. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

| | | |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise | Project (Number/Name) 675183 / Common Development (Airborne SIGINT Development - Common Development) |
|--|--|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| ASIP Upgrades Development | SS/CPIF | Northrop Grumman : San Jose, CA | - | 0.146 | May 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| ASIP Global Hawk Increment 1 | SS/CPFF | Northrop Grumman : San Jose, CA | - | 14.200 | Dec 2015 | 3.347 | Dec 2016 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| ASIP Increment 2 - Build A | SS/CPIF | Northrop Grumman : San Jose, CA | - | 28.305 | Mar 2016 | 17.476 | Dec 2016 | 8.204 | Nov 2017 | 0.000 | | 8.204 | Continuing | Continuing | - |
| ASIP Increment 2 - Build B - Pre EMD | MIPR | AFRL : Rome, NY | - | 0.000 | | 1.000 | Dec 2016 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Various SIGINT Efforts | Various | AECOM : Annapolis Junction, MD | - | 4.509 | Nov 2015 | 4.000 | Nov 2016 | 4.000 | Nov 2017 | 0.000 | | 4.000 | Continuing | Continuing | - |
| Subtotal | | | - | 47.160 | | 25.823 | | 12.204 | | 0.000 | | 12.204 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Various integration efforts and flight test | Various | Various : Various | - | 4.818 | Aug 2016 | 9.564 | Jan 2017 | 4.737 | Dec 2017 | 0.000 | | 4.737 | Continuing | Continuing | - |
| Subtotal | | | - | 4.818 | | 9.564 | | 4.737 | | 0.000 | | 4.737 | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 Support | Various | Various : Various | - | 0.096 | Feb 2017 | 0.100 | Feb 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Subtotal | | | - | 0.096 | | 0.100 | | 0.000 | | 0.000 | | 0.000 | - | - | - |

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise | Project (Number/Name) 675183 / Common Development (Airborne SIGINT Development - Common Development) |

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|---|------------|---|---|---|------------|---|---|---|------------|---|---|---|------------|---|---|---|------------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| ASIP Upgrades Increment 1 - U-2 Field Release 3.2 | ██████████ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ASIP Upgrades Increment 1 - Global Hawk | ██████████ | | | | ██████████ | | | | | | | | | | | | | | | | | | | | | | | |
| ASIP Upgrades Increment 2 - Build A | | | | | ██████████ | | | | ██████████ | | | | | | | | | | | | | | | | | | | |
| ASIP Upgrades Increment 2 - Build B - Pre EMD | | | | | | | | | ██████████ | | | | | | | | | | | | | | | | | | | |
| ASIP Upgrades Increment 2 - Build B | | | | | | | | | | | | | ██████████ | | | | ██████████ | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise | Project (Number/Name) 675183 / Common Development (Airborne SIGINT Development - Common Development) |

Schedule Details

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| ASIP Upgrades Increment 1 - U-2 Field Release 3.2 | 1 | 2016 | 1 | 2017 |
| ASIP Upgrades Increment 1 - Global Hawk | 1 | 2016 | 4 | 2017 |
| ASIP Upgrades Increment 2 - Build A | 2 | 2016 | 3 | 2018 |
| ASIP Upgrades Increment 2 - Build B - Pre EMD | 1 | 2017 | 3 | 2017 |
| ASIP Upgrades Increment 2 - Build B | 2 | 2019 | 4 | 2022 |

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|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|---|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise | | | | Project (Number/Name) 675185 / Non-Traditional SIGINT (NTS) | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 675185: Non-Traditional SIGINT (NTS) | - | 10.988 | 8.875 | 18.063 | 0.000 | 18.063 | 11.110 | 14.342 | 14.593 | 14.892 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

COMPASS BRIGHT develops, demonstrates, and rapidly transitions advanced Air Force specific Signals Intelligence (SIGINT) capabilities against emerging and future target signals of interest. This program pursues SIGINT technologies for program transition, to include Communications Intelligence (COMINT), Electronic Intelligence (ELINT), Audio, Analytics, Special Signals of Interest, and Radio Frequency Measurement and Signature Intelligence (MASINT). The COMPASS BRIGHT program objective is to develop technologies for application in SIGINT and MASINT systems or subsystems. Acquisition and production of these developed technologies will occur within the appropriate platform programs. COMPASS BRIGHT projects are selected through a data call process, whereby the USAF evaluates proposals from the laboratories and industry partners, to select those projects that are most promising. This program includes total government and contractor costs for these projects.

Operational Reconnaissance (Ops Recce) is part of the ELINT initiative to improve overall USAF intelligence, surveillance, and reconnaissance (ISR) capability through development and use of sensor data from non-ISR platforms and innovative use of sensors. This program pursues Ops Recce capabilities for transition through development, testing, demonstration and implementation efforts across all platforms. The Ops Recce program objective is to provide increased battlespace awareness through the use of sensors/platforms to achieve effects beyond what those sensor/platforms were originally designed.

The program office authority extends to accomplishment of out-of-cycle, nontraditional SIGINT efforts. These tasks may be filtered through the SIGINT Capability Working Group outside the normal vetting process to expedite acquisition of high-end capabilities for the warfighter.

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

| | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Title: Non-Traditional SIGINT Tech Development | 10.988 | 8.875 | 18.063 |
| Description: Develops projects in the Signals Intelligence (SIGINT) and Radio Frequency Measurement and Signature Intelligence areas for transition to the RC-135 fleet, other intelligence, surveillance, and reconnaissance platforms and Operational Reconnaissance. | | | |
| FY 2016 Accomplishments: - Continued, and/or completed various SIGINT projects to include enhanced electronic intelligence (ELINT) exploitation, communications intelligence (COMINT), Audio exploitation, Ops Recce, signals of interest prosecution, and non-traditional ISR. | | | |
| FY 2017 Plans: - Initiates, continues, and completes various SIGINT projects to include enhanced ELINT exploitation, COMINT, Audio exploitation, Ops Recce, Signals of interest prosecution, and NTISR. | | | |
| FY 2018 Plans: | | | |

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force **Date:** May 2017

| | | |
|--|--|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise | Project (Number/Name) 675185 / Non-Traditional SIGINT (NTS) |
|--|--|---|

| | | | |
|--|----------------|----------------|----------------|
| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
| - Will initiate, continue, and complete various SIGINT projects to include enhanced ELINT exploitation, COMINT, Audio exploitation, Ops Recce, signals of interest prosecution, and NTISR. | | | |
| Accomplishments/Planned Programs Subtotals | 10.988 | 8.875 | 18.063 |

| | | | | | | | | | | | |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| • APAF: BA05: Line Item # DARP01: RC-135 | 217.673 | 259.172 | 280.734 | 0.000 | 280.734 | 234.706 | 239.037 | 243.443 | 248.318 | Continuing | Continuing |
| • APAF: BA05: Line Item # HAWK00:: RQ-4 Mods | 50.022 | 32.045 | 43.968 | 0.000 | 43.968 | 76.511 | 22.590 | 132.710 | 143.228 | Continuing | Continuing |

Remarks

D. Acquisition Strategy
Air Force Life Cycle Management Center/Intelligence, Surveillance, and Reconnaissance and Special Operations Forces Directorate (AFLCMC/WI) will execute COMPASS BRIGHT and Operational Reconnaissance efforts through technology development and demonstration contracts which leverage existing laboratory relationships and other existing contractual vehicles, with future development projects emphasizing full and open competition.

E. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

| | | |
|--|--|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise | Project (Number/Name) 675185 / Non-Traditional SIGINT (NTS) |
|--|--|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Non Traditional SIGINT Tech Development | Various | Multiple : Various | - | 9.918 | Jan 2016 | 8.049 | Jan 2017 | 17.163 | Jan 2018 | 0.000 | | 17.163 | Continuing | Continuing | - |
| Subtotal | | | - | 9.918 | | 8.049 | | 17.163 | | 0.000 | | 17.163 | - | - | - |

Remarks
 On an annual basis, the SIGINT Capabilities Working Group reviews developmental technologies against warfighter capabilities and requirements based on strategic roadmaps. Projects advancing the technological maturity of promising sensors and processing capabilities are reviewed and prioritized into a recommended list for senior executive direction to implement for the coming fiscal year.

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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, OH | - | 1.070 | Oct 2015 | 0.826 | Oct 2016 | 0.900 | Oct 2017 | 0.000 | | 0.900 | Continuing | Continuing | - |
| Subtotal | | | - | 1.070 | | 0.826 | | 0.900 | | 0.000 | | 0.900 | - | - | - |

| | | | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|--|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| Project Cost Totals | | | - | 10.988 | 8.875 | 18.063 | 0.000 | 18.063 | - | - | - |

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| Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise | Project (Number/Name) 675185 / Non-Traditional SIGINT (NTS) |
|--|--|---|

| | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise | Project (Number/Name) 675185 / Non-Traditional SIGINT (NTS) |
|--|--|---|

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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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| SIGINT Technologies | |
| Ops Recce Efforts | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise | Project (Number/Name) 675185 / Non-Traditional SIGINT (NTS) |

Schedule Details

| Events | Start | | End | |
|---------------------|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| SIGINT Technologies | 1 | 2016 | 4 | 2022 |
| Ops Recce Efforts | 1 | 2016 | 4 | 2022 |

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|--|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|---|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise | | | | Project (Number/Name) 675186 / Special Programs (Airborne SIGINT Development - Special Platforms) | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 675186: Special Programs (Airborne SIGINT Development - Special Platforms) | - | 2.930 | 3.352 | 24.694 | 0.000 | 24.694 | 4.950 | 7.425 | 7.555 | 7.709 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

This project supports special Signals Intelligence (SIGINT) studies as well as the development and integration of advanced SIGINT capabilities for special programs including, but not limited to: quick reaction capability sensors, the processing, exploitation, and dissemination associated with these systems, and other efforts approved by the USAF SIGINT Capabilities Working Group. Development efforts will include, but are not limited to: new signal sets, antenna improvements, sensitivity upgrades, and data distribution upgrades, and new/advanced deployment capabilities. This project provides the warfighter with near term combat capabilities with increased capability improvements accomplished as technologies and risks achieve satisfactory levels. Sensors will be integrated and tested on various platforms including the MQ-1B/MQ-9A remotely piloted aircraft as funding permits.

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

| | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Title: SIGINT Development | 2.930 | 3.352 | 24.694 |
| Description: Develop, update, and test SIGINT capabilities for quick reaction capability and normalized special programs SIGINT projects. | | | |
| FY 2016 Accomplishments: - Continued to modernize SIGINT systems used by the MQ-1B/9A RPA. | | | |
| FY 2017 Plans: - Continues to modernize SIGINT systems used by the MQ-1B/9A RPA. | | | |
| FY 2018 Plans: - Will continue to modernize SIGINT systems used by the MQ-1B/9A RPA. | | | |
| Accomplishments/Planned Programs Subtotals | 2.930 | 3.352 | 24.694 |

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

| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| • APAF: BA05: Line Item #PRDTB2: MQ-9 Mods | 184.051 | 141.929 | 261.740 | 0.000 | 261.740 | 382.191 | 177.759 | 190.615 | 163.115 | Continuing | Continuing |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise | Project (Number/Name) 675186 / Special Programs (Airborne SIGINT Development - Special Platforms) |

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|

Remarks

Not all MQ-9 funds are associated with this Project.

D. Acquisition Strategy

SIGINT capabilities will be integrated to various classified platforms using an evolutionary acquisition approach. Capabilities and prototypes will be developed by Other Government Agencies and transitioned to select vendors as production needs develop.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise | Project (Number/Name) 675186 / Special Programs (Airborne SIGINT Development - Special Platforms) |
|--|--|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Upgrades to SIGINT systems used by the MQ-1/9 Rremotely piloted aircraft | Various | Various : Various | - | 0.700 | Jan 2016 | 2.702 | Jan 2017 | 23.914 | Jan 2018 | 0.000 | | 23.914 | Continuing | Continuing | - |
| Subtotal | | | - | 0.700 | | 2.702 | | 23.914 | | 0.000 | | 23.914 | - | - | - |

Remarks
Upgrades the quick reaction capability sensors already on the MQ-1/9 fleet

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Flight Test | Various | Various : Various | - | 2.230 | Jan 2016 | 0.650 | Oct 2016 | 0.780 | May 2017 | 0.000 | | 0.780 | Continuing | Continuing | - |
| Subtotal | | | - | 2.230 | | 0.650 | | 0.780 | | 0.000 | | 0.780 | - | - | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract | |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|---|
| Project Cost Totals | | - | 2.930 | 3.352 | 24.694 | 0.000 | 24.694 | - | - | - |

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| Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force | | | | | | | Date: May 2017 | | | |
| Appropriation/Budget Activity 3600 / 7 | | | R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise | | | Project (Number/Name) 675186 / Special Programs (Airborne SIGINT Development - Special Platforms) | | | | |
| | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract | |

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise | Project (Number/Name) 675186 / Special Programs (Airborne SIGINT Development - Special Platforms) |

| FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 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 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------|------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| MQ-1/9 Sensor 1 Modernization | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MQ-1/9 Sensor 2 Modernization | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MQ-1/9 Sensor Upgrades | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0304260F / Airborne SIGINT Enterprise | Project (Number/Name) 675186 / Special Programs (Airborne SIGINT Development - Special Platforms) |

Schedule Details

| Events | Start | | End | |
|-------------------------------|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| MQ-1/9 Sensor 1 Modernization | 1 | 2016 | 4 | 2022 |
| MQ-1/9 Sensor 2 Modernization | 1 | 2016 | 4 | 2022 |
| MQ-1/9 Sensor Upgrades | 1 | 2016 | 4 | 2022 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0304310F / <i>Commercial Economic Analysis</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 0.000 | 0.000 | 3.544 | 0.000 | 3.544 | 3.498 | 3.778 | 4.079 | 4.416 | Continuing | Continuing |
| 675896: <i>Commercial Economic Analysis</i> | - | 0.000 | 0.000 | 3.544 | 0.000 | 3.544 | 3.498 | 3.778 | 4.079 | 4.416 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note
 This program, BA 07 PE 0304310F, project 675896, Commercial Economic Analysis, is a new start.

A. Mission Description and Budget Item Justification

The Office of Commercial Economic Analysis (OCEA) will produce in-depth analytical assessments and advanced risk mitigation strategies based on commercially available industry, market and economic information. These assessments and strategies will support the decision making efforts of Service, Department of Defense, and Whole of Government to protect Defense Industrial Base (DIB) equities and sustain the U.S. competitive advantage.

The funding request provides for an enterprise Information Technology (IT) platform providing a technical prototype which will aggregate risk data and produce mitigation strategies and impact analysis products. The funding also supports continuous assessment of the commercially available information to ensure it is accurate, current, and relevant.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 0.000 | 0.000 | 3.544 | 0.000 | 3.544 |
| Total Adjustments | 0.000 | 0.000 | 3.544 | 0.000 | 3.544 |
| • 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 | 3.544 | 0.000 | 3.544 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0304310F / <i>Commercial Economic Analysis</i> |
|--|---|

Change Summary Explanation

FY 2018: The Commercial Economic Analysis (CEA) program is a new start activity.

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

| | FY 2016 | FY 2017 | FY 2018 |
|---|---------|---------|---------|
| Title: Commercial Economic Analysis | 0.000 | 0.000 | 3.544 |
| Description: Develop solutions to help protect the Defense Industrial Base from adversary information attacks and protect the U.S. technological advantage. Research, develop, test and evaluate Commercial Economic Analysis capabilities, systems, tools, products and services through a disciplined, yet agile, process that ensures commercial economic modeling pilots, risk management construct, decision support tools, and continuous monitoring capabilities are available for Air Force sectors and segments of the Defense Industrial Base. | | | |
| FY 2016 Accomplishments: N/A | | | |
| FY 2017 Plans: N/A | | | |
| FY 2018 Plans: Utilize existing contracts for four modular components that will expand classified commercial economic analyses and establish an initial operational capability in FY18. The four components include: CEA Enterprise Architecture and Design; Ontological Discovery/Vector Analysis of Classified Information for Risk Management Construct; Machine Learning for Continuous Assessment; and Assessment, Analysis, and Fusion Tool Integration. | | | |
| Accomplishments/Planned Programs Subtotals | 0.000 | 0.000 | 3.544 |

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> | |
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|--|
| • N/A: N/A | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - | |

Remarks

E. Acquisition Strategy

Competitively award a contract around July 2017, using Operation and Maintenance, Air Force funding, for the purchase of commercially available data. This contract will have an option that can be exercised upon receipt of FY 2018 appropriations to develop the prototype system upon which the data will run. Will also use a previously competed, existing contract for the other software modules.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

Appropriation/Budget Activity
3600: *Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development*

R-1 Program Element (Number/Name)
PE 0304310F / *Commercial Economic Analysis*

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305020F / <i>CCMD Intelligence Information Technology</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 0.000 | 0.000 | 1.542 | 0.000 | 1.542 | 1.598 | 1.631 | 1.664 | 1.703 | Continuing | Continuing |
| 675898: <i>International Intelligence Technology and Arc</i> | - | 0.000 | 0.000 | 1.542 | 0.000 | 1.542 | 1.598 | 1.631 | 1.664 | 1.703 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

Combatant Commands (CCMDs) require a cohesive, flexible Information Technology enterprise to ensure intelligence content informs analysis, planning, warfighter operations, and strategic decision making. Currently, the Combatant Command Intelligence Information Technology (CCIIT) Enterprise is at the nexus of multiple service providers, networks, systems, applications, classification levels, and funding. The vast majority of these IT services are tailored to Intelligence Community users vice CCMD-specific missions or needs. This minority stake and the physical and organizational separation of CCMD users limits their ability to influence the development and delivery of services, or results in poorly sustained one-off, vice enduring enterprise-wide, solutions. Beginning in late 2014, the CCMDs requested the Office of the Under Secretary of Defense for Intelligence (OUSD(I)) and the Joint Staff address longstanding gaps in their intelligence IT capabilities to support planning and operations. In response, OUSD(I) and Joint Staff/J2 sponsored an effort to document the required capabilities and chronic shortfalls, and to validate these requirements through the Joint Requirements Oversight Council (JROC). The initial Capabilities Based Assessment (CBA) for the CCIIT Enterprise was completed in February 2016, and an Information Systems Initial Capabilities Document (IS ICD) was approved by the JROC in September 2016. In November 2016, USD(I) requested the Secretary of the Air Force, Administrative Assistant (SAF/AA) establish a Provisional Program Activity Office (PPAO) for CCIIT, to advocate for materiel and non-materiel solutions for these validated requirements. Through FY2017, the CCIIT PPAO has actively engaged with the CCMDs and service providers throughout DoD and the IC to refine requirements, identify potential solutions, produce an integrated baseline Enterprise Architecture, and align and integrate capabilities across the enterprise critical to the warfighter.

B. Program Change Summary (\$ in Millions)

| | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|-------------------------------------|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 0.000 | 0.000 | 1.542 | 0.000 | 1.542 |
| Total Adjustments | 0.000 | 0.000 | 1.542 | 0.000 | 1.542 |
| • 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 | 1.542 | 0.000 | 1.542 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305020F / <i>CCMD Intelligence Information Technology</i> |
|--|---|

Change Summary Explanation

This effort is not a new start. The FY2017 President's Budget request included \$1.507M which will be realigned from a classified PE.

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

| | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Title: Combatant Command Intelligence Information Technology (CCMD Intel IT) | 0.000 | 0.000 | 1.542 |
| Description: Development, modification, and integration of new functionality to support improved end-to-end service delivery against one or more of six validated requirements areas within the CCIIT Enterprise operational mission set. | | | |
| FY 2016 Accomplishments: N/A | | | |
| FY 2017 Plans: Completion of the first Materiel Solutions Analysis Study Team and validation of the recommended alternative via a Requirements Definition Package (RDP), which will include the development plan and acquisition strategy for an enterprise-wide solution for Integrated Mission Management workflow visualization. | | | |
| FY 2018 Plans: Produce an integrated Enterprise Architecture baseline for the first three end-to-end Services and associated workflows. Advance agile development and release of the workflow visualization solution for Integrated Mission Management. Complete the second and initiate the third Materiel Solutions Analysis Study Team, RDP, and initiate development/acquisition activities. | | | |
| Accomplishments/Planned Programs Subtotals | 0.000 | 0.000 | 1.542 |

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

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|------------|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| • N/A: N/A | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - |

Remarks

N/A

E. Acquisition Strategy

RDT&E funds will be applied as a modification of an existing contract vehicle to address identified requirements, and align and integrate capabilities across the enterprise critical to the warfighter.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305020F / <i>CCMD Intelligence Information Technology</i> |
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F. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305099F / <i>Global Air Traffic Management (GATM)</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 4.089 | 4.354 | 4.453 | 0.000 | 4.453 | 4.526 | 4.610 | 4.689 | 4.785 | Continuing | Continuing |
| 674689: <i>Global Access Architecture</i> | - | 4.089 | 4.354 | 4.453 | 0.000 | 4.453 | 4.526 | 4.610 | 4.689 | 4.785 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

This program element funds the Air Force Life Cycle Management Center (AFLCMC) Aerospace Management System Division (AMSD), the designated Air Force (AF) Communications, Navigation, Surveillance/Air Traffic Management (CNS/ATM) and Navigation Safety Center of Excellence (COE). The COE provides expertise to Headquarters Air Force, AF major commands (MAJCOM), and weapon system program offices regarding CNS/ATM system technical functions and performance standards for operation in the US National Airspace System (NAS) and international civil airspace. This centralized capability supplements the MAJCOMs and over 50 AF weapon system program offices with resident CNS/ATM technical expertise.

This funding enables the AMSD to monitor and participate in government and industry technical forums responsible for the development and assessment of international civil aviation standards for operations in worldwide airspace. Division personnel analyze civil standards as they are being developed and work to influence them to support Department of Defense (DOD) interests. CNS/ATM experts identify specific technical and engineering criteria and document them in generic performance matrices (GPMs). The COE works with MAJCOM and program office personnel to develop strategies for implementing CNS/ATM requirements on AF weapon systems. Specifically, CNS/ATM experts work with program office systems engineers to tailor the GPMs to apply civil standards to each platform's unique avionics architecture. Once CNS/ATM component integration and testing is completed, COE personnel validate platform CNS/ATM performance against the standards necessary to operate in civil airspace.

The program office manages an Indefinite Delivery/Indefinite Quantity (IDIQ) contract that enables a centralized procurement of CNS/ATM and navigation safety avionics equipment. These contracts are used by aircraft program offices across the DOD, among other federal agencies, and in support of foreign military sales.

This program performs periodic audits required by civil aviation assurance standards on processes used to develop and distribute the Digital Aeronautical Flight Information File (DAFIF) to DOD users. This electronic navigation database, developed and maintained by the National Geospatial Intelligence Agency (NGA), contains critical safety of flight information used by DOD flight crews to fly instrument flight rules procedures worldwide.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | | | Date: May 2017 | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0305099F / <i>Global Air Traffic Management (GATM)</i> | | | |
| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
| Previous President's Budget | 4.217 | 4.354 | 4.440 | 0.000 | 4.440 |
| Current President's Budget | 4.089 | 4.354 | 4.453 | 0.000 | 4.453 |
| Total Adjustments | -0.128 | 0.000 | 0.013 | 0.000 | 0.013 |
| • 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 | -0.128 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 0.013 | 0.000 | 0.013 |
| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 | | |
| Title: CNS/ATM COE Contract Support and Administration of DOD Avionics Equipment Catalog | 0.600 | 0.757 | 0.783 | | |
| Description: Multiple contract vehicles with multiple avionic vendors that enable centralized procurement of CNS/ATM avionics equipment/components. Supports numerous DOD, US Federal Agency, and foreign military sales program offices. Provides preferred customer pricing and extended warranty. | | | | | |
| FY 2016 Accomplishments: Evaluated three proposals for sole source contracts companies to provide growth capable equipment to meet Aircraft Dependent Surveillance -Broadcast (ADS-B), area navigation (RNAV) and required navigation perform (RNP) standards, and emerging aircraft identification transponder requirements. Hosted the CNS/ATM conference to highlight current and emerging issues for aircraft operating in civil airspace. | | | | | |
| FY 2017 Plans: Continue administration of current contracts. Evaluate proposals and award new contracts through February 2019. Ensure availability of avionics components required for Federal Aviation Administration (FAA) mandated ADS-B requirements. | | | | | |
| FY 2018 Plans: Continue administration of the catalog and monitor industry for new CNS/ATM products which could be added to the catalog. | | | | | |
| Title: CNS/ATM COE Digital Aeronautical Flight Information File (DAFIF) Management | 1.818 | 1.887 | 1.880 | | |
| Description: Perform periodic audits of the processes and procedures utilized by organizations involved in the development and distribution of critical safety of flight electronic databases used by aircrews to fly instrument flight rules procedures worldwide. | | | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0305099F / <i>Global Air Traffic Management (GATM)</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| Ensures the validity of multiple sources of information critical to implementation of international performance based navigation (PBN) standards. FY 2016 Accomplishments: Audited NGA to find and correct process deficiencies and developed a data evaluation tool to enable NGA to provide accurate required Aeronautical Navigation Data to the DOD. COE personnel updated several standards documents and conducted several navigation data chain audits required to ensure the data/information needed for navigation requirements is accurate and acceptable to facilitate compliance determination for platforms. FY 2017 Plans: Continue assisting DOD agencies and the NGA to validate the accuracy of DAFIF data and investigate potential automation tools/capabilities to increase database accuracy. FY 2018 Plans: Work with DOD agencies and the FAA to develop performance based procedures required to operate without restriction in the NAS and in international civil aviation environments. Continue to publish procedures and databases with the required degree of accuracy/performance necessary to operate manned and remotely piloted aircraft in the NAS. | | | | |
| Title: CNS/ATM COE Generic Performance Matrix (GPM) Development Description: Participate in technical forums to understand and influence civil aviation standards to incorporate DOD interests. Create new and/or revise the 22 existing GPMs used by AF platform program offices to ensure aircraft comply with civil aviation requirements. Tailor GPMs for program offices to apply standards to unique aircraft avionics architectures. Assist 50+ aircraft program offices with the development of CNS/ATM related test and evaluation plans, the analysis of test/performance data, and the certification of aircraft CNS/ATM performance. FY 2016 Accomplishments: Updated 9 GPMs. Tailored GPMs with two platforms for avionics upgrades. Issued six Letters of Compliance. Evaluated ability of currently fielded GPS equipment to meet ADS-B requirements. FY 2017 Plans: Continue to engage at industry and civil authority technical working groups to influence aviation standards that benefit DOD users. Continue to define the standards and assist AF and DOD program offices to plan and equip aircraft to meet CNS/ATM requirements. Perform tests on additional fielded GPS systems to determine if they can meet ADS-B requirements. FY 2018 Plans: | | 1.671 | 1.710 | 1.790 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305099F / <i>Global Air Traffic Management (GATM)</i> |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Continue development of performance matrices to ensure AF manned and remotely piloted aircraft are capable and certified to operate in accordance with emerging International Civil Aviation Organization performance based CNS/ATM requirements. | | | |
| Accomplishments/Planned Programs Subtotals | 4.089 | 4.354 | 4.453 |

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

Remarks

E. Acquisition Strategy
This program primarily supports the acquisition of contractor advisory and assistance service (A&AS) and other technical support personnel to support the efforts described in Section C. This program also provides for the acquisition of contractor services in support of various program management activities within the COE. All of these services are acquired via the issuance of task/delivery orders against existing contractor support contract vehicles available to the CNS/ATM COE.

F. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0305110F / Satellite Control Network (SPACE) |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|-----------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 7.327 | 15.624 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 673276: Satellite Control Network | - | 7.327 | 15.624 | 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

In FY2018, PE 0305110F, Satellite Control Network efforts were transferred to PE 1203110F, Satellite Control Network due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203110F.

B. Program Change Summary (\$ in Millions)

| | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|-------------------------------------|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 7.327 | 15.624 | 0.000 | 0.000 | 0.000 |
| Total Adjustments | 7.327 | 15.624 | 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 | 7.327 | 15.624 | 0.000 | 0.000 | 0.000 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305111F / <i>Weather Service</i> |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 28.812 | 19.974 | 26.654 | 0.000 | 26.654 | 27.144 | 27.703 | 28.184 | 28.761 | Continuing | Continuing |
| 672738: <i>Weather Service</i> | - | 28.812 | 19.974 | 26.654 | 0.000 | 26.654 | 27.144 | 27.703 | 28.184 | 28.761 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note
 In FY2017, PE 0305111F, Next Generation Radar (NEXRAD), efforts were transferred to PE 0305111F, Weather Data Analysis (WDA), in order to cover funding shortfalls in WDA.

In FY2016, PE 0305111F, Next Generation Radar (NEXRAD), research efforts were completed.

A. Mission Description and Budget Item Justification

This budget activity funds operational development necessary to acquire, sustain, and enhance segments of the Air Force Weather Weapon System (AFWWS). Activities also include studies and analysis to support current program planning. Management Service costs include Federally Funded Research and Development Centers (FFRDC) and Advisory and Assistance Service (A&AS). AFWWS provides timely, accurate, consistent and relevant space and atmospheric (a.k.a. terrestrial) weather information for global battlespace situational awareness. AFWWS supports worldwide operations of Air Force and Army warfighters, Special Operation Forces, and other government agencies with weather observing and forecasting capabilities at in-garrison and deployed locations, as well as centralized, reach-back capabilities. AFWWS activities align under four capability areas: Weather Data Collection, Weather Data Analysis and Dissemination, Weather Forecasting, and Product Tailoring/ Warfighter Applications. This alignment ensures an integrated and systems-oriented approach to program management decisions.

Next Generation Radar (NEXRAD) is a tri-agency program between the National Weather Service, Federal Aviation Administration and the US Air Force that operates 159 WSR-88D Doppler weather radars throughout the United States, two territories and select overseas military locations.

The Weather Data Analysis (WDA) program of record provides a large-scale data processing, product generation, and presentation system supporting Open Geospatial Consortium (OGC) services architecture and providing capability to ingest, process, store, access, and disseminate meteorological oceanographic (METOC) data. DoD Warfighter Capability/Benefits include the following; centralized Weather Web Service capability, increased availability of weather impacts and products, improved global, regional, and execution forecasts, specific, mission-tailored weather data on demand, and finally integrated M2M interfaces that shorten the COCOM kill chain.

Weather Forecasting provides advanced scientific numerical weather prediction capabilities for automated, high resolution forecast products for mission execution, rehearsal, and planning. Weather Forecasting includes projects for Numerical Weather Modeling (NWM); Weather Services - Live, Virtual, Constructive (WS-LVC) and the Space Weather Analysis and Forecast System.

Space Weather and Forecasting Systems (SWAFS) is a custom developed suite of software that rapidly ingests, processes and stores all available space environmental data, and disseminates products DoD-wide. It provides space weather products to decision makers in support of 1) Satellite operations, 2) Predictions of HF & UHF/

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305111F / <i>Weather Service</i> |
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SHF (SATCOM) communications outages, 3) GPS inaccuracies in navigation, 4) Tracking objects like satellites, debris, projectiles in space and forecasts for radar outages and early warning radar false launch indications, 5) National, strategic, operational & tactical intelligence collection, 6) Radiation forecasts for high altitude space flight operations. SWAFS will integrate with the Global Assimilation of Ionosphere Measurement -Full Physics (GAIM-FP) application and provide enhancements to Air Force Weather's communication outage forecasting capability.

This program is in Budget Activity 7, Operational System Development, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 29.826 | 19.974 | 26.577 | 0.000 | 26.577 |
| Current President's Budget | 28.812 | 19.974 | 26.654 | 0.000 | 26.654 |
| Total Adjustments | -1.014 | 0.000 | 0.077 | 0.000 | 0.077 |
| • 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 | -1.014 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 0.077 | 0.000 | 0.077 |

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Title: Next Generation Radar (NEXRAD) | 0.190 | 0.000 | 0.000 |
| Description: NEXRAD is a tri-agency program that manages a nation-wide doppler weather radar network to provide radar data and products for flight operations and resource protection. This effort was formerly included in "Weather Data Collection." | | | |
| FY 2016 Accomplishments: - Participated with National Weather Service and Federal Aviation Administration to develop hail size discriminator algorithms. | | | |
| FY 2017 Plans: N/A | | | |
| FY 2018 Plans: N/A | | | |

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|---|--------|-------|--------|
| Title: Weather Data Analysis (WDA) | 14.227 | 9.623 | 10.317 |
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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0305111F / <i>Weather Service</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>Description: WDA provides a net-centric infrastructure that assimilates worldwide sources of atmospheric and space weather data and produces decision-quality information for warfighters. This effort includes AF Weather Web Services (AFW-WEBS) which was formerly included in "Weather Forecasting."</p> <p>FY 2016 Accomplishments: - Implemented Inc 4, Build C, Release 1 2 and 3. Which enhances the capability to ingest, process, store, access, and disseminate meteorological/oceanographic data via upgrades to the web services architecture to expand the Open Geospatial Consortium services and upgrade the large-scale data processing to accommodate new environmental satellite and numerical weather modeling data.</p> <p>FY 2017 Plans: - Complete implementation of Inc 4, Build C, Release 3, develop and implement Inc 4, Build C, Release 4, and develop Inc 4, Build D, Release 1 in order to enhance the capability to ingest, process, store, access, and disseminate meteorological/oceanographic data via upgrades to the web services architecture to expand the Open Geospatial Consortium services and upgrade the large-scale data processing to accommodate new environmental satellite and numerical weather modeling data as well as begin efforts to implement an Air Force Weather Weapon System Single Services Baseline.</p> <p>FY 2018 Plans: - Will implement Inc 4, Build D, Release 2, will develop and implement Inc 4, Build 1, Release 2, and will develop Inc 4, Build D, Release 1 in order to enhance the capability to ingest, process, store, access, and disseminate meteorological/oceanographic data via upgrades to the web services architecture to expand the Open Geospatial Consortium services and upgrade the large-scale data processing to accommodate new environmental satellite and numerical weather modeling data as well as begin efforts to implement an Air Force Weather Weapon System Single Services Baseline. In addition, AFW-WEBS Build 2.0 will employ adequate software to maximize services based architecture and be responsive to delivering weather products and services to support warfighter operations. AFW-WEBS will evolve into the single web interface optimized for accessing authoritative AF meteorological information and services. Meteorological information will be serviced in geospatially-enabled formats for direct integration into warfighter systems and decision cycles.</p> | | | | |
| <p>Title: Numerical Weather Modeling (NWM)</p> <p>Description: NWM provides advanced scientific numerical weather prediction capabilities for automated, high resolution forecast products for mission planning, rehearsal, and execution. This effort was formerly titled "Weather Forecasting" and included efforts that are now identified separately.</p> <p>FY 2016 Accomplishments:</p> | | 8.180 | 6.930 | 11.985 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
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| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>- Implemented the Air Force Global Air Land Weather Exploitation Model (GALWEM). Developed and integrated the ensemble and four-dimensional data ingest schemes in order to improve convection and cloud forecasting techniques and enhancing aerosol modeling algorithms.</p> <p>FY 2017 Plans:</p> <p>- Integrate GALWEM into operations and continue to integrate ensemble and four-dimensional data ingest schemes in order to improve convection and cloud forecasting techniques and enhancing aerosol modeling algorithms.</p> <p>FY 2018 Plans:</p> <p>- Will refresh both hardware and software of the Cloud Depiction Forecast System Version 2.0 (CDFS II), will develop software for exploitation of new satellite data sources, and will purchase HPC hardware for a development and test enclave in support of Prod 11 operations.</p> | | | | |
| <p>Title: Space Weather Analysis and Forecast System-Global Assimilation Ionospheric Measurement (SWAFS-GAIM)</p> <p>Description: Space Weather and Forecasting Systems (SWAFS) is designed to enhance and sustain a single integrated space weather software baseline operating in a net-centric environment at all security levels within the 557th Weather Wing enterprise architecture.</p> <p>SWAFS was declared FOC in FY15 and then modified to focus on the Global Assimilation of Ionospheric Measurements Full Physics (GAIM-FP) model, to satisfy future requirements, including the development of other new models and science algorithms that do not currently exist and processing space weather data that is not currently available.</p> <p>Capabilities provided: Return to service; corrective, adaptive, and capability improvement maintenance for the operational software baseline</p> <p>SWAFS accepts space weather data and uses models and/or algorithms to create and disseminate specified space weather analysis and forecast products</p> <p>Users: COCOMs, MAJCOMs, SPADOC, NRO, Navy & Army</p> <p>FY 2016 Accomplishments:</p> <p>- Continued with the Net-Centric data transition as well as Scintillation Network Decision Aid (SCINDA) 2.0 and Oval Variation, Analysis, Tracking, Intensity, and Online Nowcasting (OVATION) Prime integration. Also, SWAFS started work on GAIM-FP</p> | | 4.000 | 2.274 | 3.609 |

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| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>enhancements such a D-Region and GAIM Coverage Analysis Program (CAP). Furthermore, the funding was utilized for Program Support and lab activities to meet user requirements.</p> <p>FY 2017 Plans: - Incorporate D-Region capability and closing the capability gap in the lower ionospheric layers. Funds integration of Global Ionospheric Scintillation Model in order to forecast scintillation's impact on the phase and amplitude of signals passing through the ionosphere. Continue program office and other related program support activities that may include, but not limited to studies, technical analysis, etc.</p> <p>FY 2018 Plans: - Will develop and integrate a new Radiation Exposure model into the SWAFS baseline. The Radiation Exposure model will provide the operator with an assessment of the level of radiation for flight. Since the legacy system no longer meets mission requirements to sense, obtain, analyze and predict particle environments responsible for radiation threat to the aircrew, FY18 funds will develop a new model to fulfill operational capability gaps. Continue Program Office and other related support activities that may include, but not limited to studies, technical analysis, etc.</p> | | | | |
| <p>Title: Weather Services-Live, Virtual Constructive (WS-LVC)</p> <p>Description: - WS-LVC provides environmental representations to the DoD Modeling and Simulation community. This effort was formerly called Environmental Data Cube System Support (EDCSS) and included in "Weather Forecasting."</p> <p>FY 2016 Accomplishments: - Developed the Air and Space Natural Environment data and the associated effects that was used in the scenarios within warfighter models and simulations.</p> <p>FY 2017 Plans: - Integrate weather data and effects into Air Force and Army Warfighter Modeling and Simulation platforms by improving representation of Air and Space Natural Environment data and associated effects, mitigating data gaps in air and space domains, and developing software to transition to a agile software development process.</p> <p>FY 2018 Plans: - Will transition to cloud computing environment, will support RIF cloud proof of concept, will develop next generation forward-deployed Distributor capability, and will investigate use of Air Force Weather Open Geospatial Consortium (OGC) services for live weather feeds to support Live and Constructive simulations.</p> | | 2.215 | 1.147 | 0.743 |
| Accomplishments/Planned Programs Subtotals | | 28.812 | 19.974 | 26.654 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305111F / <i>Weather Service</i> |
|--|--|

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

| Line Item | FY 2016 | FY 2017 | FY 2018 | FY 2018 | FY 2018 | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To | |
|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|------------|------------|
| | | | Base | OCO | Total | | | | | Complete | Total Cost |
| • OPAF: BA03: Line Item # 833070: <i>Weather Observation Forecast</i> | 21.511 | 21.667 | 40.116 | 0.000 | 40.116 | 38.633 | 21.953 | 25.535 | 22.751 | Continuing | Continuing |
| • OPAF: BA03: Line Item # 838010: <i>Comm Elect Mods</i> | 8.492 | 8.646 | 10.155 | 0.000 | 10.155 | 8.924 | 9.083 | 9.246 | 9.412 | Continuing | Continuing |
| • OPAF: BA05: Line Item # 86190A: <i>Spares and Repair Parts</i> | 0.278 | 0.719 | 0.941 | 0.000 | 0.941 | 0.805 | 0.819 | 0.832 | 0.847 | Continuing | Continuing |

Remarks

E. Acquisition Strategy

AF Weather utilizes spiral and incremental development efforts using multiple contracts supporting a family of ACAT III Programs of Record through development, fielding, and sustainment.

Cost Plus contracts are utilized for software development and sustainment and Fixed Firm Price contracts for COTS systems procurements, hardware procurements and Contract Logistics Support (CLS) system sustainment efforts. Pre-competed GSA and Defense MicroElectronics Activity (DMEA) contract vehicles are leveraged when appropriate, and competitive and small-business awards are favored.

The Air Force Program Executive Officer for Battle Management (AFPEO BM) and the Air Force Program Executive Officer for Space (AFPEO SP) are the PEOs for the AFWWS. AFPEO BM manages the ground-based atmospheric sensing and data analysis, atmospheric forecast systems, and product tailoring warfighter applications. AFPEO SP manages the ground-based segments of space weather collection platforms as well as the Space Weather Analysis and Forecasting System. Both the AFPEO BM and AFPEO SP are their respective program's Milestone Decision Authority (MDA).

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date: May 2017**

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305111F / <i>Weather Service</i> | Project (Number/Name) 672738 / <i>Weather Service</i> |
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| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| WDA 1, Develop centralised web service capability (WDA 4C) | C/CPIF | Northrop Grumman : Bellevue, NE | - | 5.117 | Dec 2015 | 3.326 | Dec 2016 | 4.752 | Dec 2017 | 0.000 | | 4.752 | Continuing | Continuing | - |
| WDA 2, Development and integration of weather analysis software (AFW-WEBS) | C/CPFF | Raytheon : Long Beach, CA | - | 5.902 | Nov 2015 | 3.610 | Dec 2016 | 4.076 | Dec 2017 | 0.000 | | 4.076 | Continuing | Continuing | - |
| WDA 4, Development Contract and integration of weather analysis software | MIPR | AFRL : Wright - Patterson, OH | - | 0.040 | Sep 2016 | 0.040 | Sep 2017 | 0.040 | Sep 2018 | 0.000 | | 0.040 | Continuing | Continuing | - |
| WDA 5, Weather Common Component (WX CC) | C/CPIF | Northrop Grumman : Bellevue, NE | - | 1.483 | Feb 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| NWM 1 - Perform software enhancements to the mesoscale production model | MIPR | NCAR : Boulder, CO | - | 0.669 | Feb 2016 | 0.503 | Feb 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| NWM 2 - Improve land information system (LIS) application, providing earth surface boundary characterization for numerical modeling | MIPR | NASA : Greenbelt, MD | - | 1.054 | Feb 2016 | 1.046 | Feb 2017 | 1.125 | Feb 2018 | 0.000 | | 1.125 | Continuing | Continuing | - |
| NWM 3 - Develop model data assimilation application, ensemble forecast procedures, and convective-scale resolution model capability. | C/CPIF | Northrop Grumman : Bellevue, NE | - | 6.084 | Dec 2015 | 5.579 | Jan 2017 | 9.673 | Dec 2017 | 0.000 | | 9.673 | Continuing | Continuing | - |
| WS-LVC | C/CPIF | NWACT : Orlando, FL | - | 1.087 | Feb 2016 | 0.663 | Apr 2017 | 0.515 | Mar 2018 | 0.000 | | 0.515 | Continuing | Continuing | - |
| NEXRAD | MIPR | NOAA/NWS : Silver Spring, MD | - | 0.448 | Jun 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| SWAFS development integration and sustainment of the GAIM-full physics version | C/CPIF | Northrop Grumman : Bellevue, NE | - | 3.590 | Sep 2016 | 1.989 | Oct 2016 | 3.000 | Apr 2018 | 0.000 | | 3.000 | Continuing | Continuing | - |

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305111F / <i>Weather Service</i> | Project (Number/Name) 672738 / <i>Weather Service</i> |
|--|--|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 2- perform verification and validation report on the GAIM-full physics model | Various | Various : Various | - | 0.000 | | 0.000 | | 0.159 | Jan 2018 | 0.000 | | 0.159 | Continuing | Continuing | - |
| Subtotal | | | - | 25.474 | | 16.756 | | 23.340 | | 0.000 | | 23.340 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| 46th TS/JITC AFLCMC | WR | 46 TS : Offutt AFB, NE | - | 0.563 | Nov 2015 | 0.434 | Nov 2016 | 0.443 | Nov 2017 | 0.000 | | 0.443 | Continuing | Continuing | - |
| Subtotal | | | - | 0.563 | | 0.434 | | 0.443 | | 0.000 | | 0.443 | - | - | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 AFLCMC | C/CPFF | AFLCMC : Hanscom AFB, MA | - | 2.365 | Oct 2015 | 2.374 | Oct 2016 | 2.421 | Oct 2017 | 0.000 | | 2.421 | Continuing | Continuing | - |
| FFRDC SMC | SS/CPFF | SMC : Los Angeles AFB, CA | - | 0.410 | Oct 2015 | 0.410 | Oct 2016 | 0.450 | May 2018 | 0.000 | | 0.450 | Continuing | Continuing | - |
| Subtotal | | | - | 2.775 | | 2.784 | | 2.871 | | 0.000 | | 2.871 | - | - | - |

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305111F / <i>Weather Service</i> | Project (Number/Name) 672738 / <i>Weather Service</i> |
|--|--|---|

Schedule Details

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Weather Data Analysis | 1 | 2016 | 4 | 2021 |
| Weather Data Analysis Inc 4 Build C Delivery | 1 | 2016 | 4 | 2017 |
| Weather Data Analysis Inc 4 Build D Delivery | 4 | 2017 | 1 | 2020 |
| Weather Data Analysis Inc 4 Build D (MS C - MAR 2020) | 2 | 2020 | 2 | 2020 |
| Weather Data Analysis Inc 5 Build A Delivery | 1 | 2020 | 4 | 2021 |
| Numerical Weather Modeling | 1 | 2016 | 4 | 2022 |
| Live, Virtual, and Constructive Weather Services | 1 | 2016 | 4 | 2021 |
| Live, Virtual, and Constructive (Post MS C - MAR 2016) | 2 | 2016 | 2 | 2016 |
| Live, Virtual, and Constructive 1.1 Delivery | 4 | 2016 | 3 | 2017 |
| Live, Virtual, and Constructive 1.2 Delivery | 2 | 2017 | 1 | 2018 |
| Live, Virtual, and Constructive 1.3 Delivery | 4 | 2017 | 3 | 2018 |
| Live, Virtual, and Constructive 1.4 Delivery | 1 | 2018 | 4 | 2018 |
| Live, Virtual, and Constructive 1.5 Delivery | 4 | 2018 | 3 | 2019 |
| Space Weather Analysis and Forecasting System - Full GAIM Physics and Software Delivery Upgrade (Post MS B - JUN 2017) | 4 | 2016 | 1 | 2022 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305114F / <i>Air Traffic Control, Approach, and Landing System (ATCALs)</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 18.830 | 9.770 | 6.306 | 0.000 | 6.306 | 6.318 | 6.501 | 6.615 | 6.750 | Continuing | Continuing |
| 673587: <i>Air Traffic Control Systems</i> | - | 18.830 | 9.770 | 6.306 | 0.000 | 6.306 | 6.318 | 6.501 | 6.615 | 6.750 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

To support the Air Force worldwide flying mission, this program element funds research, development, and management of new air traffic control communications, surveillance, positioning, and precision approach and landing systems. When applicable, this includes joint efforts with the Federal Aviation Administration (FAA) and coordination with the International Civil Aviation Organization and the North Atlantic Treaty Organization. ATCALs development funding currently focuses on the Next Generation (NextGen) Air Transportation System (ATS) and Deployable Radar Approach Control (D-RAPCON) programs as described below.

NextGen ATS. This is the United States initiative for the transformation of the National Airspace System (NAS) over the next 20-30 years to enhance safety, security, efficiency, affordability and capacity, meeting the requirements of all users of the NAS. This interagency effort is designed to enable the transition from a ground infrastructure dominated Air Traffic Management capability to a capability that leverages advances in aircraft Performance Based Navigation (PBN), non-radar based surveillance services, and transition from solid-state analog voice communications to networked digital voice and data exchange. Per Deputy Secretary of Defense Direction (28 Dec 07 Memo), the Air Force is the DoD lead Service for NextGen ATS implementation and architecture development. NextGen ATS will be built on key elements from existing programs and technologies and on new systems under development. As these technologies and architectures mature, ground system upgrades will be coordinated and fielded concurrently with aircraft avionics capabilities that are acquired and integrated into Air Force aircraft (manned and unmanned). These efforts are a subset of the Communication, Navigation, and Surveillance/Air Traffic Management program in PE 0305099F and will involve aircraft avionics as well as fixed based and deployable air traffic control and landing systems. FY18 efforts will continue to use the Lead Service Office (LSO) process to develop a NextGen ATS DoD Strategic Roadmap, Consolidated Avionics Repository, and Command and Control Core Function Support Plan, outlining DoD and Air Force equities and requirements, via in-depth analysis of FAA NextGen ATS programs and timelines. Portfolio analysis will be captured in DoD NextGen ATS charters to guide Services through a broad and complex NextGen ATS environment. To minimize integration costs, the LSO will work with other organizations such as the Joint Program Office (JPO), across the Air Force and the DoD, to adopt a common framework with practical guidelines to evaluate the validity of NextGen ATS initiatives with the Air Force's mission. These efforts support the development of operational strategies that realize the achievement of valid NextGen ATS initiatives in concert with acquisition strategies in integrated avionics advances for systems such as Mode 5 Identification Friend or Foe (IFF), Global Positioning System (GPS) Military (M)-Code, Automatic Dependent Surveillance-Broadcast (ADS-B), Data Communications (Data Comm), and PBN. In support of Unmanned Aircraft System (UAS) operations, FY18 JPO efforts will also continue to support requests for implementation of Ground Based Sense and Avoid (GBSAA) at new locations. In FY18, the Air Force Flight Standards Agency (AFFSA) will continue NextGen ATS strategic planning efforts and also examine new civil air traffic control and landing system technologies that may have military utility such as a remote (unmanned) Air Traffic Control Tower System. In total, these efforts will focus on enabling DoD aircraft to take advantage of NextGen ATS envisioned efficiencies, developing policies/procedures to reduce costs while ensuring airspace access, seamlessly integrating UASs into the NAS and international

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305114F / <i>Air Traffic Control, Approach, and Landing System (ATCALs)</i> |
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airspace, improving the display of aircraft position to air traffic controllers, determining future requirements for digital communications with manned and unmanned aircraft, and enhancing flight safety.

Deployable Radar Approach Control (D-RAPCON). D-RAPCON will replace the 40 year old Air National Guard (ANG) AN/MPN-14K and Active Duty (AD) AN/TPN-19 Airport Surveillance Radar and Operations Shelter subsystems with state-of-the-art digital systems. Due to diminishing manufacturing sources, modification and overhaul of the existing systems has proven to be ineffective. On average, due to systemic equipment failures, no more than four of the existing 14 systems are deployable at any given time and none are fully mission capable. The current AN/TPN-19 (4 systems) and AN/MPN-14K (10 systems) operational availability rates are 25% and 60% respectively versus a requirement of D-RAPCON of 98%. D-RAPCON will provide aircraft surveillance/sequencing, air traffic control communications, and automation capabilities for terminal area air traffic control operations. D-RAPCON will also be deployed with a fixed base or deployable Instrument Landing System, a fixed or mobile control tower, and a fixed or mobile Tactical Air Navigation system to provide a complete air traffic control capability. D-RAPCON will support the full range of tactical military, worldwide humanitarian, and domestic disaster relief operations. The primary surveillance radar coverage (non-cooperative targets) extends out 60 nautical miles (nm) and the secondary surveillance radar coverage (cooperative targets) will increase from 120 nm to 200 nm. The D-RAPCON Capability Development Document was approved by the Air Force Requirements Oversight Council on 8 Feb 11. The D-RAPCON Milestone C is planned in Jan 18 with a full rate production decision in Jul 18. In FY18 no development funds are requested for D-RAPCON. Remaining development tasks in FY18 will be accomplished with prior year funds and focused on completion of operational testing and the following system certifications: Air Traffic Control Radar Beacon System Identification Friend or Foe, Mark XII/Mark XIII Systems Certification; National Airspace System Certification; Shelter/Transportability Certification; Electro-Magnetic Spectrum Certification; Information Assurance Certification; and Accreditation and Interoperability and Supportability Certification. Related OPAF funds are in PE 0305114F Weapon System Code 833010.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 19.392 | 9.770 | 6.288 | 0.000 | 6.288 |
| Current President's Budget | 18.830 | 9.770 | 6.306 | 0.000 | 6.306 |
| Total Adjustments | -0.562 | 0.000 | 0.018 | 0.000 | 0.018 |
| • 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 | -0.562 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 0.018 | 0.000 | 0.018 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305114F / <i>Air Traffic Control, Approach, and Landing System (ATCALs)</i> |
|--|---|

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

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|---------|---------|--------------|-------------|---------------|
| <p>Title: NextGen ATS</p> <p>Description: Includes efforts to implement NextGen ATS efficiencies and capabilities. Focus is on Automatic Dependent Surveillance Broadcast (ADS-B) integration risk reduction, seamless integration of Unmanned Aircraft Systems (UASs) into civil airspace, Lead Service Office (LSO)/Joint Program Office (JPO) technical support/architecture development, development of NextGen ATS aircraft performance based navigation avionics roadmaps, a Consolidated Avionics Repository, and surveillance radar/ADS-B integration/automation system upgrades.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Continued to execute analysis of NextGen ATS programs and capture results through charters and incorporate into NextGen ATS DoD Strategic Roadmap and Consolidated Avionics Repository which included the following tasks: -- Completed development of performance based navigation strategic roadmap charter based on Air Mobility Command Flight Operations and Air Navigation Service Provider perspectives. -- Continued use of performance based navigation roadmap and charter to conduct analysis and prioritization of NextGen ATS aircraft avionics and ground system capabilities. -- Continued testing/validation of position sources and transponders against ADS-B requirements to determine ADS-B compatibility. -- Continued assessment of DoD GPS avionics and Identification Friend or Foe transponders. -- Continued gathering/clarifying/analyzing data on FAA radar dependencies (ADS-B) for impact and mitigation strategies (minimum operating network) in the event of FAA divestiture. -- Continued to develop solutions/timeline to integrate Data Comm equipment into DoD fleet. -- Continued to advance electronic flight bag applications and standardization across all major commands. -- Continued to coordinate with interagency partners to promote UAS integration into civil airspace, including participation in applicable standards organizations. -- Continued to support requests for implementation of UAS GBSAA capability at new locations. -- Began effort to evaluate solutions for Self-Contained Approaches. -- Began effort to evaluate solutions for Alternative Positioning, Navigation, and Timing. - Began preparation of engineering change proposal to integrate Mode 5 Identification Friend or Foe and secure comm into D-RAPCON surveillance radar and automation system. | 3.886 | 5.020 | 6.306 | - | 6.306 |

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305114F / <i>Air Traffic Control, Approach, and Landing System (ATCALs)</i> |
|--|---|

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

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|---------|---------|-----------------|----------------|------------------|
| <p>- Gathered data from industry request for information responses on solutions for Remote Air Traffic Control Tower System.</p> <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Continue to execute analysis of NextGen ATS programs and capture results through charters and incorporate into NextGen ATS DoD Strategic Roadmap and Consolidated Avionics Repository which include the following tasks: <ul style="list-style-type: none"> -- Continue use of performance based navigation roadmap/charter to conduct analysis & prioritization of NextGen ATS aircraft and ground system capabilities. -- Continue testing/validation of position sources and transponders against ADS-B requirements to determine ADS-B compatibility. -- Continue assessment of DoD GPS avionics and Identification Friend or Foe (IFF) transponders. -- Continue to analyze FAA radar divestiture impacts and AF radar and FAA ADS-B coverage data for establishing a minimum operating network (MON). -- Continue to develop solutions/timeline to integrate Data Comm equipage into DoD fleet. -- Continue to advance electronic flight bag applications across all major commands. -- Continue to support requests for implementation of UAS GBSAA capability at new locations. -- Continue evaluation of solutions for Self-Contained Approaches. -- Continue evaluation of solutions for Alternative Positioning, Navigation, and Timing (APNT). -- Begin analysis on specific base flight operations to identify opportunities to enhance performance based navigation usage. -- Provide requirements analysis and document actions and costs to replace legacy air traffic control surveillance radars with the Spectrum Efficient National Surveillance Radar. - Continue integration analysis of Mode 5 IFF/Secure Comm into D-RAPCON. - Assess maturity of Remote Air Traffic Control Tower technology and potential to support AF flying/ATC missions in lieu of brick and mortar control towers. - Conduct analysis of options to develop Procedures for Air Navigation Service - Operations (Pans-Ops) Terminal Instrument procedures (TERPS) capability. <p>FY 2018 Base Plans:</p> <ul style="list-style-type: none"> - Will continue to execute analysis of NextGen ATS programs and capture results through charters and incorporate into NextGen ATS DoD Strategic Roadmap and Consolidated Avionics Repository which will include the following tasks: | | | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305114F / <i>Air Traffic Control, Approach, and Landing System (ATCALs)</i> |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|---------|---------|--------------|-------------|---------------|
| <p>-- Will continue use of performance based navigation (PBN) roadmap and charter to conduct analysis and prioritization of NextGen ATS aircraft and ground system capabilities.</p> <p>-- Will continue analysis on specific base flight operations to identify opportunities to enhance PBN usage.</p> <p>-- Will continue testing/validation of position sources and transponders against Automatic Dependent Surveillance Broadcast (ADS-B) requirements to determine ADS-B compatibility.</p> <p>-- Will continue assessment of DoD GPS avionics and Identification Friend or Foe transponders.</p> <p>-- Will complete joint FAA/Air Force analysis/assessment of FAA radar divesture/impacts and establishment of a MON.</p> <p>-- Will continue development of solutions to integrate Data Comm capability into DoD fleet.</p> <p>-- Will continue to advance electronic flight bag applications.</p> <p>-- Will continue to coordinate with interagency partners to promote UAS integration into civil airspace.</p> <p>-- Will continue to support requests for implementation of UAS GBSAA capability at new locations.</p> <p>-- Will continue evaluation of solutions for Self-Contained Approaches.</p> <p>-- Will continue evaluation of solutions for APNT.</p> <p>- Will continue to refine D-RAPCON Mode 5 and secure comm/architecture and concept of operation.</p> <p>- Will continue planning for execution of Operational Utility Evaluation of a Remote Air Traffic Control Tower capability to AF flying/ATC missions in lieu of brick and mortar control towers.</p> | | | | | |
| <p>Title: D-RAPCON</p> <p>Description: Effort supports D-RAPCON engineering, manufacturing, and development and government developmental and operational testing of one Pre-Production Unit (PPU) leading to Milestone C and production decisions in FY18.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Continued contractor testing. - Obtained frequency allocation and authority to radiate approvals. - Continued preparation of documentation to obtain six separate certifications which are required for entry into full rate production: <ul style="list-style-type: none"> -- Air Traffic Control Radar Beacon System, Identification Friend or Foe, Mark XII/Mark XIIA Systems Certification. -- National Air Space Certification. -- Shelter/Transportability Certification. -- Electro-Magnetic Spectrum Certification. | 14.944 | 4.750 | 0.000 | - | 0.000 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305114F / <i>Air Traffic Control, Approach, and Landing System (ATCALs)</i> |
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C. Accomplishments/Planned Programs (\$ in Millions)

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|---------|---------|--------------|-------------|---------------|
| -- Information Assurance Certification. -- Accreditation and Interoperability and Supportability Certification. FY 2017 Plans: - Complete contractor testing and begin government developmental testing and deficiency mitigation work as necessary. - Continue to prepare for Milestone C decision and production contract award in FY18. - Continue the following system certifications which are required prior to full rate production decision: -- Air Traffic Control Radar Beacon System, Identification Friend or Foe, Mark XII/Mark XIIA Systems Certification. -- National Airspace System Certification. -- Shelter/Transportability Certification. -- Electro-Magnetic Spectrum Certification. -- Information Assurance Certification. -- Accreditation and Interoperability and Supportability Certification. FY 2018 Base Plans: N/A | | | | | |
| Accomplishments/Planned Programs Subtotals | 18.830 | 9.770 | 6.306 | - | 6.306 |

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
|---|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| • OPAF: BA 03: Line Item # 833010: <i>Air Traffic Control and Landing Systems</i> | 0.000 | 24.866 | 48.579 | 16.500 | 65.079 | 54.086 | 46.713 | 37.100 | 37.772 | Continuing | Continuing |
| • OPAF: BA 05: Line Item # 861900: <i>Spares and Repair Parts</i> | 0.000 | 1.009 | 1.294 | 0.000 | 1.294 | 0.939 | 0.957 | 3.143 | 3.201 | Continuing | Continuing |

Remarks

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305114F / <i>Air Traffic Control, Approach, and Landing System (ATCALs)</i> | |
| E. Acquisition Strategy ATCALs is a basket program element with multiple programs in various stages of acquisition which provide the air traffic control infrastructure to support peacetime and wartime missions. The current acquisition strategy is focused on replacing 1960/70s era deployable and fixed based equipment with mature off-the-shelf technology with remote maintenance capability while also looking to the future under the NextGen ATS initiative. Current contracting efforts include D-RAPCON development and GBSAA/NextGen ATS planning and implementation. The contracting strategy for D-RAPCON development is based on award of a competitive fixed price incentive firm contract emphasizing off-the-shelf technology and maximizing the use of non-developmental items. The contract includes engineering, manufacturing, and development and test with follow-on production options. GBSAA and NextGen ATS Enterprise Architecture Implementation Tasks are being executed via Military Inter-Departmental Purchase Requests, and Project Orders with various organizations (FAA, MITRE, Army, Air Force Research Laboratory, and Air Force Flight Standards Agency). The Air Force Program Executive Officer (PEO) for Battlefield Management (BM) is the PEO for ATCALs. PEO/BM is also the delegated milestone decision authority for ATCALs. The Air Force Life Cycle Management Center Aerospace Management Systems Division (AFLCMC/HBA) is aligned under the PEO/BM and includes program management, contracts, legal, and financial management support. | | |
| F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission. | | |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305116F / <i>Aerial Targets</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 2.578 | 3.051 | 21.295 | 0.000 | 21.295 | 1.446 | 1.505 | 1.532 | 1.566 | Continuing | Continuing |
| 675136: <i>Target Systems Development</i> | - | 1.092 | 1.915 | 5.029 | 0.000 | 5.029 | 1.446 | 1.505 | 1.532 | 1.566 | Continuing | Continuing |
| 675366: <i>QF-16</i> | - | 1.486 | 1.136 | 16.266 | 0.000 | 16.266 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 18.888 |

A. Mission Description and Budget Item Justification

Full-scale and subscale Aerial Targets assure warfighter's weapon systems will perform effectively against real-world enemy fighters and cruise missiles. Aerial Targets provide adherence to Public Law Title 10, Section 2366 "Live Fire/Lethality" developmental/operational test requirements. Targets are used to validate operational missile/weapon system effectiveness and fighter Operational Flight Program (OFP) updates. Targets are essential for development testing/operational testing for all air-to-air and surface-to-air missiles, and for the F-22A, F-35, F-18, F-16, and F-15, aircraft. The objective is to provide realistic targets for missile testing to enable the development of offensive counter-air systems (air-to-air and surface-to-air) capable of defeating changing enemy airborne threats. This program element funds development, improvements, and updates of full-scale/subscale aerial targets and target control systems to ensure aerial targets represent enemy threat airborne systems. Specialized target payload subsystems are developed for requirements to include but not limited to missile scoring, electronic attack, electronic countermeasures and infrared (IR) countermeasures, radar and IR signature augmentation, and chaff and flare dispensing systems.

This program is in budget activity 7 - Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 2.515 | 3.051 | 2.334 | 0.000 | 2.334 |
| Current President's Budget | 2.578 | 3.051 | 21.295 | 0.000 | 21.295 |
| Total Adjustments | 0.063 | 0.000 | 18.961 | 0.000 | 18.961 |
| • 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 | 0.063 | 0.000 | 18.961 | 0.000 | 18.961 |

Change Summary Explanation

FY18 increase of \$18.961M for enhancements to the QF-16 electronic attack infrared signature

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force **Date:** May 2017

| | | |
|--|---|--|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305116F / <i>Aerial Targets</i> | Project (Number/Name) 675136 / <i>Target Systems Development</i> |
|--|---|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 675136: <i>Target Systems Development</i> | - | 1.092 | 1.915 | 5.029 | 0.000 | 5.029 | 1.446 | 1.505 | 1.532 | 1.566 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

Full-scale aerial targets, subscale aerial targets, and companion Target Control Systems (TCS) assure the effectiveness and currency of warfighter weapon systems to combat real-world enemy fighters and cruise missiles. The BQM-167A Air Force Subscale Aerial Target (AFSAT) is a reusable jet-powered target aircraft measuring approximately 20 feet long with a mission to simulate threat aircraft for testing and evaluation of surface-to-air, ship-to-air, or air-to-air missiles. The target accomplishes this mission through the use of optional payloads including chaff and flare, electronic attack, and infrared devices. Funding supports continued improvement of launch phase performance and overall performance enhancement efforts. Funding supports development, improvements, and updates of target control systems and specialized target payload subsystems for requirements to include but not limited to missile scoring, electronic attack and infrared (IR) countermeasures, radar and IR signature augmentation, and chaff and flare dispensing systems.

Electronic Attack (EA) pod upgrade provides new techniques and capabilities critical to subscales and full-scales to realistically emulate foreign threat systems in support of weapons testing.

TCS provides a myriad of sub-systems that together delivers the capability to control and track mission aerial targets (full-scale and subscale) and to track a mix of other critical mission participants (to include relay platforms, shooters, and the missile system under test). In this role, TCS ensures an optimum integrated aerial target environment that enhances both weapon system assessments and companion aircrew skills, all the while assuring the full safety of mission participants throughout the conduct and fulfillment of T&E objectives. Funding supports continued improvement (modernization) of TCS capabilities to effectively meet the multi-service T&E demands of current and future warfighter weapon systems.

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

| | FY 2016 | FY 2017 | FY 2018 |
|---|---------|---------|---------|
| Title: BQM-167A Development | 0.000 | 0.049 | 1.340 |
| Description: Provide enhancements to the radar cross section and infrared signature with accompanying test and integration. Begin development activities for an alternate launch system. | | | |
| FY 2016 Accomplishments: N/A | | | |
| FY 2017 Plans: | | | |

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|--|---|--|----------------|----------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305116F / <i>Aerial Targets</i> | Project (Number/Name) 675136 / <i>Target Systems Development</i> | | |
| B. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>Continue BQM-167A improvement efforts. Conduct research and analysis on potential affordable, subscale aerial target platform concepts, support user requirements generation for alternate launch capabilities to the current AFSAT platform and improve target endurance.</p> <p>FY 2018 Plans: Continue BQM-167A improvement efforts. Conduct research and analysis on potential affordable, subscale aerial target platform concepts, support user requirements generation for the current AFSAT platform and improve target endurance.</p> | | | | |
| <p>Title: Target Control System</p> <p>Description: Provide system modernization enhancements to Target Control System Gulf Range Drone Control System, (GRDCS) for command and control and tracking of Aerial Targets.</p> <p>FY 2016 Accomplishments: Continued system modernization enhancements to Target Control System for command and control, tracking of Aerial Targets, Utah Test and Training Range Upgrade, and Loss of Carrier Waypoint.</p> <p>FY 2017 Plans: Continue system modernization enhancements to include but not limited to GRDCS software updates to support QF-16 Full Operational Capability at Holloman AFB and future TCS capability assessment.</p> <p>FY 2018 Plans: Continue system modernization enhancements to include but not limited to GRDCS software updates to support QF-16 Full Operational Capability at Holloman AFB and future TCS capability assessment.</p> | | 0.378 | 1.178 | 2.389 |
| <p>Title: Digital Radio Frequency Memory (DRFM)</p> <p>Description: Upgrade existing and develop new electronic attack (EA) pod hardware and software used on QF-16 and subscales to emulate evolving adversary EA tactics and techniques.</p> <p>FY 2016 Accomplishments: Continued efforts to upgrade existing and develop new EA pod hardware and software used on QF-16 and subscales to emulate evolving adversary EA tactics and techniques.</p> <p>FY 2017 Plans: Continue efforts to upgrade existing and develop new EA pod hardware and software used on QF-16 and subscales to emulate evolving adversary EA tactics and techniques.</p> <p>FY 2018 Plans:</p> | | 0.714 | 0.688 | 1.300 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305116F / <i>Aerial Targets</i> | Project (Number/Name) 675136 / <i>Target Systems Development</i> |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Continue efforts to upgrade existing and develop new EA pod hardware and software used on QF-16 and subscales to emulate evolving adversary EA tactics and techniques. | | | |
| Accomplishments/Planned Programs Subtotals | 1.092 | 1.915 | 5.029 |

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

| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| • APAF:BA04: Line Item # 10TRGT: <i>Target Drones</i> | 131.879 | 114.656 | 109.841 | 0.000 | 109.841 | 148.394 | 131.875 | 134.579 | 137.274 | Continuing | Continuing |
| • APAF: BA06: Line Item # 000999: <i>Initial Spares/Repair Parts</i> | 0.537 | 0.595 | 0.596 | 0.000 | 0.596 | 0.584 | 0.594 | 0.606 | 0.618 | Continuing | Continuing |
| • APAF: BA07: Line Item # 000074: <i>War Consumables</i> | 0.000 | 4.460 | 4.560 | 0.000 | 4.560 | 4.636 | 4.044 | 4.804 | 4.900 | Continuing | Continuing |
| • APAF: BA07: Line Item # 000075: <i>Other Production Charges</i> | 7.969 | 19.345 | 15.780 | 0.000 | 15.780 | 11.768 | 12.146 | 12.157 | 12.437 | Continuing | Continuing |
| • OPAF: BA03: Line Item # 834190: <i>Combat Training Ranges</i> | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 | 5.546 |

Remarks

D. Acquisition Strategy

The AFSAT acquisition strategy is sole source follow-on with fixed price and time and materials contracts. The Target Control System acquisition strategy includes several small projects to provide enhancements to Target Control System (to include GRDCS) and will be accomplished with other government agencies and contracts as needed. EA Pods acquisition strategy includes several small projects managed by the US Navy program office to provide enhancements to the target payloads for subscale and full-scale targets.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305116F / <i>Aerial Targets</i> | | | | Project (Number/Name) 675366 / <i>QF-16</i> | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 675366: <i>QF-16</i> | - | 1.486 | 1.136 | 16.266 | 0.000 | 16.266 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 18.888 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

Full-scale Aerial Targets assure warfighters weapon systems perform effectively against real-world enemy fighters and cruise missiles. Aerial Targets support adherence to Public Law Title 10, Section 2366, which requires major systems and munitions programs to conduct survivability and lethality testing before full-rate production. The Aerial Targets program provides targets to satisfy "Live Fire/Lethality" developmental/operational test requirements. Targets are used to validate operational missile/weapon system effectiveness and fighter operational flight program (OFP) updates. Targets are required for developmental/operational testing for all air-to-air and surface-to-air missiles, and for the F-22A, F-35, F-18, F-16, and F-15, aircraft. The United States Air Force's (USAF) Air Superiority Modernization/ Mission Area Plan has identified aerial targets as a capability shortfall; the QF-16 program will fulfill this requirement. Funding supports continued development of the follow-on full-scale aerial target (QF-16) and simulators, development, improvements, and updates of target control systems and specialized target payload subsystems for requirements such as: missile scoring, electronic attack and infrared (IR) countermeasures, radar and IR signature augmentation, and chaff and flare dispensing systems. Development is required to evolve QF-16 threat capabilities to meet current and future threats identified by OSD.

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

| | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Title: QF-16 Development Program | 1.486 | 1.136 | 16.266 |
| Description: QF-16 Development Program | | | |
| FY 2016 Accomplishments: Continued threat realism improvements. Conducted studies and analysis, including future F-16 Block Studies and Development. | | | |
| FY 2017 Plans: Continue threat realism improvements to include but not limited to radar cross section (RCS) reduction and improved countermeasures. Conduct studies and analysis, including future F-16 Block Studies and Development. | | | |
| FY 2018 Plans: Continue threat realism improvements to include but not limited to radar cross section (RCS) reduction and improved countermeasures and their control. Conduct studies and analysis, including future F-16 Block Studies and Development. | | | |
| Accomplishments/Planned Programs Subtotals | 1.486 | 1.136 | 16.266 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | Date: May 2017 |
|---|-----------------------|

| | | |
|--|---|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305116F / <i>Aerial Targets</i> | Project (Number/Name) 675366 / <i>QF-16</i> |
|--|---|---|

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • APAF: BA 04: Line Item # 10TRGT: <i>Target Drones</i> | 131.879 | 114.656 | 109.841 | 0.000 | 109.841 | 148.394 | 131.875 | 134.579 | 137.274 | Continuing | Continuing |
| • APAF: BA 06: Line Item # 000999: <i>Initial Spares/Repair Parts</i> | 0.537 | 0.595 | 0.596 | 0.000 | 0.596 | 0.584 | 0.594 | 0.606 | 0.618 | Continuing | Continuing |
| • APAF: BA 07: Line Item # 000074: <i>War Consumables</i> | 0.000 | 4.460 | 4.560 | 0.000 | 4.560 | 4.636 | 4.044 | 4.804 | 4.900 | Continuing | Continuing |
| • APAF: BA 07: Line Item # 000075: <i>Other Production Charges</i> | 7.969 | 19.345 | 15.780 | 0.000 | 15.780 | 11.768 | 12.146 | 12.157 | 12.437 | Continuing | Continuing |

Remarks

D. Acquisition Strategy

The QF-16 was a competitive contract award, including fixed price incentive development contract with fixed priced production options (Lots 1-5). In FY19, planning is in progress to award a sole source follow-on production and sustainment contract to the incumbent for Lots 6-8.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

| | | |
|--|---|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305116F / <i>Aerial Targets</i> | Project (Number/Name) 675366 / <i>QF-16</i> |
|--|---|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Drone Peculiar Equipment | C/Various | The Boeing Company : Saint Louis, MO | - | 1.486 | Dec 2015 | 1.136 | Mar 2017 | 16.266 | Mar 2018 | 0.000 | | 16.266 | Continuing | Continuing | - |
| Subtotal | | | - | 1.486 | | 1.136 | | 16.266 | | 0.000 | | 16.266 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| | | | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|--|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| Project Cost Totals | | | - | 1.486 | 1.136 | 16.266 | 0.000 | 16.266 | - | - | - |

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force **Date:** May 2017

| | | |
|--|---|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305116F / <i>Aerial Targets</i> | Project (Number/Name) 675366 / <i>QF-16</i> |
|--|---|---|

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Threat Realism Improvements | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Electronic Flight Termination System / Loss of Carrier | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Future F-16 Block Studies and Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Radar Cross Section Model Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force **Date:** May 2017

| | | |
|--|---|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305116F / <i>Aerial Targets</i> | Project (Number/Name) 675366 / <i>QF-16</i> |
|--|---|---|

Schedule Details

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Threat Realism Improvements | 3 | 2017 | 3 | 2022 |
| Electronic Flight Termination System / Loss of Carrier | 1 | 2016 | 2 | 2018 |
| Future F-16 Block Studies and Development | 1 | 2016 | 3 | 2018 |
| Radar Cross Section Model Development | 1 | 2016 | 2 | 2017 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

| | |
|--|--|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305128F / <i>Security and Investigative Activities</i> |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 0.455 | 0.405 | 0.415 | 0.000 | 0.415 | 0.421 | 0.428 | 0.436 | 0.445 | 0.000 | 3.005 |
| 671931: <i>TECH SURVEIL COUNTER MEAS EQPT</i> | - | 0.455 | 0.405 | 0.415 | 0.000 | 0.415 | 0.421 | 0.428 | 0.436 | 0.445 | 0.000 | 3.005 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | - | - |

A. Mission Description and Budget Item Justification

Air Force Office of Special Investigations (AFOSI) conducts specialized investigative activities and force protection support for Air Force (AF) commanders worldwide. This assists AF commanders in protecting their people and resources. AFOSI's mission includes investigating criminal matters affecting AF personnel, contract fraud and economic crimes involving AF weapons systems and spare parts, the investigation of environmental crime, counterdrugs, computer intrusion detection and forensic media analysis of computer crimes. This element supports Technical Surveillance Countermeasures (TSCM), Computer Crime Investigations (CCI), and technical support to criminal and counterintelligence investigations and operations conducted by AFOSI. AFOSI's TSCM mission conducts counterintelligence investigations for both AF and DoD facilities and programs in order to deter and detect technical surveillance operations conducted by Foreign Intelligence Services to compromise classified or sensitive information. The purpose of CCI research is to improve AF and DoD Information Operations capability by enhancing AFOSI's ability to deter or prevent spies, hackers, or saboteurs from manipulating, damaging, or stealing sensitive war fighting data or systems. Failing that, to investigate, identify, and prosecute those who do. While most research to meet operational requirements is Operational System Development, there is also research in the category of Engineering and Manufacturing Development due to a need for modifications to present technology. The equipment required to provide technical support to investigations is unique and complex. This equipment must be continually updated to provide state-of-the-art capabilities to detect and neutralize criminal activities targeted against the AF and DoD. In an era of advancing technology, reduced manning, and increasingly high level fraud, environmental crime and computer crime investigations, technical investigative equipment must be continuously updated to enable AFOSI special agents to have the most cost effective and best possible means of thwarting criminal acts. The evolution of a new wave of computer crimes has made AFOSI responsible for the collection, investigative analysis, national level law enforcement coordination, and dissemination of hacker activity and intrusion incidents for the Air Force. AFOSI's computer crime equipment must stay on the leading edge of technology to collect criminal information as well as pursue and apprehend criminals through a global medium. AFOSI must continually update its existing high tech computer surveillance equipment to support ongoing and future investigative operations to identify hackers and hacker groups, as well as potential hostile government activities targeting Air Force communication and control systems. Critical Infrastructure Protection identifies weaknesses in the Air Force Critical infrastructure, highlights critical countermeasures and acquires and deploys cost-effective solutions. The intent is to provide an Air Force-wide review of current infrastructure vulnerabilities; prioritize AF protection planning and integrate with existing programs; identify gaps based on AF needs; direct studies to refine AF requirements.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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|--|----------------|--|---------------------|-----------------------|----------------------|
| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | | | Date: May 2017 | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0305128F / <i>Security and Investigative Activities</i> | | | |
| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
| Previous President's Budget | 0.472 | 0.405 | 0.414 | 0.000 | 0.414 |
| Current President's Budget | 0.455 | 0.405 | 0.415 | 0.000 | 0.415 |
| Total Adjustments | -0.017 | 0.000 | 0.001 | 0.000 | 0.001 |
| • 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 | -0.017 | 0.000 | 0.001 | 0.000 | 0.001 |
| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 | | |
| Title: TSCM | 0.455 | 0.405 | 0.415 | | |
| Description: These funds will support development of a suite of specialized law enforcement and counterintelligence restricted tools needed to exploit cyberspace, digital media storage and mobile audio/visual/data communications for the collection of evidence against a wide variety of serious offenses. They will develop next generation Technical Surveillance Countermeasures (TSCM) to defend against emerging foreign technical intelligence capabilities targeting sensitive protected information for exploitation. The concerted efforts of criminal, terrorist and foreign intelligence elements to evade law enforcement and compromise protected systems, all while remaining undetected using the latest technical advances available, require persistent development of tools to defeat their efforts. | | | | | |
| FY 2016 Accomplishments: Continue development of Next Generation Technical Surveillance Countermeasures (TSCM) receiver. FY16 activities (based on FY15 results) will transition into more robust activities to identify, develop and test and evaluate receivers against state-of-the-art commercial and state-sponsored technical collection tools and capabilities. Evaluation and acceptance testing will facilitate the objective and technical evaluation towards meeting validated requirements prior to full-rate acquisition. | | | | | |
| FY 2017 Plans: These funds continue to support the development of a suite of specialized law enforcement and counterintelligence restricted tools needed to exploit cyberspace, digital media storage and mobile audio/visual/data communications for the collection of evidence against a wide variety of serious offenses and develop next generation Technical Surveillance Countermeasures (TSCM) to defend against emerging foreign technical intelligence capabilities targeting sensitive protected information for exploitation. | | | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305128F / <i>Security and Investigative Activities</i> |
|--|--|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| <p>- \$200,000 went to the Naval Research Laboratory to support a joint project to develop the capability to detect and geo-locate foreign intelligence optical threats, breaking ground on new capabilities for DoD. Reference MIPR F1DT886285GW02.</p> <p>- \$153,500 went to the Armed Forces Experiential Training Activity (AFETA) to facilitate research, development, test and evaluation of the following technical services requirements; \$28,500 to support development of a consolidated Tagging, Tracking, and Locating interface; \$75,000 to research cost effective 3D room scanning technology for incorporation into AFOSI crime scene processing activities; \$20,000 for test and evaluation of unmanned aerial systems for use on AFOSI crime scenes; \$5,000 for test and evaluation of 360 degree high definition cameras for use on AFOSI crime scenes; \$25,000 for test and evaluation of tactical assault kit server integration with other USG entities. Reference MIPR F1DT886285GW04.</p> <p>- \$51,500 went to the Department of Energy/Idaho National Lab, Cyber & Information OPS for research and development of software to detect changes through photo comparisons associated with the disturbance or manipulation of a crime scene or foreign technical collection operation. Reference MIPR F1DT886291GW01.</p> <p>FY 2018 Plans: These funds continue to support the development of a suite of specialized law enforcement and counterintelligence restricted tools needed to exploit cyberspace, digital media storage and mobile audio/visual/data communications for the collection of evidence against a wide variety of serious offenses and develop next generation Technical Surveillance Countermeasures (TSCM) to defend against emerging foreign technical intelligence capabilities targeting sensitive protected information for exploitation.</p> <p>- \$240,000 for research and development of GOTS software for the live capture of digital information from the Air Force Network.</p> <p>- \$20,000 to research software defined radio software which integrates community standard radio software for incorporation into existing TSCM suites.</p> <p>- \$200,000 will go to the Naval Research Laboratory to support a joint project to detect and geo-locate foreign intelligence optical threats breaking ground on new capabilities for DoD.</p> | | | |
| Accomplishments/Planned Programs Subtotals | 0.455 | 0.405 | 0.415 |

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

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305128F / <i>Security and Investigative Activities</i> | |
| E. Acquisition Strategy Market Research is accomplished jointly within the DoD, Counterintelligence, and Law Enforcement communities with the various government laboratories and major contractors to identify locations with the ability to develop investigative tools unique to our mission needs. These technologies, capabilities, and limitations of current and future investigative tools is sometimes highly sensitive or classified. Market Research also allows inter-agency coordination and deconfliction to occur, reducing or eliminating duplicitous development efforts. Annually, stakeholders meet to discuss initiatives, challenges and organizational goals to coordinate or consolidate requirements to increase efficiency. Once Market Research and any applicable coordination/deconfliction is completed, acquisition channels are analyzed and selected based on the ability to meet operational and technical security requirements. | | |
| F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission. | | |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305145F / <i>Arms Control Implementation</i> |
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| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 9.116 | 4.844 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 13.960 |
| 675063: <i>Digital Visual Imaging System (DVIS)</i> | - | 9.116 | 4.844 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 13.960 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | - | - |

A. Mission Description and Budget Item Justification

The OC-135B aircraft supports the implementation of the United States Government (USG) Open Skies Treaty. This program addresses the requirements in the Presidential Policy Directive-15 (PPD-15). The Open Skies Treaty allows signatories to conduct observation flights over each other's territory using fixed-wing, unarmed observation aircraft. The aircraft can use optical cameras, video cameras, sideways-looking synthetic aperture radar, and infrared line scanning devices. There are 34 participating states to the Open Skies Treaty. The Air Force is required to allow over flight of USAF bases per multilateral request; to acquire, operate, and maintain the aircraft and equipment utilized during over flights of partner countries; to provide required sensor media and initial media processing; and to provide airfield servicing, logistics, and maintenance for foreign over flights of the US.

Open Skies Sensors - Mission equipment on the OC-135B includes wet film optical framing and panoramic cameras. Open Skies Sensors program addresses the requirements in the Presidential Policy Directive-15 (PPD-15), which states, "The United States shall begin budgeting no later than FY14 to upgrade the sensors on the current aircraft by replacing film-based cameras with available electro-optical sensors. (U)"

Test articles will be procured for the purpose of developmental testing and to support Treaty certification of the sensors.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305145F / <i>Arms Control Implementation</i> |
|--|--|

| B. Program Change Summary (\$ in Millions) | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 9.137 | 4.844 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 9.116 | 4.844 | 0.000 | 0.000 | 0.000 |
| Total Adjustments | -0.021 | 0.000 | 0.000 | 0.000 | 0.000 |
| • Congressional General Reductions | -0.021 | 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 | 0.000 | 0.000 | 0.000 |

| C. Accomplishments/Planned Programs (\$ in Millions) | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> |
|--|----------------|----------------|----------------|
| Title: OC-135 Open Skies Sensors | 9.116 | 4.844 | - |
| Description: Replace existing Open Skies aircraft wet film sensors with digital sensors. | | | |
| FY 2016 Accomplishments: Procure and install (quantity of 1) RDT&E article as prototype sensor system. | | | |
| FY 2017 Plans: Test and Treaty Certify prototype sensor system. | | | |
| Accomplishments/Planned Programs Subtotals | 9.116 | 4.844 | - |

| D. Other Program Funding Summary (\$ in Millions) | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| • APAF:BA05: Line Item #1900: <i>Digital Visual Imaging System (DVIS)</i> | 0.000 | 0.000 | 20.100 | 0.000 | 20.100 | 5.961 | 0.000 | 0.000 | 0.000 | 0.000 | 26.061 |
| Remarks PE 035145F | | | | | | | | | | | |

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305145F / <i>Arms Control Implementation</i> |
|--|--|

E. Acquisition Strategy
The acquisition strategy is to acquire, develop, test, purchase, and install DVIS update the Open Skies Medial Processing Facility (OSMPF) through full and open competition. The contracting strategy is for a single integrator through development, test, production, and installation.

F. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305146F / <i>Defense Joint Counterintelligence Activities</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 0.361 | 0.339 | 3.867 | 0.000 | 3.867 | 3.873 | 3.880 | 3.887 | 3.895 | Continuing | Continuing |
| 671931: <i>TECH SURVEIL COUNTER MEAS EQPT</i> | - | 0.361 | 0.339 | 3.867 | 0.000 | 3.867 | 3.873 | 3.880 | 3.887 | 3.895 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

Technical Surveillance Countermeasures (TSCM) develops future technologies capable of thwarting advanced, hostile force technical capabilities. The technologies will provide secure environments for austere mission planning locations and theater commander centers, and will collect information for counterthreat operations in support of DoD and AF requirements.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| <u>B. Program Change Summary (\$ in Millions)</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|--|-----------------------|-----------------------|----------------------------|---------------------------|-----------------------------|
| Previous President's Budget | 0.361 | 0.339 | 0.366 | 0.000 | 0.366 |
| Current President's Budget | 0.361 | 0.339 | 3.867 | 0.000 | 3.867 |
| Total Adjustments | 0.000 | 0.000 | 3.501 | 0.000 | 3.501 |
| • 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 | 3.501 | 0.000 | 3.501 |

Change Summary Explanation

Funds were added to continue a pilot program that was started in a classified PE. Additional FY2018 funding will continue to mature the pilot program.

| <u>C. Accomplishments/Planned Programs (\$ in Millions)</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> |
|--|-----------------------|-----------------------|-----------------------|
| Title: Defense Joint Counterintelligence Program | 0.361 | 0.339 | 0.366 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305146F / <i>Defense Joint Counterintelligence Activities</i> |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| <p>Description: TSCM will develop future technologies capable of thwarting advanced, hostile force technical capabilities. They will be developed to provide secure environments to austere mission planning locations, theater commander centers, and will collect information for counterthreat operations in support of DoD and AF requirements.</p> <p>FY 2016 Accomplishments: Continue research and development of advanced systems to provide support to counterthreat operations and other austere and contingency areas as needed.</p> <p>FY 2017 Plans: Continue research and development of advanced systems to provide support to counterthreat operations and other austere and contingency areas as needed.</p> <p>FY 2018 Plans: These funds continue to support the development of a suite of specialized law enforcement and counterintelligence restricted tools needed to exploit cyberspace, digital media storage and mobile audio/visual/data communications for the collection of evidence against a wide variety of serious offenses and develop next generation Technical Surveillance Countermeasures (TSCM) to defend against emerging foreign technical intelligence capabilities targeting sensitive protected information for exploitation.</p> | | | |
| <p>Title: Counterintelligence Pilot</p> <p>Description: N/A</p> <p>FY 2018 Plans: Continue the development of a suite of specialized law enforcement and counterintelligence restricted tools needed to exploit cyberspace, digital media storage and mobile audio/visual/data communications for the collection of evidence against a wide variety of serious offenses. Funds will also be used to develop next generation Technical Surveillance Countermeasures (TSCM) to defend against emerging foreign technical intelligence capabilities targeting sensitive protected information for exploitation.</p> | - | - | 3.501 |
| Accomplishments/Planned Programs Subtotals | 0.361 | 0.339 | 3.867 |

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

Remarks

E. Acquisition Strategy
Defense Joint Counterintelligence Program funds will be obligated on competitively awarded contracts. Counterintelligence pilot funding will be obligated on an existing Air Force contract with MIT/Lincoln Labs.

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305146F / <i>Defense Joint Counterintelligence Activities</i> |
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F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date: May 2017**

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305173F / <i>Space and Missile Test and Evaluation Center</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 3.490 | 3.989 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 67A014: <i>R&D Space and Missile Operations</i> | - | 3.490 | 3.989 | 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

In FY2018, PE 0305173F, Space and Missile Test and Evaluation Center efforts were transferred to PE 1203173F, Space and Missile Test and Evaluation Center due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203173F.

B. Program Change Summary (\$ in Millions)

| | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|-------------------------------------|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 3.490 | 3.989 | 0.000 | 0.000 | 0.000 |
| Total Adjustments | 3.490 | 3.989 | 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 | 3.490 | 3.989 | 0.000 | 0.000 | 0.000 |

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305174F / <i>Space Innovation, Integration and Rapid Technology Development</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 1.543 | 3.070 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 67A011: <i>Space Analysis and Application Development</i> | - | 1.543 | 3.070 | 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

In FY2018, PE 0305174F, Space Innovation, Integration and Rapid Technology Development efforts were transferred to PE 1203174F, Space Innovation, Integration and Rapid Technology Development due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203174F.

B. Program Change Summary (\$ in Millions)

| | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|-------------------------------------|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 1.543 | 3.070 | 0.000 | 0.000 | 0.000 |
| Total Adjustments | 1.543 | 3.070 | 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 | 1.543 | 3.070 | 0.000 | 0.000 | 0.000 |

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| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0305179F I Integrated Broadcast Service (IBS) |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 9.760 | 8.833 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 674779: Integrated Broadcast Service (IBS) | - | 9.760 | 8.833 | 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

In FY2018, PE0305179F Integrated Broadcast System efforts were transferred to PE1203179F, Integrated Broadcast System due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE1203179F

B. Program Change Summary (\$ in Millions)

| | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|-------------------------------------|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 9.760 | 8.833 | 0.000 | 0.000 | 0.000 |
| Total Adjustments | 9.760 | 8.833 | 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 | 9.760 | 8.833 | 0.000 | 0.000 | 0.000 |

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305182F / <i>Spacelift Range System (SPACE)</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 5.708 | 11.867 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 674137: <i>Launch and Test Range System (LTRS) Modernization</i> | - | 5.708 | 11.867 | 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

In FY2018, PE 0305182F, Spacelift Range System efforts were transferred to PE 1203182F, Spacelift Range System, due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203182F.

| B. Program Change Summary (\$ in Millions) | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 5.708 | 11.867 | 0.000 | 0.000 | 0.000 |
| Total Adjustments | 5.708 | 11.867 | 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 | 5.708 | 11.867 | 0.000 | 0.000 | 0.000 |

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305202F / <i>Dragon U-2</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|-----------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 34.471 | 37.217 | 34.486 | 0.000 | 34.486 | 48.882 | 38.682 | 16.994 | 17.120 | 0.000 | 227.852 |
| 674820: <i>Sensor Development</i> | - | 34.471 | 37.217 | 34.486 | 0.000 | 34.486 | 48.882 | 38.682 | 16.994 | 17.120 | 0.000 | 227.852 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | - | - |

A. Mission Description and Budget Item Justification

The Central Intelligence Agency (CIA) established the Senior Year Program in 1955. The program has evolved significantly over the years to include the U-2 airframe, engines, sensors, cameras, recorders, data links, life support systems, test facilities and equipment. The U-2S model airframes were constructed in the late 1980s, with the last aircraft rolling off the assembly line in 1989. The U-2S provides global reconnaissance signals intelligence (SIGINT) and geospatial intelligence (GEOINT) 24 hours a day, seven days a week in support of national and DoD worldwide missions. The U-2 is currently deployed to forward operating locations (FOL) around the world. Modifications to the aircraft and payloads are required to ensure continued operational effectiveness in support of Combatant Commander Requirements and in accordance with previous NDAA guidance.

In the 2013 PB, the Air Force decided to retain the U-2 weapon system instead of retiring it. At that time sustainment efforts and capability upgrades to the platform and payloads were pursued to support National and Combatant Commander requirements.

In the 2015 PB, the Air Force decided to retire the U-2 in 2016. In accordance with 10 U.S.C. 2244a, the U-2 weapon system is identified as Equipment Scheduled For Retirement Or Disposal: Limitation On Expenditures For Modifications, stating that modification to any aircraft (i.e., a given tail number, weapon, or item of equipment that the SECAF plans to retire or otherwise dispose of within 5 years after the date on which the modification would be completed) are prohibited.

In the 2016 PB, the Air Force re-phases U-2 divestiture to begin in FY2019 and to complete no later than FY2020. In accordance with 10 U.S.C. 2244a, the Secretary of the Air Force may waive the prohibition on modifications if the Secretary determines that carrying out the modification is in the national security interest of the United States. Therefore, modifications required to address sustainment issues (diminishing manufacturing sources, vanishing vendor items) or operational utility may be submitted to the Secretary for approval to ensure operational effectiveness and to comply with guidance received in previous and current NDAs for the timeframe of phased divestiture. The National Security Waiver was signed by the Secretary of the Air Force on 26 May 2015.

In the 2017 PB, the Air Force continued addressing reliability, maintainability, sustainability, and safety issues and support U-2 integration of payloads and capabilities by taking prudent acquisition actions to meet operational requirements, comply with previous NDAA guidance, and IAW 10 U.S.C. Prudent acquisition activities also include trade studies, analyses, preliminary systems engineering, system and subsystem level testing in accordance with DoD and military standards, and specification development in support of both current program planning and execution as well as studies supporting analysis and investment in future U-2 program planning.

In the 2018 PB, the Air Force decided to retain the U-2 through FY22, funding investment and manpower in base, and the majority of operations and sustainment in OCO. The Air Force will continue to address reliability, maintainability, sustainability, and safety issues and support U-2 integration of payloads and capabilities by taking

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305202F / <i>Dragon U-2</i> |
|--|---|

prudent acquisition actions to meet operational and safety of flight requirements. These acquisition efforts will include trade studies, analyses, preliminary systems engineering, system and subsystem level testing in accordance with DoD and military standards, and specification development in support of both current program planning and execution as well as studies supporting analysis and investment in future U-2 program planning.

The U-2 Program provides funding for an Advanced Synthetic Aperture Radar System (ASARS) acquisition effort. This effort will design, fabricate, integrate, and demonstrate system capability enhancements for a high altitude deep look SAR system. This mitigates a Diminishing Manufacturing Supply and Material Shortages (DMSMS) issue with the current U-2 SAR sensor.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 34.471 | 37.217 | 6.942 | 0.000 | 6.942 |
| Current President's Budget | 34.471 | 37.217 | 34.486 | 0.000 | 34.486 |
| Total Adjustments | 0.000 | 0.000 | 27.544 | 0.000 | 27.544 |
| • 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 | 27.544 | 0.000 | 27.544 |

Change Summary Explanation

FY16 increase across FYDP due to AF decision to rephase U-2 divestiture to FY19.

FY17 increase to address DMSMS issues in the program.

FY18 increase due to the retention of the U-2 through FY22. Addresses prudent acquisition efforts to address safety-of-flight and DMSMS issues.

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Title: U-2 Aircraft Update Block 20.1 | 0.000 | 9.902 | 23.488 |
| Description: Aircraft sustainment and/or enhancement development includes activities such as, but not limited to, trade studies, analysis, preliminary system engineering, system and subsystem testing or demonstrations, sensor specification development, | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0305202F / <i>Dragon U-2</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>avionics system upgrades, emergency egress system sustainability and suitability effort, airframe Loads and Environment Spectra Survey (L/ESS) Compliance and Flight Data Recorder Installation, mission planning system migration, navigation system and stellar tracker initiatives, Open Mission Systems and Unmanned Aerospace Systems Command and Control Standard Initiative (OMS/UCI) standards compliance, GPS technical refresh, helmet and Full Pressure Suit technical refresh, and tactical data-link (L-16, IBS, IFDL, MADL, etc.) design and integration.</p> <p>FY 2016 Accomplishments: No efforts were planned.</p> <p>FY 2017 Plans: FY17 will support aircraft sustainment activities such as, but not limited to, sensor sustainment and/or enhancements, avionics, navigation systems, mission planning, and airframe sustainment.</p> <p>FY 2018 Plans: FY18 will support sensor sustainment and/or enhancements, avionics, navigation system and stellar tracker initiatives, OMS/UCI standards compliance, mission planning, airframe sustainment, ground support equipment, helmet and Full Pressure Suit Technical refresh, Loads and Environment Spectra Survey (L/ESS) Compliance and Flight Data Recorder Installation, and mitigating sustainability and suitability issues with the current emergency egress system on the U-2 platform.</p> | | | | |
| <p>Title: U-2 Payload Update Block 20.1</p> <p>Description: Aircraft payload development supports sustainment and/or enhancement development includes activities such as, but not limited to, trade studies, analysis, preliminary system engineering, system and subsystem testing or demonstrations, sensor specification development, Advanced Synthetic Aperture Radar System (ASARS) development and test, SIGINT and multi-spectral sensor technical refresh integration and test, defensive systems, sensor range improvements, strategic and tactical data link (L-16, IBS, IFDL, MADL, etc.) design and integration.</p> <p>FY 2016 Accomplishments: FY 16 supported payload sustainment and/or enhancement activities such as, but not limited to, ASARS development, integration and test, defensive systems, and datalinks.</p> <p>FY 2017 Plans: FY17 will support payload sustainment and/or enhancement activities such as, but not limited to, ASARS development, integration and test, defensive systems, datalinks, and associated ground support equipment.</p> <p>FY 2018 Plans:</p> | | 34.471 | 27.315 | 10.998 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305202F / <i>Dragon U-2</i> |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| FY18 will support payload sustainment and/or enhancement activities such as, but not limited to, ASARS development, integration and test, defensive systems, datalinks, avionics technical refresh, SIGINT and multi-spectral sensor technical refresh, Optical Bar Camera technical refresh, sensor range improvements, and associated ground support equipment. | | | |
| Accomplishments/Planned Programs Subtotals | 34.471 | 37.217 | 34.486 |

| D. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
| • N/A: N/A | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - |

Remarks

E. Acquisition Strategy

N/A

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305202F / <i>Dragon U-2</i> | Project (Number/Name) 674820 / <i>Sensor Development</i> |
|--|---|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| ASARS Phase 1 Enhancements Design | SS/CPFF | Raytheon/Lockheed Martin : El Segundo, CA | - | 2.183 | Jan 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 2.183 | - |
| ASARS Phase 2 Integration & Demonstration | SS/CPIF | Raytheon/Lockheed Martin Aeronautics : El Segundo, CA | - | 31.160 | Mar 2016 | 14.714 | Mar 2016 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Flight Test Support | SS/CPFF | Lockheed Martin Aeronautics : Palmdale, CA | - | 0.000 | | 1.986 | Dec 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Ground Support Equipment | SS/CPFF | L3 Communications : Salt Lake City, UT | - | 0.000 | | 9.901 | Nov 2016 | 10.998 | Nov 2017 | 0.000 | | 10.998 | Continuing | Continuing | - |
| Navigation System | SS/CPFF | Lockheed Martin Aeronautics : Palmdale, CA | - | 0.000 | | 9.902 | Dec 2016 | 4.734 | Dec 2017 | 0.000 | | 4.734 | Continuing | Continuing | - |
| Emergency Egress System Sustainability and Suitability Effort | TBD | TBD : TBD | - | 0.000 | | 0.000 | | 10.111 | Jul 2018 | 0.000 | | 10.111 | Continuing | Continuing | - |
| Loads and Environment Spectra Survey (L/ESS) Compliance and Flight Data Recorder Installation | TBD | TBD : TBD | - | 0.000 | | 0.000 | | 8.643 | Jan 2018 | 0.000 | | 8.643 | Continuing | Continuing | - |
| Subtotal | | | - | 33.343 | | 36.503 | | 34.486 | | 0.000 | | 34.486 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | C/FFP | Not specified. : TBD | - | 1.128 | | 0.714 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Subtotal | | | - | 1.128 | | 0.714 | | 0.000 | | 0.000 | | 0.000 | - | - | - |

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force **Date:** May 2017

| | | |
|--|---|--|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305202F / <i>Dragon U-2</i> | Project (Number/Name) 674820 / <i>Sensor Development</i> |
|--|---|--|

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Advanced Synthetic Aperture Radars System (ASARS) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ground Support Equipment | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Navigation System | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Emergency Egress System Sustainability and Suitability Effort | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Loads and Environment Spectra Survey (L/ESS) Compliance and Flight Data Recorder Installation | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force **Date:** May 2017

| | | |
|--|---|--|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305202F / <i>Dragon U-2</i> | Project (Number/Name) 674820 / <i>Sensor Development</i> |
|--|---|--|

Schedule Details

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Advanced Synthetic Aperture Radars System (ASARS) | 1 | 2016 | 4 | 2022 |
| Ground Support Equipment | 1 | 2017 | 2 | 2020 |
| Navigation System | 1 | 2017 | 4 | 2020 |
| Emergency Egress System Sustainability and Suitability Effort | 3 | 2018 | 4 | 2021 |
| Loads and Environment Spectra Survey (L/ESS) Compliance and Flight Data Recorder Installation | 1 | 2018 | 3 | 2019 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305205F / <i>Endurance Unmanned Aerial Vehicles</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 5.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 5.000 |
| 67A026: <i>MAGIC</i> | - | 5.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 5.000 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | - | - |

A. Mission Description and Budget Item Justification

The Medium Altitude Global ISR and Communications (MAGIC) project was an Air Force led technology and concept development to demonstrate the ability for a Remotely Piloted Aircraft (RPA) to stay airborne in the medium altitude structure for a multiple day duration mission with a minimum of 1,000 pounds payload capacity of intelligence, surveillance and reconnaissance sensor systems. The MAGIC concept was initiated by OSD/DDR&E in FY 2010 in response to the Combatant Commanders ranking this type of initiative as the highest priority for a Joint Concept and Technology Demonstration (JCTD). In FY 2011, the Air Force accepted this initiative as the sponsor and MAGIC was subsequently removed from consideration as a JCTD and transitioned into the Air Force as a developmental project.

The MAGIC project was intended to provide the USAF with data regarding sensor and aircraft performance parameters at a multiple day duration at medium altitude flight. The objectives laid out in the JCTD competition and selection of Aurora Flight Sciences (AFS)'s Orion RPA for the long endurance demonstration was managed by the 645th Aeronautical Systems Group (AESG).

In FY 2010, OSD/DDR&E (now ASD/R&E) provided \$5M of initial funding to AFRL to initiate the MAGIC project. In FY 2011, ASD/R&E provided an additional \$5M to keep the MAGIC project development moving forward. The Air Force provided \$10M of FY 2011. Congressional Adds of \$19M in FY 2012, \$50M in FY 2013, \$20M in FY 2015, and \$5M in FY 2016 provided the Endurance UAV program manager with the funding for the continuation of the Orion RPA development and initiation of the three phase flight testing series.

Orion RPA flight test series and demonstrations were accomplished at Naval Air Weapons Station (NAWS) China Lake, CA between August 2013 and March 2015. The objectives to test/demonstrate basic air vehicle performance, expansion of the flight characteristic envelope, a multiple day sortie and integration of a nominal sensor payload were successfully accomplished on the prototype (Block 0) Orion RPA in a controlled environment non-representative of an operational setting. Subsequent development efforts concentrated on the validation of the Orion RPA system requirements and concept design/specifications for a follow-on air vehicle (Block 1) capable of operational deployment in the event that the Air Force chooses the Orion RPA as a quick reaction capable system for a theater of operation or a program of record. Currently, there is no validated requirement for the Orion RPA.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current of subsequent fiscal year.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305205F / <i>Endurance Unmanned Aerial Vehicles</i> |
|--|---|

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 5.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 5.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Total Adjustments | 0.000 | 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 | 0.000 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

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

Project: 67A026: *MAGIC*

Congressional Add: *MAGIC*

Congressional Add Subtotals for Project: 67A026

Congressional Add Totals for all Projects

| | FY 2016 | FY 2017 |
|---|----------------|----------------|
| | 5.000 | 0.000 |
| Congressional Add Subtotals for Project: 67A026 | 5.000 | 0.000 |
| Congressional Add Totals for all Projects | 5.000 | 0.000 |

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

Congressional Add: *MAGIC*

FY 2016 Accomplishments: Follow-on development efforts concentrated on lessons learned from the Orion RPA Block 0 flight test and applied those concepts to continue development of a Block 1 deployable Orion RPA long endurance capability.

FY 2017 Plans: N/A

Congressional Adds Subtotals

| | FY 2016 | FY 2017 |
|--|----------------|----------------|
| Congressional Add: <i>MAGIC</i> | 5.000 | 0.000 |
| Congressional Adds Subtotals | 5.000 | 0.000 |

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

N/A

Remarks

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force Date: May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305205F / <i>Endurance Unmanned Aerial Vehicles</i> |
|--|---|

E. Acquisition Strategy
There is currently no validated requirement for the Orion RPA. The concept for the Air Force to develop a long endurance, persistent ISR capability for the Combatant Commanders was an outgrowth of a JCTD started in FY 2010. Previous development efforts included: completion of studies analysis, development of a prototype air vehicle (Block 0), bench testing of engines and other aircraft components, ground continuity testing of select avionics, flight controls, and engine components, slow and high speed ground taxiing and a full flight series testing of the Orion RPA capabilities to include a multiple day, long duration flight demonstration. Starting with a portion of the FY 2015 funds, congressional adds have continued hardware and software engineering and development efforts towards operational airworthiness standards and mission requirements for a deployable air vehicle (Block 1).

F. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305206F / <i>Airborne Reconnaissance Systems</i> |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 61.742 | 3.841 | 4.450 | 0.000 | 4.450 | 4.516 | 4.603 | 3.607 | 3.680 | Continuing | Continuing |
| 674818: <i>Imaging and Targeting Support</i> | - | 21.534 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 675092: <i>JTC/SIL MUSE</i> | - | 3.475 | 3.841 | 3.429 | 0.000 | 3.429 | 3.480 | 3.548 | 3.607 | 3.680 | Continuing | Continuing |
| 675148: <i>Common-Airborne Sense and Avoid (C-ABSAA)</i> | - | 19.735 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 675291: <i>Gorgon Stare</i> | - | 10.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 10.000 |
| 675292: <i>Hyperspectral Sensors</i> | - | 2.195 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 676025: <i>Data Compression</i> | - | 4.803 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 676031: <i>Dismount Detection RADAR</i> | - | 0.000 | 0.000 | 1.021 | 0.000 | 1.021 | 1.036 | 1.055 | 0.000 | 0.000 | Continuing | Continuing |

A. Mission Description and Budget Item Justification

The Airborne Reconnaissance Systems (ARS) program coordinates the development of advanced technologies (sensors, data links, targeting networks and products, and quick reaction capabilities) in support of multiple airborne reconnaissance platforms, both manned and unmanned. 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, and to provide safe separation and collision avoidance for Remotely Piloted Aircraft (RPAs). It provides for modeling/simulation, training and systems engineering. This program also coordinates the development of common collection, processing, and dissemination solutions for near-real time Intelligence, Surveillance, and Reconnaissance (ISR).

Funds in any project can also cover activities to include studies and analysis to support both current program planning and execution and future program planning.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305206F / <i>Airborne Reconnaissance Systems</i> |
|--|--|

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 60.142 | 3.841 | 3.419 | 0.000 | 3.419 |
| Current President's Budget | 61.742 | 3.841 | 4.450 | 0.000 | 4.450 |
| Total Adjustments | 1.600 | 0.000 | 1.031 | 0.000 | 1.031 |
| • Congressional General Reductions | 0.000 | 0.000 | | | |
| • Congressional Directed Reductions | 0.000 | 0.000 | | | |
| • Congressional Rescissions | 0.000 | 0.000 | | | |
| • Congressional Adds | 0.000 | 0.000 | | | |
| • Congressional Directed Transfers | 0.000 | 0.000 | | | |
| • Reprogrammings | 1.600 | 0.000 | | | |
| • SBIR/STTR Transfer | 0.000 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 1.031 | 0.000 | 1.031 |

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

Project: 675291: *Gorgon Stare*

Congressional Add: *Wide-Area Motion Imagery*

| | FY 2016 | FY 2017 |
|---|----------------|----------------|
| | 10.000 | 0.000 |
| Congressional Add Subtotals for Project: 675291 | 10.000 | 0.000 |
| Congressional Add Totals for all Projects | 10.000 | 0.000 |

Change Summary Explanation

- In FY 2016, \$1.6M Below Threshold Reprogramming for Agile Pod Phase I, Harvest Reaper, an MQ-9 demonstration project.
- In FY 2018, \$1.031 increase to fund Next Generation ISR platforms and sensors integration

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|--|----------------|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | | | Project (Number/Name) 674818 / Imaging and Targeting Support | | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 674818: <i>Imaging and Targeting Support</i> | - | 21.534 | 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 purpose of the Imaging and Targeting Support (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 (geolocation models, sensor-based exploitation tools, sensor networking capabilities).

Developmental efforts pursued include: improved sensor capabilities such as hyperspectral imagery (HSI), measurement and signature intelligence, polarimetric imaging, ground moving target indication (GMTI), maritime search/track, Inverse Synthetic Aperture Radar, foliage penetration and additional radar, electro-optical, nuclear event detection, and other modalities; increased geolocation accuracy; increased dismount detection capability; advanced sensor data correlation; automated target detection; network centric warfare; and other Intelligence, Surveillance, and Reconnaissance (ISR) and associated planning and direction; collection; processing and exploitation; analysis and production; and dissemination capabilities. These efforts are intended to reduce both target search and kill chain timelines as well as supporting traditional intelligence activities. This project will also increase interoperability by developing common standards and interfaces.

The funds in this project are distributed in priority order, as supported by the Challenging Targets Initial Capabilities Document and set by the Geospatial Intelligence (GEOINT) Capabilities Working Group, for the goal of building a comprehensive GEOINT capability for the USAF. On an annual basis, developmental technologies are reviewed against warfighter capabilities and requirements based on strategic roadmaps and 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.

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

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

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Title: Imaging and Targeting Support (I&TS) | 21.434 | 0.000 | 0.000 | - | 0.000 |
| Description: Developed/demonstrated and advance technical maturity of promising sensors and processing capabilities (ex: radar improvement, next-generation hyperspectral imagery (HSI), laser radar/light detection and ranging (LADAR/LIDAR), and data mitigation technologies). | | | | | |
| FY 2016 Accomplishments: | | | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 674818 / Imaging and Targeting Support |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| <p>- Continued development, upgrade, and demonstration of advanced sensors and detection and processing algorithms, hyperspectral imaging technologies, multiband Electro-Optical/Infra-Red and Synthetic Aperture Radar sensor systems, enhanced light detection and ranging capabilities, polarimetric imaging, and other Geospatial Intelligence sensing modalities for Anti-Access Area Denial, permissive and non-permissive environments, foliage penetration, and littoral environments.</p> <p>FY 2017 Plans: - FY 2017 activities will be reported under PE 0604257F, Project 644818, Imaging and Targeting Support.</p> <p>FY 2018 Base Plans: - FY 2018 activities will be reported under PE 0604257F, Project 644818, Imaging and Targeting Support.</p> | | | | | |
| <p>Title: Advanced Synthetic Aperture Radar System (ASARS) 2B</p> <p>Description: Designed/fabricated/integrated/demonstrated completion of technical maturation effort for deep look high altitude synthetic aperture radar. Includes total government and contractor costs for this project.</p> <p>FY 2016 Accomplishments: - Continued technical maturation effort for deep look high altitude SAR.</p> <p>FY 2017 Plans: - FY 2017 activities will be reported under PE 0604257F, Project 644818, Imaging and Targeting Support.</p> <p>FY 2018 Base Plans: - FY 2018 activities will be reported under PE 0604257F, Project 644818, Imaging and Targeting Support.</p> | 0.100 | 0.000 | 0.000 | - | 0.000 |
| Accomplishments/Planned Programs Subtotals | 21.534 | 0.000 | 0.000 | - | 0.000 |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|---|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| • RDTE: BA07: PE 0305202F: <i>Dragon U-2 (JMIP)</i> | 34.471 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 | 0.000 |
| Remarks A portion of the funding within the U-2 RDT&E line will be used to advance Advanced Synthetic Aperture Radar (ASARS) design, development, test and demonstration. | | | | | | | | | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / <i>Airborne Reconnaissance Systems</i> | Project (Number/Name) 674818 / <i>Imaging and Targeting Support</i> |

D. Acquisition Strategy

Imaging and Targeting Support efforts are prioritized on an annual basis by the Geospatial Intelligence Capabilities Working Group, 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.

ASARS technology maturation is conducted by Air Force Life Cycle Management Center/Intelligence, Surveillance, and Reconnaissance and Special Operations Forces (AFLCMC/WIN), in conjunction and cooperation with AFLCMC/Robins AFB for flight test support.

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.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | | | | Project (Number/Name) 675092 / JTC/SIL MUSE | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 675092: JTC/SIL MUSE | - | 3.475 | 3.841 | 3.429 | 0.000 | 3.429 | 3.480 | 3.548 | 3.607 | 3.680 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The Joint Technology Center/Systems Integration Laboratory (JTC/SIL) is a center of technical excellence to support Unmanned Aircraft Systems (UAS) and Remotely Piloted Aircraft (RPA) programs within the services. The mission includes Service-specific and Joint Command, Control, Communications, Computers and Intelligence, Surveillance, and Reconnaissance (C4ISR) programs throughout DoD. The JTC/SIL provides a Government testbed for interoperability, rapid prototyping, technology insertion and transition, systems engineering, modeling/simulation, training and C4ISR optimization. The cornerstone of JTC/SIL's diverse tool set is the Multiple Unified Simulation Environment (MUSE), which is the DoD simulation/training system of choice for many UAS, RPA and Intelligence, Surveillance, and Reconnaissance systems. The MUSE is also known as the Air Force Synthetic Environment for Reconnaissance and Surveillance (AFSERS) in its Air Force application. The MUSE/AFSERS simulates Air Vehicles, Sensors, Datalinks, Takeoff and Landing Systems, and to some degree, surrogate UAS and RPA ground stations, when actual ground stations are unavailable.

The Services and combatant commanders have a requirement for the capability to train with a system that provides a real-time simulation environment containing multiple intelligence systems that can be integrated with larger force-on-force simulations. The MUSE creates a realistic operational environment which supports the ability to assess military utility, architecture and concept of employment development, and Tactics, Techniques, and Procedures refinement, conduct emerging concepts experimentation, and optimize C4ISR within warfighting exercises and experiments. It is the preferred simulation system used by the combatant commanders and Joint Services to support command and battle staff C4ISR training.

The MUSE/AFSERS also creates a realistic operational environment that supports: an embedded training capability for multiple Program Managers; tools to minimize acquisition and life cycle cost and schedule impacts; ability to conduct emerging concepts experimentation, future systems exploration, systems integration, and technology insertion; applications for Joint and Service-specific warfighting exercises; and C4ISR optimization.

MUSE/AFSERS is currently in use within all Services and most unified commands simulating MQ-1, MQ-9, RQ-4, MQ-1C, M/RQ-5, RQ-7, national and commercial satellite collectors, P-3, E-8, and the U-2. During warfighting exercises, the JTC/SIL integrates imagery simulations with associated C4ISR systems to support the execution of critical imagery processes. For those assets normally not available for training, the JTC/SIL provides surrogate systems and interfaces. Distributed training environments, virtually linking participants from various locations worldwide, are routinely supported within the MUSE architecture. The MUSE/AFSERS is also used as a mission rehearsal tool for current, on-going military combat operations.

The JTC/SIL supports the Office of the Secretary of Defense UAS Task Force staff and the Standards and Interoperability Integrated Product Team, as well as the joint team working the Ground Segment Interface. The JTC/SIL is the primary custodian of this interface and in that role performs various supporting tasks including development of tools for helping the definition and execution of open architecture for joint service ground control systems, developing and maintaining Standardization Agreement 45 joint interoperability tasks to be defined on an annual basis.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 675092 / JTC/SIL MUSE |

Activities also include studies and analysis supporting current and future program planning and project execution.

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

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| <p>Title: Air Force Synthetic Environment for Reconnaissance and Surveillance (AFSERS) Development</p> <p>Description: DoD's simulation/training system of choice for Intelligence Surveillance and Reconnaissance systems, sensors, and platforms. Includes AFSERS, Common Ground Station Interface, and infrastructure support.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Advanced redesign the Vignette Planning and Rehearsal Software by implementing a Service Oriented Architecture to facilitate external users developing generic solutions and to optimize the software baseline to maintain pace with the training audience's requirements, thereby reducing the costs of travel and training. - Redesigned Multiple Unified Simulation Environment (MUSE/AFSERSU2/RQ-4) Fixed Frame Imagery simulation Capability. - Designed and implemented a Heads Up Display (HUD) wizard. - Completed the full virtualization of MUSE/AFSERS. - Continued to implement Web enabled MUSE/AFSERS that will allow users to train via a web browser, without needing the MUSE/AFSERS software installed on their systems. - Implemented ports management into the MUSE/AFSERS baseline to better facilitate Information Assurance guidance and to be in accordance with the upcoming Risk Management Framework that will replace Department of Defense Information Assurance and Accreditation Process. - Provided Exercise Support for Unified Endeavor, Key Resolve (Korean Air Simulation Center & Korean Battle Simulation Center) & Ulchi Freedom Guardian. - Continued Intel Simulation Training support at Goodfellow Air Force Base. <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Continue HUD creator - Redesign Windows Entity Server and NeLink software tools to support the increased scale of exercises - Redesign Control Station Surrogate to support the increased scale of exercises while leveraging technology advances - Continue migration of legacy code to C# and/or 64 Bit - Migrate from Department of Defense Information Assurance and Accreditation Process to RMF - Enhance Weaponization capability | 3.475 | 3.841 | 3.429 | - | 3.429 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 675092 / JTC/SIL MUSE |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| - Continue integration with Night Vision Image Generator (NVIG) | | | | | |
| <i>FY 2018 Base Plans:</i> | | | | | |
| - Will continue integration of NVIG into the Modeling & Simulation domain as it pertains to unmanned aircraft systems simulation. Terrain, and model development for NVIG and Virtual Reality Scene Generator to increase fidelity. | | | | | |
| - Will continue support of theater level exercises: Ulchi Freedom Guardian, Key Resolve and Pacific Sentry. | | | | | |
| - Will work on the Global Hawk trainer, blocks 30 & 40. | | | | | |
| - Will support improvement of mapping capability for mission planning. | | | | | |
| - Will redesign Windows Entity Server and NetLink to improve network routing, thus lessening bandwidth consumption. | | | | | |
| - Will incorporate Common Image Generator Interface to provide an Image Generator (IG) agnostic solution to allow other IGs to be supported. | | | | | |
| - Will continue to implement tactical protocols into the simulation domain to enhance interoperability. | | | | | |
| - Will continue development of a HUD designer application that will allow for the creation and modification of HUDs without having to touch the software baseline thereby reducing costs and increasing fidelity and speed of solution in theater. | | | | | |
| - Will redesign the generic 6 Degree of Freedom application that will allow for creation of new platforms without touching code; again a reduction in costs and increased solution delivery speed. | | | | | |
| Accomplishments/Planned Programs Subtotals | 3.475 | 3.841 | 3.429 | - | 3.429 |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
| • RDTE: BA07: PE 0305204A: <i>Tactical Unmanned Aerial Vehicles</i> | 2.498 | 3.942 | 4.568 | 0.000 | 4.568 | 4.615 | 4.832 | 4.979 | 5.231 | Continuing | Continuing |

Remarks

D. Acquisition Strategy

This is an enterprise services effort, jointly funded and centrally managed by the US Army. AFLCMC/WIN MIPRs funds in support of Unmanned Aircraft Systems modeling and simulation efforts.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / <i>Airborne Reconnaissance Systems</i> | Project (Number/Name) 675092 / <i>JTC/SIL MUSE</i> |

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|--|----------------|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | | | Project (Number/Name) 675148 / Common-Airborne Sense and Avoid (C-ABSAA) | | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 675148: Common-Airborne Sense and Avoid (C-ABSAA) | - | 19.735 | 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

Common-Airborne Sense and Avoid (C-ABSAA) is an analysis and developmental effort in the pre-Materiel Development Decision phase of the acquisition lifecycle which supports emerging warfighter requirements to fully integrate Group 4-5 Remotely Piloted Aircraft (RPA) into the National Airspace System (NAS), international airspace, other nations' sovereign airspace, and operational combat airspace to conduct the entire range of military operations across all mission environments. C-ABSAA also supports the "Worldwide Operations" key performance parameter in larger RPA requirement documents, and Public Law 112-239 directing DoD collaboration with the Federal Aviation Administration (FAA) and the National Air and Space Administration (NASA) to safely integrate RPA in the NAS. Funding in this project supports the development of a Sense and Avoid (SAA) capability set for Group 4-5 RPA and covers analysis, research, and developmental activities as well as infrastructure and other government costs. Ongoing activities include support to the development of warfighter requirements and analysis of possible solution alternatives, collaboration with the FAA, NASA, and other Services to develop national policy and standards, and SAA related studies, analysis, modeling and simulation, program planning and project execution. RPA platform specific integration and testing is not included.

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

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| Title: Sense and Avoid (SAA) Related Requirements Development and Analysis, National Policy Standards Development, and Technology Development and Demonstration | 19.735 | 0.000 | 0.000 | 0.000 | 0.000 |
| Description: Support development and analysis of warfighter requirements and analysis of possible solution alternatives. Develop SAA technology and capabilities for Group 4-5 remotely piloted aircraft. Collaborate with the Federal Aviation Administration, National Air and Space Administration, and other Services to develop national policy and standards. Conduct SAA related studies, analysis, modeling and simulation, demonstrations, program planning and project execution. | | | | | |
| FY 2016 Accomplishments: - Continued Developmental Planning/Pre-Analysis of Alternatives activity leading to a Material Development Decision - Continued to collaborate with FAA, NASA, and other Services on national policy and standards, and to build and exercise modeling and simulation capabilities to support requirements, policy/standards, and technology development | | | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 675148 / Common-Airborne Sense and Avoid (C-ABSAA) |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| - Continued SAA science and technology research and development with the Air Force Research Laboratory FY 2017 Plans: - FY 2017 efforts will be reported under PE 0604257F, Advanced Technology and Sensors, Project 645148, Common-Airborne Sense & Avoid (C-ABSAA). FY 2018 Base Plans: - FY 2018 efforts will be reported under PE 0604257F, Advanced Technology and Sensors, Project 645148 C-ABSAA. FY 2018 OCO Plans: N/A | | | | | |
| Accomplishments/Planned Programs Subtotals | 19.735 | 0.000 | 0.000 | 0.000 | 0.000 |

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

N/A

Remarks

D. Acquisition Strategy

Common-Airborne Sense and Avoid (C-ABSAA) will integrate Better Buying Power 3.0 initiatives throughout its acquisition lifecycle and rely upon acquisition of government data rights to maximize contractor competition from Technology Development through Production. The program uses an incremental acquisition strategy to provide the warfighter with sense and avoid capability for Group 4-5 Remotely Piloted Aircraft (RPA) with increased, time-phased capability improvements as technology and risks achieve satisfactory levels. Group 4-5 RPA platforms will be expected to integrate the C-ABSAA provided capability into their unique systems via retrofit or in design, development, and/or production.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force **Date: May 2017**

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 675291 / Gorgon Stare |
|--|---|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 675291: Gorgon Stare | - | 10.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 10.000 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The Gorgon Stare system is a podded airborne sensor suite that provides city-sized wide area airborne surveillance and is integrated on specially-modified MQ-9 Reaper Remotely Piloted Aircraft (RPA). The Air Force Requirements Oversight Council (AFROC) approved Air Combat Command's recommendation to transition Gorgon Stare from a Quick Reaction Capability (QRC) to an Air Force Enduring Capability in November 2014. Gorgon Stare's requirements are documented in the Gorgon Stare Wide Area Airborne Sensor Capabilities Production Document (draft).

Development efforts conducted with FY 2014 Congressionally-added RDT&E funds included system integration lab testing of Near Vertical Direction Finding (NVDF) with Gorgon Stare Increment 2 Wide Area Motion Imagery (WAMI) sensors. Funds spent on NVDF will provide a ramp for future airborne integration efforts as required. Development efforts conducted with FY 2015 Congressionally-added funds included efforts focused primarily on beyond line of sight in support of an Urgent Operational Need. Development efforts conducted with FY 2016 Congressionally-added funds continued development efforts associated with NVDF integration and furthered RDT&E efforts for persistent day and night WAMI capability.

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

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

| | FY 2016 | FY 2017 |
|---|---------|---------|
| Congressional Add: Wide-Area Motion Imagery | 10.000 | 0.000 |
| FY 2016 Accomplishments: Continued development activities associated with near vertical direction finding integration. | | |
| FY 2017 Plans: N/A | | |
| Congressional Adds Subtotals | 10.000 | 0.000 |

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
|------------------|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| • N/A: N/A | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - |

Remarks

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 675291 / Gorgon Stare |

D. Acquisition Strategy

The wide area airborne surveillance requirement is being delivered via the Gorgon Stare podded wide area motion imagery sensor suite integrated on dedicated, specially-modified MQ-9 Reaper RPA. Gorgon Stare transitioned from a QRC to an Air Force Enduring Capability under AFROC authority in November 2014. The program is executed by the 645 Aeronautical Systems Group, Intelligence, Surveillance, and Reconnaissance and Special Operations Forces Directorate as a post-MS C program. The sensor suite will be sustained in its current configuration. Any future capability upgrades will be fielded as a result of validated -1067s or Urgent Operational Needs.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force **Date: May 2017**

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 675292 / Hyperspectral Sensors |
|--|---|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|-------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 675292: Hyperspectral Sensors | - | 2.195 | 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 Hyperspectral Sensors project develops Hyperspectral Imagery (HSI) sensors and capabilities for MQ-1 remotely piloted aircraft and other manned or unmanned aircraft. Within this project, the Airborne Cueing & Exploitation System-Hyperspectral (ACES HY) program helps to fulfill a portion of the sponsoring combatant command and Central Command's current HSI requirements. The ACES HY program developed sensors for the MQ-1B Predator Block 15 and included development of the required training, maintenance and fielding plans to support a working architecture.

Activities within this project also include studies and analysis supporting current and future program planning and tech development for advanced HSI sensors and capabilities, including high altitude HSI sensor developments per the HSI strategic roadmap.

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

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|---------|---------|--------------|-------------|---------------|
| Title: Airborne Cueing & Exploitation System - Hyperspectral (ACES HY) | 2.195 | 0.000 | 0.000 | - | 0.000 |
| Description: Develop capability enhancements for the ACES HY sensor system. Provide support data to accompany sensors and modifications. Tech development supporting sensor improvements and possible integration on other platforms. | | | | | |
| FY 2016 Accomplishments: - Completed high resolution camera development and test and prepare for camera production effort. - Conducted preliminary and critical design reviews and build one unit to support qualification testing. | | | | | |
| FY 2017 Plans: - N/A | | | | | |
| FY 2018 Base Plans: - N/A | | | | | |
| Accomplishments/Planned Programs Subtotals | 2.195 | 0.000 | 0.000 | - | 0.000 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 675292 / Hyperspectral Sensors |

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

| Line Item | FY 2016 | FY 2017 | FY 2018 | FY 2018 | FY 2018 | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To | Total Cost |
|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|------------|
| | | | Base | OCO | Total | | | | | Complete | |
| • APAF: BA05: Line Item # PRDT01: MQ-1 Mods | 3.173 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Remarks

A portion of the Predator modification funding listed above is used to support ACES HY integration.

D. Acquisition Strategy

ACES HY production sensor deliveries were completed in July of 2014, using the Advanced Technology Support Program process developed by Office of the Secretary of Defense Defense MicroElectronics Activity at McClellan AFB, CA. Sensors are currently managed at AFLCMC/WIILR, the MQ-1 Predator sustainment program office, Robins AFB GA.

ACES HY utilized a sole source Basic Ordering Agreement with Raytheon (McKinney, TX) for system modifications.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | | | | Project (Number/Name) 676025 / Data Compression | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 676025: Data Compression | - | 4.803 | 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 Data Compression effort provides the warfighter a capability to efficiently compress and decompress airborne Intelligence, Surveillance, and Reconnaissance ISR sensor data and transmit near real time to tactical users through current and future bandwidth limited commercial satellite communications (SATCOM) or military SATCOM. The effort is developing, testing and will implement new sensor data compression and decompression algorithms for current and emerging airborne ISR sensors. Additionally, the program develops compression and decompression capabilities for manned and unmanned airborne platforms, associated ground stations, and Distributed Common Ground System. Outputs will meet standard certification for use within the Department of Defense Geospatial Intelligence and Measurement and Signatures Intelligence architectures.

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

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

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Title: Data Compression | 4.803 | 0.000 | 0.000 | - | 0.000 |
| Description: The Data Compression effort provides the warfighter a capability to efficiently compress and decompress airborne Intelligence, Surveillance and Reconnaissance (ISR) sensor data and transmit near real time to tactical users through current and future bandwidth limited commercial Satellite Communications (SATCOM) or military SATCOM. The effort will develop, test and implement new sensor data compression and decompression algorithms for current and emerging airborne ISR sensors. Additionally, the program develops compression and decompression capabilities for manned and unmanned airborne platforms, associated ground stations, and the Defense Common Ground System. Outputs will meet standard certification for use within the Department of Defense Geospatial Intelligence and Measurement and Signatures Intelligence architectures. | | | | | |
| FY 2016 Accomplishments: | | | | | |
| - Developed and tested Phase History Synthetic Aperture Radar (SAR) data compression capabilities, and other phenomenologies. | | | | | |
| - Developed and tested compression and decompression algorithms for Persistent SAR and Smart Data Discrimination. | | | | | |
| - Developed documentation for standards acceptance. | | | | | |
| - Provided engineering services for algorithm familiarization, assessment, and improvement. | | | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 676025 / Data Compression |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| - Participated in Sensors Open System Architecture planning and integration. | | | | | |
| FY 2017 Plans: - N/A | | | | | |
| FY 2018 Base Plans: - N/A | | | | | |
| Accomplishments/Planned Programs Subtotals | 4.803 | 0.000 | 0.000 | - | 0.000 |

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

N/A

Remarks

D. Acquisition Strategy

The Data Compression acquisition approach is to design and develop compression and decompression technology hardware and software components, interfaces and standards for various airborne Intelligence, Surveillance and Reconnaissance platforms, ground stations, data storage facilities, and exploitation tools utilizing existing contracts with full and open competition where appropriate. Integration will be accomplished by the requisite program offices.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | | | | Project (Number/Name) 676031 / Dismount Detection RADAR | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 676031: <i>Dismount Detection RADAR</i> | - | 0.000 | 0.000 | 1.021 | 0.000 | 1.021 | 1.036 | 1.055 | 0.000 | 0.000 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The purpose of the Imaging and Targeting Support (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 (geolocation models, sensor-based exploitation tools, sensor networking capabilities).

Developmental efforts pursued include: improved sensor capabilities such as hyperspectral imagery (HSI), measurement and signature intelligence (MASINT), polarimetric imaging, ground moving target indication (GMTI), maritime search/track, Inverse Synthetic Aperture Radar (ISAR), foliage penetration and additional radar, electro-optical, nuclear event detection, and other modalities; increased geolocation accuracy; increased dismount detection capability; advanced sensor data correlation; automated target detection; network centric warfare; and other Intelligence, Surveillance, and Reconnaissance (ISR) and associated Tasking, Processing, Exploitation, and Dissemination (TPED) capabilities. These efforts are intended to reduce both target search and kill chain timelines as well as supporting traditional intelligence activities. This project will also increase interoperability by developing common standards and interfaces.

The funds in this project 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 (ASI) 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 initiate an I&TS project, within the GEOINT Capabilities Working Group (GCWG) construct but outside the normal annual GCWG vetting process, to expedite development and acquisition of urgently needed capabilities for the warfighter. Advanced Synthetic Aperture Radar System (ASARS)2B efforts include but are not limited to development, design, fabrication, integration, demonstration, and transition of high altitude, deep look ISR radar.

Traditional focus areas include, but are not limited to: development, demonstration, and rapid transition of common radar and electro-optical sensors (Synthetic Aperture Radar (SAR), Low Frequency SAR, and antenna, Electro-Optical (EO), Infrared (IR), HSI, Low Light, Laser Radar (LADAR), Light Detection And Ranging (LIDAR) and their operational modes (High Resolution Imagery, Ground and Dismount Moving Target Indication (GMTI/DMTI), Persistent Surveillance, Wide Area Motion Imagery (WAMI), Spectral Identification) for multiple airborne platforms, including medium and high altitude platforms; development and demonstration of advanced tactical sensor and associated TPED processing algorithms and tools (automatic registration, automatic and assisted target detection, network centric warfare). Development of integrated multi-sensor capabilities to detect and identify obscured targets (OT); development and implementation of standards (Common GMTI/DMTI, National Imagery Transmission Format (NITF); and monitoring and enhancement of Imagery Intelligence (IMINT) product quality (radar and EO/IR imagery, GMTI data, and spectral information) and timeliness throughout the image chain (from sensor to user). Development and integration of airborne sensors to support an open systems architecture pod capability. These efforts focus on reducing the find, fix and track elements of the time critical targeting kill-chain timeline while improving operator and decisionmaker efficiency and effectiveness.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 676031 / Dismount Detection RADAR |

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

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

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Title: Various projects | 0.000 | 0.000 | 1.021 | 0.000 | 1.021 |
| Description: Develop/demonstrate and advance technical maturity of promising sensors and processing capabilities (ex: radar improvement, next-generation Hyperspectral Imagery (HSI), Laser Detection and Ranging (LADAR)/Laser Identification Detection and Ranging (LIDAR), and data mitigation technologies). | | | | | |
| FY 2016 Accomplishments: N/A | | | | | |
| FY 2017 Plans: N/A | | | | | |
| FY 2018 Base Plans: - Will develop, modernize, and demonstrate advanced sensors and detection and processing algorithms, hyperspectral imaging technologies, multiband Electro-Optical (EO), Infrared (IR) and Synthetic Aperture Radar (SAR) sensor systems, enhanced lidar capabilities, polarimetric imaging, and other Geospatial Intelligence (GEOINT) sensing modalities for Anti-Access Area Denial, permissive and non-permissive environments, foliage penetration, and littoral environments. | | | | | |
| FY 2018 OCO Plans: N/A | | | | | |
| Accomplishments/Planned Programs Subtotals | 0.000 | 0.000 | 1.021 | 0.000 | 1.021 |

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

| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|------------------|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| • N/A: N/A | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - |

Remarks

D. Acquisition Strategy

Imaging and Targeting Support efforts are prioritized on an annual basis by the Geospatial Intelligence Capabilities Working Group (GCWG), in accordance with the validated gaps in the Challenging Targets Initial Capabilities Document (ICD). Resulting funded efforts are then contracted for and/or executed by either various program offices, laboratories, industry, and/or other government agencies.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems | Project (Number/Name) 676031 / Dismount Detection RADAR |

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.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305207F / <i>Manned Reconnaissance Systems</i> |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|-------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 13.245 | 20.975 | 14.269 | 0.000 | 14.269 | 14.330 | 14.596 | 14.849 | 15.153 | Continuing | Continuing |
| 674754: <i>RC-135 Systems</i> | - | 13.245 | 20.975 | 14.269 | 0.000 | 14.269 | 14.330 | 14.596 | 14.849 | 15.153 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The RC-135 operational systems development and enhancement activities support the design studies, engineering analysis, non-recurring engineering, and other efforts associated with the integration and modification of the RC-135 programs and their specialized mission systems, both air and ground. Associated ground systems include RIVET JOINT Mission Trainers (RJMT, a.k.a. mission crew simulators), Ground Data Processing Systems (GDPS), Distributed Mission Shelters (DMS), Mission Crew Training Systems (MCTS), Airborne Capabilities Extension System (ACES), and the Operational Flight Trainers (OFT, a.k.a. flight deck simulators). Extensive utilization of Commercial-Off-The-Shelf (COTS) based solutions allows rapid fielding of needed capabilities through upgrades and supports Diminishing Manufacturing Sources (DMS)/Vanishing Vendor Items (VVI) logistics mitigation efforts. The results of these efforts provide for preliminary assessments of technical feasibility, operability, or military utility as well as specific engineering implementations for integration into the various systems baseline configurations.

These activities are managed by the Air Force through the 645th Aeronautical Systems Group (645 AESG). The 645 AESG (a.k.a. BIG SAFARI Systems Program Office or SPO) manages engineering, ground and support systems modifications, integration, flight testing, product assurance, acceptance testing, logistics, and training activities.

Aircraft, sensor systems, and associated ground support system engineering planned for FY 2018 budget includes developmental planning, execution and support for the RC-135V/W RIVET JOINT Baselines 12 and 13 (BL-12 and BL-13), the RC-135U COMBAT SENT Baselines 5 and 6 (BL-5 and BL-6), and the RC-135S COBRA BALL BL-5 and BL-6 configurations. The world-wide challenge of keeping pace against technologically agile targets used by both nation and non-nation-state adversaries and the rapid evolution of COTS technologies demands a responsive and adaptive acquisition strategy for fielding incremental spiral upgrades and baseline capabilities that are logistically supportable at all locations. The 645 AESG uses an incremental baseline strategy to mitigate risk, find affordable solutions and field needed capabilities on the aircraft and associated ground support and training systems. Obsolescence and DMS/VVI logistical concerns are addressed with each baseline upgrade strategy and assessed annually as part of the fleet sustainment responsibilities.

RIVET JOINT BL-12 upgrades consist of, but are not limited to, increased digital signal exploitation, increased digital signal recorder bandwidth, enhanced spatial processing/exploitation, enhanced weather radar, digitally enhanced electronic flight instrument system (EFIS), continued Communications, Navigation and Surveillance/Air Traffic Management (CNS/ATM) and Required Navigational Performance (RNP) compliant cockpit avionics enhancements, Air Force Distributed Common Ground System (AF-DCGS) interoperability, operator work station 3-D map projection, enhanced operator reporting management tools, modernized communications security (COMSEC) protocols, and a new steerable beam antenna. RIVET JOINT BL-13 upgrades consist of, but are not limited to, providing a continuous recording capability, Super Wideband Compressive Receiver (SWCR) and Nyquist Folding Receiver (NYFR), global air traffic management (GATM) avionics upgrades such as new autopilot,

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305207F / <i>Manned Reconnaissance Systems</i> | |
| <p>automated data system-broadcast (ADS-B) and Mode 5 identify friendly or foe (IFF) systems, and family of beyond-line-of-sight terminals (FAB-T) advanced extremely high frequency (AEHF) communications suite.</p> <p>COMBAT SENT BL-5 upgrades consist of, but are not limited to, active ranging and theater networked geo-location (TNG) capability, cooling duct and lighting improvements, RJ Baseline 11 (BL-11) communications intelligence (COMINT), upgraded computer architecture, wideband global satellite (WGS) communications enhanced integration, development of an airborne tracking system, communications upgrade to include Multifunctional Information Distribution System Joint Tactical Radio System (MIDS-J), and continued CNS/ATM and RNP compliant cockpit avionics enhancements. COMBAT SENT BL-6 developmental enhancements consist of, but are not limited to, steerable beams for the COMINT sub-system, improved SWCR capability and specific emitter identification (SEI) electronic intelligence (ELINT) sub-system, Primary Sensor Measurement System (PRISMS) merge with manual precision collections, millimeter wave and low band capabilities with PRISMS, digitizing antennas, direction finding of High Frequency signals and expanded streaming audio services and 360 degree aircraft tracking system. BL-6 RDT&E is funded via PE 0305206G.</p> <p>COBRA BALL BL-5 upgrades consist of, but are not limited to, RJ BL-11 COMINT, WGS communications enhanced integration, communications upgrades to include MIDS-J and an intercom system (FORCE), and continued CNS/ATM and RNP compliant cockpit avionics enhancements. COBRA BALL BL-6 developmental enhancements consist of, but are not limited to, high gain S-Band antenna, large format Sapphire windows, RJ BL-13 COMINT capability, foreign instrumentation signals intelligence (FISINT) analog to digital receiver, and Brave version of the digital cockpit avionics systems to continue CNS/ATM and RNP compliance initiatives. BL-6 RDT&E is funded via PE 0301314F.</p> <p>Ground Systems Baseline upgrades add the capabilities found in the corresponding RIVET JOINT Baseline upgrades (i.e., RIVET JOINT BL-11 corresponds to Ground System BL-11, RIVET JOINT BL-12 corresponds to Ground System BL-12, RIVET JOINT BL-13 corresponds to Ground System BL-13) to the Ground Systems to ensure crews receive training on the appropriate mission system configurations.</p> <p>Activities also include studies and analysis to support both current program planning and execution and future program planning.</p> <p>This program is in Budget Activity 7, Operational Systems Development, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production fielding in the current or subsequent fiscal year.</p> | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | | | Date: May 2017 | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0305207F / <i>Manned Reconnaissance Systems</i> | | | |
| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
| Previous President's Budget | 13.245 | 20.975 | 14.228 | 0.000 | 14.228 |
| Current President's Budget | 13.245 | 20.975 | 14.269 | 0.000 | 14.269 |
| Total Adjustments | 0.000 | 0.000 | 0.041 | 0.000 | 0.041 |
| • 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 | 0.000 | 0.000 | | | |
| • SBIR/STTR Transfer | 0.000 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 0.041 | 0.000 | 0.041 |
| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 | | |
| Title: Manned Reconnaissance Systems | 13.245 | 20.975 | 14.269 | | |
| Description: Non-recurring engineering (NRE) for Baseline system developments and enhancements to improve mission capabilities of the RIVET JOINT BL-12 and BL-13, COMBAT SENT BL-5 and BL-6, COBRA BALL BL-5 and BL-6, and Ground Systems BL-11 and BL-12 | | | | | |
| FY 2016 Accomplishments: | | | | | |
| <ul style="list-style-type: none"> • Continued Design Studies • Continued Engineering Analysis • Continued NRE and other efforts associated with the integration and modification of the RC-135 primary mission equipment • Continued Specialized Mission Systems development for the collection of both air and ground signals. | | | | | |
| FY 2017 Plans: | | | | | |
| Initiating new contracts to: | | | | | |
| <ul style="list-style-type: none"> • Continue Engineering Analysis • Continue NRE and other efforts associated with the integration and modification of the RC-135 primary mission equipment • Continue Specialized Mission Systems development for the collection of both air and ground signals. | | | | | |
| FY 2018 Plans: | | | | | |
| Will initiate new contracts to: | | | | | |
| <ul style="list-style-type: none"> • Continue Engineering Analysis • Continue NRE and other efforts associated with the integration and modification of the RC-135 primary mission equipment | | | | | |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305207F / <i>Manned Reconnaissance Systems</i> |
|--|--|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| • Continue Specialized Mission Systems development for the collection of both air and ground signals. | | | |
| Accomplishments/Planned Programs Subtotals | 13.245 | 20.975 | 14.269 |

| D. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|---|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| • APAF: BA05: Line Item #DARP01: <i>RC-135</i> | 165.715 | 211.438 | 201.559 | 0.000 | 201.559 | 184.779 | 188.189 | 191.658 | 195.496 | Continuing | Continuing |
| • APAF: BA06: Line Item #DARP01: <i>Initial Spares/Repair Parts</i> | 51.958 | 47.734 | 49.475 | 0.000 | 49.475 | 49.927 | 50.848 | 51.785 | 52.822 | Continuing | Continuing |
| • OPAF: BA04: Line Item #846070: <i>DARP RC-135</i> | 23.973 | 25.287 | 25.985 | 0.000 | 25.985 | 26.449 | 26.918 | 27.402 | 27.896 | Continuing | Continuing |
| • RDTE: BA07: PE 0304260F: <i>Airborne SIGINT Enterprise</i> | 43.046 | 39.756 | 59.706 | 0.000 | 59.706 | 50.958 | 41.002 | 42.513 | 43.383 | Continuing | Continuing |

Remarks

E. Acquisition Strategy

The RC-135 RIVET JOINT, COBRA BALL, and COMBAT SENT configured aircraft are maintained and kept technologically relevant through a baseline or incremental upgrade acquisition strategy. Technology upgrades and quick reaction capability (QRC) developments are acquired through the 645 AESG in accordance with the BIG SAFARI Program Management Directive (PMD) and Class Justification and Approval (J&A) document for acquisition of supplies and services using an "other than full and open competition" criteria. The supplies and services procured by 645 AESG satisfy National Security requirements (FAR 6.302-6) through the use of their standing J&A or address Unusual and Compelling Urgency requirements (FAR 6.302-2) through an individually prepared J&A supported by the BIG SAFARI Life Cycle Management Plan (LCMP) across the full spectrum of system life cycle management from developmental engineering to system retirement ("cradle to grave") support. Due to the ever changing threat and rapidly evolving electromagnetic combat environment encountered during our prolonged commitment to Overseas Contingency Operations (OCO) and the global war on terrorism, the acquisition program manager has the authority to redirect funding as necessary to meet current stated and emerging Combatant Command (CCMD) and/or Intelligence Community (IC) requirements to better meet the war fighting objectives.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305207F / <i>Manned Reconnaissance Systems</i> | Project (Number/Name) 674754 / <i>RC-135 Systems</i> |
|--|--|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 Systems Development | SS/ Various | L-3 Technologies : Greenville, TX | - | 13.245 | Dec 2015 | 20.975 | Dec 2016 | 14.269 | Dec 2017 | 0.000 | | 14.269 | Continuing | Continuing | - |
| Subtotal | | | - | 13.245 | | 20.975 | | 14.269 | | 0.000 | | 14.269 | - | - | - |

Remarks
All activity is based around the Programmed Depot Maintenance (PDM) airframe and missions systems schedule which includes multiple contracts and organizations with overlapping and continuous periods of performance. Due to the rapidly changing threat environment encountered during our prolonged commitment to Overseas Contingency Operations (OCO), the acquisition program manager has the authority to redirect funding as necessary to meet current stated and emerging Combatant Command (CCMD) and/or Intelligence Community (IC) requirements.

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| | | | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|--|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| Project Cost Totals | | | - | 13.245 | 20.975 | 14.269 | 0.000 | 14.269 | - | - | - |

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|--|--------------------|----------------|--|---------------------|--------------------|--|-------------------------|-------------------|---------------------------------|
| Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | R-1 Program Element (Number/Name) PE 0305207F / <i>Manned Reconnaissance Systems</i> | | | Project (Number/Name) 674754 / <i>RC-135 Systems</i> | | | |
| | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |

Remarks

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305207F / <i>Manned Reconnaissance Systems</i> | Project (Number/Name) 674754 / <i>RC-135 Systems</i> |

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|--|--|---|---|---|--|---|---|---|--|---|---|---|--|---|---|---|--|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| RIVET JOINT Baseline 11 Integration, Test and Fielding | ██████████ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RIVET JOINT Baseline 12 Development | ██████ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RIVET JOINT Baseline 12 Integration, Test and Fielding | | | | | ██ | | | | | | | | | | | | | | | | | | | | | | | |
| RIVET JOINT Baseline 13 Development | | | | | ████████████████████ | | | | | | | | | | | | | | | | | | | | | | | |
| RIVET JOINT Baseline 13 Integration, Test and Fielding | | | | | | | | | | | | | ██ | | | | | | | | | | | | | | | |
| COMBAT SENT Baseline 5 Integration, Test and Fielding | ██ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| COMBAT SENT Baseline 6 Development | | | | | | | | | ██ | | | | | | | | | | | | | | | | | | | |
| COMBAT SENT Baseline 6 Integration, Test and Fielding | | | | | | | | | | | | | ██ | | | | | | | | | | | | | | | |
| COBRA BALL Baseline 5 Integration, Test and Fielding | ██ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| COBRA BALL Baseline 6 Development | | | | | | | | | ██ | | | | | | | | | | | | | | | | | | | |
| COBRA BALL Baseline 6 Integration, Test and Fielding | | | | | | | | | | | | | ██ | | | | | | | | | | | | | | | |
| Ground Systems Baseline 11 Integration, Test and Fielding | ██ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ground Systems Baseline 12 Integration, Test and Fielding | | | | | | | | | ██ | | | | | | | | | | | | | | | | | | | |
| Ground Systems Baseline 13 Development, Integration, Test and Fielding | | | | | | | | | | | | | | | | | ██ | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305207F / <i>Manned Reconnaissance Systems</i> | Project (Number/Name) 674754 / <i>RC-135 Systems</i> |

Schedule Details

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| RIVET JOINT Baseline 11 Integration, Test and Fielding | 1 | 2016 | 2 | 2017 |
| RIVET JOINT Baseline 12 Development | 1 | 2016 | 2 | 2016 |
| RIVET JOINT Baseline 12 Integration, Test and Fielding | 2 | 2016 | 2 | 2020 |
| RIVET JOINT Baseline 13 Development | 2 | 2017 | 4 | 2018 |
| RIVET JOINT Baseline 13 Integration, Test and Fielding | 1 | 2019 | 4 | 2022 |
| COMBAT SENT Baseline 5 Integration, Test and Fielding | 1 | 2016 | 2 | 2018 |
| COMBAT SENT Baseline 6 Development | 2 | 2018 | 2 | 2022 |
| COMBAT SENT Baseline 6 Integration, Test and Fielding | 2 | 2020 | 4 | 2022 |
| COBRA BALL Baseline 5 Integration, Test and Fielding | 1 | 2016 | 4 | 2019 |
| COBRA BALL Baseline 6 Development | 1 | 2018 | 1 | 2020 |
| COBRA BALL Baseline 6 Integration, Test and Fielding | 1 | 2020 | 4 | 2022 |
| Ground Systems Baseline 11 Integration, Test and Fielding | 1 | 2016 | 1 | 2018 |
| Ground Systems Baseline 12 Integration, Test and Fielding | 1 | 2018 | 1 | 2021 |
| Ground Systems Baseline 13 Development, Integration, Test and Fielding | 1 | 2021 | 4 | 2022 |

Note

Ground systems include the RIVET JOINT Mission Trainers (RJMT), Mission Crew Training Systems (MCTS), Ground Data Processing System (GDPS), Modular Processing System (MPS), Airborne Capabilities Extension Systems (ACES) and Operational Flight Trainers (OFT). Baseline upgrades are determined by the aircraft programmed depot maintenance schedule. Hardware, firmware or software enhancements to the ground systems are set up to match the aircraft baseline upgrades. Typically, baseline configuration changes and enhancements are incorporated first into the RJMTs and OFTs, and then integrated into GDPS, MCTS, MPS, and ACES. Delivery of the enhancements to the RJMTs and OFTs are planned to arrive concurrently, if not slightly prior, to the delivery of the first aircraft with an upgraded cockpit or mission system in a given baseline configuration to allow for aircrew and ground personnel training and qualification.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i> |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 22.686 | 30.448 | 27.501 | 0.000 | 27.501 | 23.170 | 23.601 | 24.011 | 24.503 | Continuing | Continuing |
| 674826: <i>Common Imagery Ground / Surface Systems</i> | - | 22.686 | 30.448 | 27.501 | 0.000 | 27.501 | 23.170 | 23.601 | 24.011 | 24.503 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

Air Force Distributed Common Ground System (AF DCGS) is the Combat Air Force (CAF) weapon system architecture for planning and direction, collection, processing and exploitation, analysis and production, and dissemination (PCPAD) of data from Intelligence, Surveillance, and Reconnaissance (ISR) missions. Since AF DCGS is also a major component of the DoD DCGS, the system is designed to complement and interoperate with the DoD, Army, Navy and Marine Corps DCGS. The AF DCGS mission is to provide Joint Task Force (JTF) Commanders, Air Component Commanders, Unified Commands, and other directed organizations with global, time-sensitive ISR PCPAD across the spectrum of military operations. AF DCGS is a multi-INT network linked weapon system (AN/GSQ-272) capable of exploiting intelligence data from manned platforms, remotely piloted aircraft (RPA), non-traditional ISR platforms, national and commercial satellites, and other collection systems. AF DCGS is designed to support joint operational requirements by providing a common PCPAD means to provide time-sensitive intelligence to field commanders and in support of the Air Operations Center (AOC) mission requirements. Currently, the AF DCGS worldwide architecture is composed of two worldwide core sites, three regional core sites, two remote Air Force Forces (AF FOR) sites, four National Mission Partner (NMP) sites, three support sites, and multiple National Guard Bureau (NGB) sites. Currently, AF DCGS is supporting ongoing operations from forward deployed and in-garrison CONUS and OCONUS based locations. The system employs a concept of data distribution, information sharing and collaborative work centers. AF DCGS provides the national leadership and the warfighter with integrated and interoperable national and airborne reconnaissance by providing quality and fused Signals Intelligence (SIGINT), Measurement and Signature Intelligence (MASINT), and Geospatial Intelligence (GEOINT) tailored to the warfighter for all levels of conflict.

AF DCGS is transforming by integrating the necessary technologies and tools to provide increased capabilities and meet emerging and urgent operational needs. These efforts will also integrate commercial-off-the-shelf and government-off-the-shelf upgrades to provide current technologies and achieve necessary application services. The next series of upgrades will meet the operational need to integrate new and/or improved sensor capabilities, as well as enhance interoperability by migrating to an Open Architecture (OA) to improve data sharing ability per DoD direction.

Program management consists of eight ACAT III efforts: GEOINT (GB 4.1), GEOINT Transformation, Systems Release (SR 3.0), SIGINT Transformation, Sensor Integration, Multi-INT, Network Infrastructure Transformation, and DCGS Reference Imagery Transition (DRT):

1. *GB 4.1: The GEOINT Baseline 4.1 (GB4.1) effort completes the Bulk Release process and provides a common baseline across the weapon system. It also integrates Airborne Cuing and Exploitation System, Hyper Spectral ACES-HY (MQ-1) and Global Hawk (GH) Block 40 capability into AF DCGS.
2. GEOINT Transformation: The GEOINT Transformation effort rapidly integrates new capabilities and migrates GEOINT-specific applications & capabilities into the open architecture framework.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i> |
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3. *SR 3.0: The Systems Release (3.0) effort completes SIGINT Bulk Release process and provides a common baseline across the weapon system. Provides the ability to PCPAD the Airborne Signals Intelligence Payload (ASIP) family of systems and integrates the Common Intelligence Collections System (CICS) capability.
4. SIGINT Transformation: Rapidly integrate new capabilities, leverage mission partner methods and tools, exchange data, and migrate the SIGINT-specific applications/capabilities into the open architecture framework.
5. *Sensor Integration: The Sensor Integration effort rapidly integrates AF, Joint, & Coalition Sensor data into DCGS Enterprise to ingest data, perform sensor planning, and Command & Control.
6. Multi-INT: Provides and supports Open Architecture (OA)-based Enterprise Services, moves to commodity hardware, a virtual desktop environment, and facilitates enterprise-wide collaborative tools.
7. Network Infrastructure Transformation: The Infrastructure Transformation effort modernizes the AF DCGS infrastructure to improve data ingest, transfer, and storage capabilities while migrating the network toward a cloud architecture.
- 8.*DRT: The Air Force DCGS Reference Imagery Transition (DRT) effort provides data ingest, transfer, and storage capabilities for NGA reference imagery data.

NOTES:

*For FY18, this effort does not have any associated RDT&E funding. The Other Procurement Air Force (OPAF) funding is exhibited in the Procurement Documentation (WSC846080, DCGS-AF).

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded.

| B. Program Change Summary (\$ in Millions) | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|---|-----------------------|-----------------------|----------------------------|---------------------------|-----------------------------|
| Previous President's Budget | 22.686 | 18.902 | 26.422 | 0.000 | 26.422 |
| Current President's Budget | 22.686 | 30.448 | 27.501 | 0.000 | 27.501 |
| Total Adjustments | 0.000 | 11.546 | 1.079 | 0.000 | 1.079 |
| • 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 | 11.546 | 1.079 | 0.000 | 1.079 |

Change Summary Explanation

In FY 2018, \$1.00M was added by the Air Force to enhance target recognition capabilities.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i> |
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In FY 2017, \$11.546M was requested in the FY 2017 Request for Additional Appropriations to address emergency war-fighting readiness requirements. This provides RDT&E funds to establish peer-to-peer cryptologic interoperability with NSA architecture, automated ingest of airborne data, improved geo-location timeliness & accuracy for tracking & targeting, greatly enhancing the quality of DCGS analysis.

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

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|---------|---------|-----------------|----------------|------------------|
| <p>Title: SIGINT Transformation</p> <p>Description: The Signal Intelligence (SIGINT) Transformation effort rapidly integrates new capabilities, leverages mission partner methods and tools, exchange data, and migrates the SIGINT-specific applications/capabilities into the open architecture framework. The SIGINT Segment provides command and control (C2) of ISR sensors, data processing, and data distribution to the customers in near real time from connected sensors at both core and remote sites.</p> <p>FY 2016 Accomplishments: Developed connectivity directly to NSANET leveraging national SIGINT and the current AF DCGS System Release 3.0 (SR 3.0) baseline architecture to improve the tactical SIGINT available to the warfighter. Also, integrated current SIGINT specific software applications to the Virtual Desktop Environment, providing expandability for multi-INT in the future.</p> <p>FY 2017 Plans: Continue to develop and integrate connectivity directly to NSANET leveraging national SIGINT and the SR 3.0 architecture to improve the tactical SIGINT available to the warfighter. Continue to establish peer-to-peer cryptologic interoperability with NSA architecture, automated ingest of airborne data, improved geolocation timeliness & accuracy for tracking & targeting, greatly enhancing the quality of DCGS analysis.</p> <p>FY 2018 Base Plans: Will continue to develop and integrate connectivity directly to NSANET, leveraging SIGINT and the SR 3.0 architecture to improve the tactical SIGINT available to the warfighter.</p> <p>FY 2018 OCO Plans: N/A</p> | 10.759 | 14.897 | 8.267 | 0.000 | 8.267 |
| <p>Title: Multi-INT Transformation</p> <p>Description: Provides and supports Open Architecture-based Enterprise Services, moves to commodity hardware, a virtual desktop environment, and facilitates enterprise-wide collaborative tools.</p> <p>FY 2016 Accomplishments:</p> | 1.089 | 0.851 | 0.700 | 0.000 | 0.700 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i> |
|--|--|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|---------|---------|--------------|-------------|---------------|
| <p>Provided support for all projects' test and evaluation activities for the Air Force DCGS weapons system.</p> <p>FY 2017 Plans: Provide support for all projects' test and evaluation activities for the Air Force DCGS weapons system.</p> <p>FY 2018 Base Plans: Will provide support for all projects' test and evaluation activities for the Air Force DCGS weapons system.</p> <p>FY 2018 OCO Plans: N/A</p> | | | | | |
| <p>Title: Network Infrastructure Transformation</p> <p>Description: The Network Infrastructure Transformation effort modernizes the AF DCGS infrastructure to improve data ingest, transfer, and storage capabilities while migrating the network toward a cloud architecture. A primary task is to replace the Asynchronous Transfer Mode (ATM) capability with a non-ATM based Transport Architecture.</p> <p>FY 2016 Accomplishments: Continued risk reduction, integration, and deployment activities for Open Architecture (OA) DCGS, migrated Global Hawk (GH) imagery data into the DCGS Storage & Dissemination architecture, and integrated improved GH sensor capability.</p> <p>FY 2017 Plans: Continue modernizing the AF DCGS infrastructure to improve data ingest, transfer, and storage capabilities while migrating the network toward an open architecture. Continue to add capabilities to the baseline of the FOC weapon system already fielded and does not replace it. Continue integration and deployment activities for the AF DCGS Transport Architecture.</p> <p>FY 2018 Base Plans: Will continue modernizing the AF DCGS infrastructure to improve data ingest, transfer, and storage capabilities while migrating the network toward an open architecture. Will add capabilities to the baseline of the FOC weapon system already fielded and does not replace it. Will continue integration and deployment activities for the AF DCGS Transport Architecture.</p> <p>FY 2018 OCO Plans:</p> | 9.674 | 13.700 | 17.315 | 0.000 | 17.315 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i> |
|--|--|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|---------|---------|-----------------|----------------|------------------|
| N/A | | | | | |
| Title: GEOINT Transformation Description: The GEOINT Transformation effort rapidly integrates new capabilities and migrates GEOINT-specific applications & capabilities into the open architecture framework. Furthermore, GEOINT Transformation provides continuous and incremental improvement to the capability for planning and direction, collection, processing and exploitation, analysis and production, and dissemination (PCPAD) of advanced imagery intelligence. GEOINT Transformation builds upon GB4.1 to integrate new sensors, provide enhanced processing techniques, and provide imagery analysts the advanced capability to exploit, analyze, produce, and disseminate imagery. FY 2016 Accomplishments: Continued to integrate new capabilities and migrate GEOINT-specific applications and capabilities into the open architecture framework. FY 2017 Plans: Continue to integrate new capabilities and migrate GEOINT-specific applications & capabilities into the open architecture framework. FY 2018 Base Plans: Will continue to integrate new capabilities and migrate GEOINT-specific applications & capabilities into the open architecture framework. FY 2018 OCO Plans: n/a | 1.164 | 1.000 | 1.219 | 0.000 | 1.219 |
| Accomplishments/Planned Programs Subtotals | 22.686 | 30.448 | 27.501 | 0.000 | 27.501 |

| D. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
| • OPAF: BA04: Line Item # 846080: DCGS-AF | 177.021 | 198.455 | 167.523 | 9.200 | 176.723 | 159.085 | 151.591 | 154.322 | 157.109 | Continuing | Continuing |
| Remarks | | | | | | | | | | | |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force Date: May 2017

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|--|--|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i> |
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E. Acquisition Strategy

The AF DCGS acquisition strategy is to transition the weapon system to an open hardware and software architecture. Also, the strategy leverages approved lean and agile industry practices to increase delivery cycles and incorporates remote installation capabilities to speed up the installation tempo.

Contracting strategy involves a combination of Basic Ordering Agreements (BOAs), Indefinite Delivery/Indefinite Quantity (IDIQ) contracts awarded to execute program funds and delivery/task orders are negotiated/awarded individually.

The program is managed as eight ACAT III efforts: GEOINT (GB 4.1), GEOINT Transformation, Systems Release (SR 3.0), SIGINT Transformation, Sensor Integration, Multi-INT-1, Network Infrastructure Transformation, and DCGS Reference Imagery Transition (DRT).

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i> | Project (Number/Name) 674826 / <i>Common Imagery Ground / Surface Systems</i> |
|--|--|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| SIGINT Transformation | Various | Various : Various | - | 10.759 | Jan 2016 | 14.897 | Nov 2016 | 7.322 | Nov 2017 | 0.000 | | 7.322 | Continuing | Continuing | - |
| Network Infrastructure Transformation | Various | Various : Various | - | 5.947 | Oct 2015 | 11.700 | Feb 2017 | 14.900 | Feb 2018 | 0.000 | | 14.900 | Continuing | Continuing | - |
| GEOINT Transformation | Various | Various : Various | - | 0.000 | | 1.000 | Apr 2017 | 1.079 | Apr 2018 | 0.000 | | 1.079 | Continuing | Continuing | - |
| Subtotal | | | - | 16.706 | | 27.597 | | 23.301 | | 0.000 | | 23.301 | - | - | - |

Remarks
 Note on "various" entries - Contract Method, Contract Type, Performing Activity, Target Value of Contract are entered as "various" because there are multiple projects within each upgrade and depending on the type of effort to be completed determines the contract vehicle to use. There is no way on this document to delineate the contracts that support each upgrade as they are numerous.

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Multi-INT | Various | Various : Various | - | 1.089 | Oct 2015 | 0.851 | Jan 2017 | 0.700 | Jan 2018 | 0.000 | | 0.700 | Continuing | Continuing | - |
| Subtotal | | | - | 1.089 | | 0.851 | | 0.700 | | 0.000 | | 0.700 | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | - | 4.891 | Sep 2016 | 2.000 | Feb 2017 | 3.500 | Feb 2018 | 0.000 | | 3.500 | Continuing | Continuing | - |
| Subtotal | | | - | 4.891 | | 2.000 | | 3.500 | | 0.000 | | 3.500 | - | - | - |

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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|--|--|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i> | Project (Number/Name) 674826 / <i>Common Imagery Ground / Surface Systems</i> |
|--|--|---|

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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
 Note on "various" entries - Contract Method, Contract Type, Performing Activity, Target Value of Contract are entered as "various" because there are multiple projects within in each upgrade and depending on the type of effort to be completed determines the contract vehicle to use. There is no way on this document to delineate the contracts that support each upgrade as they are numerous.

| | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| Project Cost Totals | - | 22.686 | 30.448 | 27.501 | 0.000 | 27.501 | - | - | - |

Remarks

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i> | Project (Number/Name) 674826 / <i>Common Imagery Ground / Surface Systems</i> |

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|--|------------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| SIGINT Transformation: NSANET Integration | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SIGINT Transformation: Virtual Desktop Environment | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SIGINT Transformation: Technology Insertion | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Network Infrastructure Transformation: OA DCGS | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Network Infrastructure Transformation: GH Imagery Storage | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Network Infrastructure Transformation: AF DCGS Transport Architecture Update | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Network Infrastructure Transformation: Technology Insertion | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Multi-INT Transformation: Technology Insertion | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GEOINT Transformation: GWE | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GEOINT Transformation: Common Workstation | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GEOINT Transformation: Technology Insertion | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305208F / <i>Distributed Common Ground/Surface Systems</i> | Project (Number/Name) 674826 / <i>Common Imagery Ground / Surface Systems</i> |

Schedule Details

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| SIGINT Transformation: NSANET Integration | 2 | 2016 | 3 | 2018 |
| SIGINT Transformation: Virtual Desktop Environment | 2 | 2016 | 3 | 2017 |
| SIGINT Transformation: Technology Insertion | 1 | 2018 | 4 | 2022 |
| Network Infrastructure Transformation: OA DCGS | 2 | 2016 | 3 | 2016 |
| Network Infrastructure Transformation: GH Imagery Storage | 2 | 2016 | 4 | 2016 |
| Network Infrastructure Transformation: AF DCGS Transport Architecture Update | 1 | 2017 | 4 | 2019 |
| Network Infrastructure Transformation: Technology Insertion | 1 | 2018 | 4 | 2022 |
| Multi-INT Transformation: Technology Insertion | 1 | 2018 | 4 | 2022 |
| GEOINT Transformation: GWE | 1 | 2016 | 3 | 2017 |
| GEOINT Transformation: Common Workstation | 1 | 2016 | 3 | 2017 |
| GEOINT Transformation: Technology Insertion | 1 | 2016 | 4 | 2018 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | 686.056 | 180.547 | 256.307 | 214.849 | 0.000 | 214.849 | 227.143 | 228.670 | 175.572 | 178.642 | Continuing | Continuing |
| 675145: <i>RQ-4 Block 30</i> | 236.368 | 128.051 | 126.737 | 35.030 | 0.000 | 35.030 | 32.495 | 27.812 | 25.577 | 26.100 | 0.000 | 638.170 |
| 675146: <i>RQ-4 Block 40</i> | 169.092 | 4.944 | 0.089 | 0.139 | 0.000 | 0.139 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 174.264 |
| 675147: <i>RQ-4 Grnd Segment/ Comm System</i> | 53.915 | 31.460 | 0.175 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 85.550 |
| 675149: <i>RQ-4 Capability Enhancements</i> | 0.000 | 0.000 | 121.838 | 167.745 | 0.000 | 167.745 | 182.744 | 188.741 | 137.708 | 141.454 | Continuing | Continuing |
| 67RTIP: <i>MP-RTIP</i> | 226.681 | 16.092 | 7.468 | 11.935 | 0.000 | 11.935 | 11.904 | 12.117 | 12.287 | 11.088 | 0.000 | 309.572 |

Program MDAP/MAIS Code: 252
Project MDAP/MAIS Code(s): 293

Note

The sum of all Prior Years is actually \$2031.377 million more than the represented total due to several projects ending.

In FY17 the PE contains funding for RQ-4 Global Hawk (ACAT 1C), MP-RTIP (ACAT 1C), GSMP (ACAT II) and MS-177 Sensor (ACT III) programs. In FY 2017 and beyond, Program 0305220F, RQ-4, Project 675145, RQ-4 Block 30, Project 675146, RQ-4 Block 40, and Project 675147, RQ-4 Ground Segment/Comm System, most major modernization efforts will be transferred to Program 0305220F, RQ-4, Project 675149, RQ-4 Capability Enhancements in order to allow greater visibility into Global Hawk modernization efforts.

In FY 2018, PE 0305220F, RQ-4 UAV, Project 675146, RQ-4 Block 40, efforts were transferred to PE 0305220F, RQ-4 UAV, Project 675149, RQ-4 Capability Enhancements, in order to allow greater visibility into Global Hawk modernization efforts.

In FY 2017, PE 0305220F, RQ-4 UAV, Project 675147, RQ-4 Grnd Segment/Comm System, efforts were transferred to PE 0305220F, RQ-4 UAV, Project 675149, RQ-4 Capability Enhancements, in order to allow greater visibility into Global Hawk modernization efforts.

A. Mission Description and Budget Item Justification

This program element funds five (5) related Air Force projects sharing the RQ-4 platform in common: the RQ-4 Block 30, the RQ-4 Block 40, the RQ-4 Ground Segment/Communication System, RQ-4 Capability Enhancements, and Multi-Platform Radar Technology Insertion Program (MP-RTIP). The RQ-4 Block 30, Block 40, and Ground Segment/Communications Segment projects support the development and testing of the baseline ACAT 1C RQ-4 capability and the initiation of the major modernization ACAT programs. Beginning in FY17, the majority of modernization funding was transferred to the Capability Enhancements project to support upgrades

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV |
|--|--|

and modifications to the fielded RQ-4 weapon system to meet evolving threats and warfighter requirements. The MP-RTIP project completes development and testing of the baseline MDAP MP-RTIP sensor capability.

When judged feasible and affordable, this program will participate in the development, testing, and implementation of international standards to enhance joint, allied, and coalition interoperability. Studies and activities may be initiated to further explore the utility of incorporating the emerging architectural standards such as the USAF Unmanned Aerial System (UAS) Command and Control Initiative (UCI) or the DoD's Unmanned Control Segment standards (UCS) and Open Mission Systems (OMS). GSMP and CSMP will incorporate UCI and UCS standards.

Per direction of USD(AT&L), the RQ-4 program was restructured from the original project 675144 (Baseline) into multiple projects: (1) Block 30, (2) Block 40, (3) GroundSegment/Communications System, and (4) Common-Airborne Sense and Avoid (C-ABSAA). Prior year funds in the amount of \$2031.377M were accounted for in project 675144.

The FY2018 funding request was reduced by \$49.958 million to account for the availability of prior year execution balances.

This program is in Budget Activity 7, Operational System Development, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 188.053 | 256.307 | 321.807 | 0.000 | 321.807 |
| Current President's Budget | 180.547 | 256.307 | 214.849 | 0.000 | 214.849 |
| Total Adjustments | -7.506 | 0.000 | -106.958 | 0.000 | -106.958 |
| • 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 | -7.506 | 0.000 | | | |
| • SBIR/STTR Transfer | 0.000 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | -106.958 | 0.000 | -106.958 |

Change Summary Explanation

FY16 \$7.506M decrease: Reprogramming of funds due to higher Air Force priorities.

FY18 \$57.0M decrease: Air Force directed changes for higher priority efforts.

FY18 \$49.958M decrease: Air Force directed reduction to account for availability of prior year execution balances.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | | | | Project (Number/Name) 675145 / RQ-4 Block 30 | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 675145: RQ-4 Block 30 | 236.368 | 128.051 | 126.737 | 35.030 | 0.000 | 35.030 | 32.495 | 27.812 | 25.577 | 26.100 | 0.000 | 638.170 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note

The RQ-4 Block 30 Project was directed by an Acquisition Decision Memorandum (ADM) signed 14 Jun 2011 by USD (AT&L). At the time of the ADM signature, and subsequent designation of projects, budgets had already been finalized. Prior budgets for all projects are captured under the RQ-4 Baseline project, as its related Project (675144) was the core project for the RQ-4 program prior to the directed restructure.

In FY 2017 and beyond, Program 0305220F, RQ-4, Project 675145, Block 30, most major modernization efforts have been transferred to Program 0305220F, RQ-4, Project 675149, Capability Enhancements. The transfer of these efforts allows greater visibility into Global Hawk upgrade efforts.

A. Mission Description and Budget Item Justification

The RQ-4 Remotely Piloted Aircraft (RPA) provides a high altitude, deep look, long-endurance Intelligence, Surveillance, and Reconnaissance (ISR) capability that complements space and other airborne collectors during peacetime, crisis, and war-fighting scenarios. RDT&E funding in this project supports design, development, integration, and testing of capabilities needed to meet validated requirements for Block 30 aircraft, including continuing aircraft system upgrade for Enhanced Integrated Sensor Suite (EISS) sensors, the Airborne Signals Intelligence Payload (ASIP), and alternate sensor payloads.

This funding also supports aircraft systems upgrades to include continuing airframe updates, aircraft operations surety, cybersecurity, airspace and interoperability enhancements, information assurance, and mission critical repair of Government Furnished Equipment (GFE).

Activities include mission planning development and testing, enhanced weather capability development and testing, airspace and interoperability enhancements and updates, airframe and software upgrades and deficiency report resolution across RQ-4 fleet, periodic Operational Flight Program updates and releases, sensor interoperability and communication enhancements and alternate sensor upgrades, upgrades to ASIP Signals Intelligence (SIGINT) sensor, Identification Friend or Foe (IFF) Mode 5 Automatic Dependent Surveillance-Broadcast (ADS-B) development and testing, development and testing activities associated with enhancing sensor capability and sensor integration, integration of alternate sensors, development and testing of ice protection system, support of demonstration/development and technology insertion, and studies and analysis supporting future system enhancements.

This project supports system engineering/program management, test and evaluation, management services, and fielding support for all RQ-4 projects. This reflects contracting/acquisition strategy for these common elements within the Global Hawk program to provide efficiencies.

The RQ-4 program will maintain and upgrade interoperability for Blocks 20/30/40 with system of systems partners and continue to incorporate applicable synergies with other platforms such as the U.S. Navy's Triton, other RPA weapon systems, and Processing, Exploration & Dissemination (PED) elements. The networking capability for intelligence dissemination is required to provide the data transport interface between the Weapons System, Operations Centers, and external Intelligence Community customers.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675145 / RQ-4 Block 30 |
|--|--|--|

This program will participate in the development, testing, and implementation of international standards to enhance joint, allied, and coalition interoperability. Likewise, studies and activities will be initiated to further explore the utility of incorporating the emerging architectural standards such as the USAF Unmanned Aerial System (UAS) Command and Control Initiative (UCI), the DoD's Unmanned Control Segment standards (UCS), or Open Mission Systems (OMS) as well as technology insertion activities in support of Better Buying Power (BBP).

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

| | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| <p>Title: RQ-4 Block 30 Development and Demonstration</p> <p>Description: Global Hawk Unmanned Aerial Vehicle Development and Demonstration includes enterprise management, test and evaluation, software integration, and fielding support for all RQ-4 projects as well as periodic Operational Flight Program updates and releases, studies and analysis supporting future system enhancements.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Continued development of system interoperability, IFF Mode 5/ADS-B, enhanced weather capability, Joint Mission Planning System (JMPS) mission planning, cybersecurity and information assurance and reliability & maintainability, and associated testing & evaluation - Continued upgrades to Airborne Signals Intelligence Payload (ASIP Signals Intelligence (SIGINT) and Enhanced Integrated Sensor Suite (EISS sensors) <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Continue upgrades to ASIP SIGINT and EISS sensors - Continue airspace integration activities including IFF Mode 5/ADS-B, comm interoperability and upgrades, cybersecurity and information assurance and reliability & maintainability, and associated testing - Initiate Operational Flight Program updates and releases - Continue risk reduction and analysis of ice protection system - Development and operational test of enhanced weather capability and JMPS <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will continue upgrades to ASIP SIGINT and EISS sensors - Will continue airspace integration activities including IFF Mode 5/ADS-B, comm interoperability and upgrades, cybersecurity and information assurance and reliability & maintainability, and associated testing - Will continue development of Operational Flight Program updates - Will continue risk reduction and analysis of ice protection system - Will conduct Operational test of enhanced weather capability | 73.076 | 93.378 | 24.980 |
| <p>Title: RQ-4 MS-177 Sensor Integration</p> <p>Description: Integration of MS-177 multispectral sensor into Block 30</p> | 38.655 | 4.000 | 0.000 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675145 / RQ-4 Block 30 |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Awarded contract for MS-177 integration and development activities - Initiated sensor enhancement RDT&E of additional spectral band request for FOC capability <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Continue the development, integration, and testing of MS-177 on Block 30, including additional spectral bands - Conduct first flight and development test activities <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will continue in project 675149 | | | |
| <p>Title: Block 30 Government Test and Non-Prime Support</p> <p>Description: Government test, non-prime technical support and Other Government Costs (OGC) -- Funding supports RQ-4 development testing at the 412 Test Wing at Edwards AFB, CA as well as for support from Air Force Operational Test and Evaluation Center (AFOTEC), Joint Interoperability Test Command (JITC), Distributed Common Ground System (DCGS), other interoperability partners and OGC.</p> | 16.320 | 29.359 | 10.050 |
| <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Continued government test - Continued non-prime engineering and technical support and Other Government Costs <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Continue government test - Continue non-prime engineering and technical support and Other Government Costs <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will continue government test - Will continue non-prime engineering and technical support and Other Government Costs | | | |
| Accomplishments/Planned Programs Subtotals | 128.051 | 126.737 | 35.030 |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|-------------------|
| Line Item | FY 2016 | FY 2017 | FY 2018 | FY 2018 | FY 2018 | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To | Total Cost |
| | | | Base | OCO | Total | | | | | Complete | |
| • APAF: BA04: Line Item # HAEUAV: RQ-4 | 4.250 | 12.966 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 4,354.270 |
| • APAF: BA05: Line Item # HAWK00: RQ-4 Mods | 50.022 | 32.045 | 43.968 | 0.000 | 43.968 | 76.511 | 22.590 | 132.710 | 143.228 | 167.265 | 1,083.716 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675145 / RQ-4 Block 30 |
|--|--|--|

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • APAF: BA07: Line Item # RQ4DIS: <i>RQ-4 Post Production Support</i> | 0.000 | 0.099 | 86.695 | 0.000 | 86.695 | 90.044 | 61.661 | 17.575 | 15.549 | 92.583 | 424.236 |

Remarks

D. Acquisition Strategy

The RQ-4 program uses an evolutionary acquisition strategy to provide the warfighter with a near-term combat capability with increased time-phased capability improvements as technology and risk achieve satisfactory levels. Northrop Grumman Corporation is the prime contractor. A suite of contract vehicles is used for development efforts: primarily, Indefinite Delivery, Indefinite Quantity (IDIQ) contracts cover development, system upgrade, production, retrofit, fielding, and sustainment efforts. MS-177 Sensor Enhancement RDT&E is being contracted directly with the Original Equipment Manufacturer (OEM), United Technology Corporation Aerospace Systems (UTAS).

The program successfully completed Milestone (MS) C in February 2015 and is transitioning core program activities to the Operations and Support phase of the Defense Acquisition System over the next several years. Future required capabilities beyond the core Acquisition Category (ACAT) IC RQ-4 program will be completed as separate ACAT II and ACAT III modification programs.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date: May 2017**

| | | |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675145 / RQ-4 Block 30 |
|--|--|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Global Hawk Engineering Manufacturing and Development | SS/ Various | Northrop Grumman Integrated Systems : San Diego, CA | 166.963 | 73.076 | May 2016 | 93.378 | Jul 2017 | 24.980 | Jul 2018 | 0.000 | | 24.980 | 106.824 | 465.221 | 465.221 |
| RQ-4 MS-177 Sensor Integration | SS/ Various | Various : Various | 49.143 | 38.655 | Jul 2016 | 4.000 | Nov 2016 | 0.000 | | 0.000 | | 0.000 | 0.000 | 91.798 | 140.229 |
| Subtotal | | | 216.106 | 111.731 | | 97.378 | | 24.980 | | 0.000 | | 24.980 | 106.824 | 557.019 | 605.450 |

Remarks
 Target Value of the Global Hawk EMD, IDIQ, and EPIC Contracts are not segregated by Budget Project Number.
 Target Value of MS-177 contract includes \$48.431M of funding in Budget Project Number 675149, RQ-4 Capability Enhancements.

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Non Prime Technical Support | Various | Various : Dayton, OH | 1.330 | 1.131 | Feb 2016 | 0.423 | Jan 2017 | 0.396 | Jan 2018 | 0.000 | | 0.396 | 0.000 | 3.280 | 3.280 |
| Subtotal | | | 1.330 | 1.131 | | 0.423 | | 0.396 | | 0.000 | | 0.396 | 0.000 | 3.280 | 3.280 |

Remarks
 Target Value of the Global Hawk effort is not segregated by Budget Project Number.

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Flight Test & Evaluation | MIPR | 412 TW : Edwards AFB, CA | 11.606 | 9.650 | Oct 2015 | 23.604 | Oct 2016 | 6.338 | Oct 2017 | 0.000 | | 6.338 | 1.163 | 52.361 | 52.361 |
| Subtotal | | | 11.606 | 9.650 | | 23.604 | | 6.338 | | 0.000 | | 6.338 | 1.163 | 52.361 | 52.361 |

Remarks
 Target Value of the Global Hawk effort is not segregated by Budget Project Number.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date: May 2017**

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675145 / RQ-4 Block 30 |
|--|--|--|

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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: A&AS | Various | Various : Dayton, OH | 5.708 | 3.739 | Nov 2015 | 3.200 | Nov 2016 | 2.315 | Nov 2017 | 0.000 | | 2.315 | 3.697 | 18.659 | 18.659 |
| PMA: Other Government Costs | Various | Various : Dayton, OH | 1.618 | 1.800 | Oct 2015 | 2.132 | Oct 2016 | 1.001 | Oct 2017 | 0.000 | | 1.001 | 0.300 | 6.851 | 6.851 |
| Subtotal | | | 7.326 | 5.539 | | 5.332 | | 3.316 | | 0.000 | | 3.316 | 3.997 | 25.510 | 25.510 |

Remarks
Target Value of the Global Hawk effort is not segregated by Budget Project Number.

| | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| Project Cost Totals | 236.368 | 128.051 | 126.737 | 35.030 | 0.000 | 35.030 | 111.984 | 638.170 | - |

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force

Date: May 2017

Appropriation/Budget Activity
3600 / 7

R-1 Program Element (Number/Name)
PE 0305220F / RQ-4 UAV

Project (Number/Name)
675145 / RQ-4 Block 30

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|---|------------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| Enhanced Weather Capability Development | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mode 5/ADS-B Development | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ASIP Inc 1 Development | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mission Planning Development | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sensor Enhancements & Upgrades (MS-177) Development | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Operational Flight Program Updates & Releases | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Test Support | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force **Date:** May 2017

| | | |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675145 / RQ-4 Block 30 |
|--|--|--|

Schedule Details

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Enhanced Weather Capability Development | 1 | 2016 | 4 | 2017 |
| Mode 5/ADS-B Development | 2 | 2016 | 2 | 2018 |
| ASIP Inc 1 Development | 2 | 2016 | 3 | 2017 |
| Mission Planning Development | 1 | 2016 | 3 | 2017 |
| Sensor Enhancements & Upgrades (MS-177) Development | 1 | 2016 | 2 | 2017 |
| Operational Flight Program Updates & Releases | 3 | 2017 | 4 | 2022 |
| Test Support | 1 | 2016 | 4 | 2019 |

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|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|--|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | | | | Project (Number/Name) 675146 / RQ-4 Block 40 | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 675146: RQ-4 Block 40 | 169.092 | 4.944 | 0.089 | 0.139 | 0.000 | 0.139 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 174.264 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note

The RQ-4 Block 40 Project was directed by an Acquisition Decision Memorandum (ADM) signed 14 Jun 2011 by USD (AT&L). At the time of the ADM signature, and subsequent designation of projects, budgets had already been finalized. Prior budgets for all projects are captured under the RQ-4 Baseline project, as its related Project (675144) was the core project for the RQ-4 program prior to the directed restructure.

In FY 2017 and beyond, Program 0305220F, RQ-4, Project 675146, Block 40, most major modernization efforts have been transferred to Program 0305220F, RQ-4, Project 675149, Capability Enhancements. The transfer of these efforts allows greater visibility into Global Hawk modernization efforts.

In FY 2018, PE 0305220F, RQ-4 UAV, Project 675146, RQ-4 Block 40, efforts were transferred to PE 0305220F, RQ-4 UAV, Project 675149, RQ-4 Capability Enhancements, in order to allow greater visibility into Global Hawk modernization efforts.

A. Mission Description and Budget Item Justification

The RQ-4 Remotely Piloted Aircraft (RPA) provides a high altitude, deep look, long-endurance Intelligence, Surveillance, and Reconnaissance (ISR) capability that complements space and other airborne collectors during peacetime, crisis, and war-fighting scenarios.

RDT&E funding in this project supports design, development, integration, and testing of items needed to meet validated requirements for Block 40 aircraft, including further development, creation of additional radar modes, integration and test of the Multi-Platform Radar Technology Insertion Program (MP-RTIP) sensor capabilities. The Block 40 program provides critical Synthetic Aperture Radar (SAR) and Ground Moving Target Indicator (GMTI) data to the warfighter. This funding also supports continued aircraft/communications systems upgrade to include Identification Friend or Foe (IFF) Mode 5/ADS-B, mission planning upgrade development and testing, airspace and interoperability and communication enhancements and updates, periodic Operational Flight Program updates and releases, enhanced weather capability, development and testing of ice protection system, additional radar modes, sensor enhancements, reliability and maintainability improvements, and support of demonstration and technology insertion. Funding continues RQ-4 unique development and integration of upgraded capabilities.

This program will participate in the development, testing, and implementation of international standards to enhance joint, allied, and coalition interoperability. Likewise, studies and activities will be initiated to further explore the utility of incorporating the emerging architectural standards such as the USAF Unmanned Aerial System (UAS) Command and Control Initiative (UCI), the DoD's Unmanned Control Segment standards (UCS), or Open Mission Systems (OMS) as well as technology insertion activities in support of Better Buying Power (BBP).

The RQ-4 program will maintain capability and interoperability for Block 40 including efforts with system of systems partners and continue to incorporate applicable synergies with other platforms, such as the U.S. Navy's Triton, other RPA weapon systems, and Processing, Exploitation & Dissemination (PED) elements.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force **Date:** May 2017

| | | |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675146 / RQ-4 Block 40 |
|--|--|--|

Activities also include studies and analysis, support to future system enhancements, communication and interoperability enhancements, current and future program planning, and project execution.

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

| | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Title: RQ-4 Block 40 Development and Demonstration | 4.944 | 0.089 | 0.139 |
| Description: RQ-4 Block 40 Payload and Aircraft/Communications Development and Demonstration as well as periodic Operational Flight Program updates and releases | | | |
| FY 2016 Accomplishments: | | | |
| - Completed successful IOT&E rated "suitable, effective and mission capable" | | | |
| - Began development activities to support airspace integration activities including IFF Mode 5/ADS-B | | | |
| - Continued development of mission planning, enhanced weather capability, sensor software, and integration of additional MP-RTIP radar modes | | | |
| - Continued enhancements to system interoperability, cybersecurity, comms, information assurance, and reliability & maintainability improvements and associated testing & evaluation | | | |
| FY 2017 Plans: | | | |
| - Initiate Operational Flight Program updates and releases | | | |
| - Continue enhancements to system interoperability, cybersecurity, comms, information assurance, and reliability & maintainability improvements and associated testing & evaluation | | | |
| - Continue development and testing of enhanced weather capability | | | |
| - Continue airspace integration of IFF Mode 5/ADS-B | | | |
| - Continue integration of additional RTIP modes and associated testing | | | |
| FY 2018 Plans: | | | |
| - Will complete funding of airspace integration of IFF Mode 5/ADS-B | | | |
| - Will continue integration of additional RTIP modes and associated testing | | | |
| Accomplishments/Planned Programs Subtotals | 4.944 | 0.089 | 0.139 |

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • APAF: BA04: Line Item # HAEUAV: RQ-4 | 4.250 | 12.966 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 4,380.410 |
| • APAF: BA05: Line Item # HAWK00: RQ-4 Mods | 50.022 | 32.045 | 43.968 | 0.000 | 43.968 | 76.511 | 22.590 | 132.710 | 143.228 | 167.265 | 1,054.745 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675146 / RQ-4 Block 40 |
|--|--|--|

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

| Line Item | FY 2016 | FY 2017 | FY 2018 | FY 2018 | FY 2018 | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To | |
|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|------------|
| | | | Base | OCO | Total | | | | | Complete | Total Cost |
| • APAF: BA07: Line Item # RQ4DIS: <i>RQ-4 Post Production Support</i> | 0.000 | 0.099 | 86.695 | 0.000 | 86.695 | 90.044 | 61.661 | 17.575 | 15.549 | 92.583 | 364.206 |
| • RDTE: BA07: PE 0305238F: NATO AGS | 131.900 | 38.904 | 44.729 | 0.000 | 44.729 | 38.915 | 25.812 | 1.800 | 0.802 | 0.000 | 282.862 |

Remarks

D. Acquisition Strategy

The RQ-4 program uses an evolutionary acquisition strategy to provide the warfighter with a near-term combat capability with increased time-phased capability improvements as technology and risk achieve satisfactory levels. Northrop Grumman Corporation is the prime contractor. A suite of contract vehicles is used for development efforts: a legacy Engineering & Manufacturing Development (EMD) "C" contract is being phased out with the completion of current efforts; Indefinite Delivery, Indefinite Quantity (IDIQ) contracts cover development, upgrade, production, retrofit, fielding, and sustainment efforts.

The program successfully completed Milestone (MS) C in February 2015 and is transitioning core program activities to the Operations and Support phase of the Defense Acquisition System over the next several years. Future required capabilities beyond the core Acquisition Category (ACAT) IC RQ-4 program will be completed as separate ACAT II and ACAT III modification programs.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

| | | |
|--|--|--|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675146 / RQ-4 Block 40 |
|--|--|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Global Hawk Engineering Manufacturing and Development | SS/ Various | Northrop Grumman Integrated Systems : San Diego, CA | 134.040 | 4.944 | Nov 2015 | 0.089 | Nov 2016 | 0.139 | Nov 2017 | 0.000 | | 0.139 | 0.000 | 139.212 | 139.212 |
| Subtotal | | | 134.040 | 4.944 | | 0.089 | | 0.139 | | 0.000 | | 0.139 | 0.000 | 139.212 | 139.212 |

Remarks
Target Value of the RQ-4 EMD, IDIQ, and EPIC contracts are not segregated by Budget Project Number.

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Non-Prime Technical Support | Various | Various : Dayton, OH | 1.369 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 1.369 | - |
| Subtotal | | | 1.369 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 1.369 | - |

Remarks
Target Value of the Global Hawk effort is not segregated by Budget Project Number.

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Flight Test & Evaluation | MIPR | 412 TW : Edwards AFB, CA | 23.231 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 23.231 | - |
| Subtotal | | | 23.231 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 23.231 | - |

Remarks
Target Value of the Global Hawk effort is not segregated by Budget Project Number.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

| | | |
|--|--|--|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675146 / RQ-4 Block 40 |
|--|--|--|

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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: A&AS | Various | Various : Dayton, OH | 7.040 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 7.040 | - |
| PMA: Other Gov't Cost | Various | Various : Dayton, OH | 3.412 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 3.412 | - |
| Subtotal | | | 10.452 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 10.452 | - |

Remarks
Target Value of the Global Hawk effort is not segregated by Budget Project Number.

| | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| Project Cost Totals | 169.092 | 4.944 | 0.089 | 0.139 | 0.000 | 0.139 | 0.000 | 174.264 | - |

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force **Date:** May 2017

| | | |
|--|--|--|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675146 / RQ-4 Block 40 |
|--|--|--|

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Block 40 IOT&E | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Block 40 IOC June 2016 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Block 40 FOC June 2017 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RTIP Enhancements Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Enhanced Weather Capability Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mode 5/ADS-B Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mission Planning Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sensor Integration/Modes Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Operational Flight Program Updates and Releases | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force **Date: May 2017**

| | | |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675146 / RQ-4 Block 40 |
|--|--|--|

Schedule Details

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Block 40 IOT&E | 1 | 2016 | 2 | 2016 |
| Block 40 IOC June 2016 | 4 | 2016 | 4 | 2016 |
| Block 40 FOC June 2017 | 4 | 2017 | 4 | 2017 |
| RTIP Enhancements Development | 1 | 2016 | 4 | 2016 |
| Enhanced Weather Capability Development | 1 | 2016 | 4 | 2017 |
| Mode 5/ADS-B Development | 2 | 2016 | 2 | 2018 |
| Mission Planning Development | 1 | 2016 | 3 | 2016 |
| Sensor Integration/Modes Development | 1 | 2017 | 4 | 2017 |
| Operational Flight Program Updates and Releases | 1 | 2017 | 4 | 2018 |

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|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|--|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | | | | Project (Number/Name) 675147 / RQ-4 Grnd Segment/Comm System | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 675147: RQ-4 Grnd Segment/Comm System | 53.915 | 31.460 | 0.175 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 85.550 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | - | - |

Note

The RQ-4 Ground Segment/Communications System Sub-Program was directed by an Acquisition Decision Memorandum (ADM) signed 14 Jun 2011 by USD (AT&L). At the time of the ADM signature, and subsequent designation of sub-program projects, budgets had already been finalized. The budgets for all projects are captured under the RQ-4 baseline project, as its related Project (675144) was the core project for the RQ-4 program prior to the directed restructure.

In FY 2017 and beyond, Program 0305220F, RQ-4, Project 675147, Ground Segment/Comm System, most major modernization efforts have been transferred to Program 0305220F, RQ-4, Project 675149, Capability Enhancements. The transfer of these efforts allows greater visibility into Global Hawk modernization efforts.

In FY 2017, PE 0305220F, RQ-4 UAV, Project 675147, RQ-4 Grnd Segment/Comm System, efforts were transferred to PE 0305220F, RQ-4 UAV, Project 675149, RQ-4 Capability Enhancements, in order to allow greater visibility into Global Hawk modernization efforts.

A. Mission Description and Budget Item Justification

The RQ-4 Remotely Piloted Aircraft (RPA) provides a high altitude, deep look, long-endurance intelligence, surveillance, and reconnaissance (ISR) capability that complements space and other airborne collectors during peacetime, crisis, and war-fighting scenarios.

RDT&E funding in this project supports design, development, integration and testing of the weapon system's ground elements and communications capabilities to enhance functionality and maintain interoperability, as well as support for demonstration and technology insertion. The ground segment currently includes the Mission Control Elements (MCE), the Launch and Recovery Elements (LRE), and the networking resources required to simultaneously disseminate intelligence information while remaining compliant with DoD cybersecurity network requirements to operate on the Global Information Grid.

The RDT&E funding in this project also supports the Ground Segment Modernization Program (GSMP) and Communication System Modernization Program (CSMP) efforts, as well as next generation communications capabilities. GSMP resolves fleet grounding Diminishing Manufacturing Sources (DMS) and obsolescence issues associated with ground segment equipment and provides critical warfighter capabilities such as building-based multi-aircraft control. It will also enhance interoperability data dissemination as well as provide training capability. CSMP resolves critical DMS and obsolescence issues in the RQ-4 communication infrastructure and provides enhancements across the RQ-4 communication network. Both GSMP and CSMP will employ the USAF Unmanned Aerial System (UAS) Command and Control Initiative (UCI), the DoD's Unmanned Control Segment standards (UCS), and Open Mission Systems (OMS) using a service-oriented, open architecture approach. Prior to GSMP/CSMP fielding, funding from this project supports modifications to the legacy system to support operations.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675147 / RQ-4 Grnd Segment/Comm System |
|--|--|--|

This program will participate in the development, testing, and implementation of international standards to enhance joint, allied, and coalition interoperability. Likewise, studies and activities will be initiated to explore the utility of next-generation communications technologies, as well as emerging architectural standards such as UCI and UCS as well as technology insertion activities in support of Better Buying Power (BBP).

The RQ-4 program will maintain and upgrade interoperability for Blocks 20/30/40 with system of systems partners and continue to incorporate applicable synergies with other platforms such as the U.S. Navy's Triton, other RPA weapon systems, and Processing, Exploitation & Dissemination (PED) elements. The networking capability for intelligence dissemination is required to provide the data transport interface between the Weapons System, Operations Centers, and external Intelligence Community customers.

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

| | FY 2016 | FY 2017 | FY 2018 |
|---|---------|---------|---------|
| <p>Title: RQ-4 Ground Segment / Communications System - Critical Obsolescence and Modernization</p> <p>Description: RQ-4 Ground Segment/ Communications System Development</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Continued to resolve critical DMS and obsolescence issues with ground and comms segment equipment and software - Continued interoperability upgrades and cybersecurity with system of systems partners - Incorporated applicable synergies with other platforms, such as the U.S. Navy's Triton, other RPA weapon systems, and Processing, Exploitation & Dissemination (PED) elements - Incorporated Air Vehicle (AV) modifications/upgrades into the ground segment architecture <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Continue to resolve critical DMS and obsolescence issues with ground and comms segment equipment and software - Maintain and upgrade interoperability and cybersecurity with system of systems partners - Continue to incorporate applicable synergies with other platforms, such as the U.S. Navy's Triton, other RPA weapon systems, and Processing, Exploitation & Dissemination (PED) elements - Continue Air Vehicle (AV) modifications/upgrades into the ground segment architecture <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - N/A | 3.046 | 0.175 | 0.000 |
| <p>Title: RQ-4 Ground Segment Modernization Program (GSMP)</p> <p>Description: GSMP resolves fleet grounding DMS and obsolescence issues associated with ground segment equipment and provides critical warfighter capabilities such as building-based multi-aircraft control. It will also enhance interoperability data dissemination as well as provide training capability.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Completed Acquisition Strategy Panel (ASP) and awarded development contract | 28.414 | 0.000 | 0.000 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675147 / RQ-4 Grnd Segment/Comm System |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| - Began development of GSMP, leveraging earlier efforts which developed a modern aircraft command and control capability and an open-system architecture - Successful Milestone B decision FY 2017 Plans: - N/A, effort is funded in Project 675149, RQ-4 Capability Enhancements FY 2018 Plans: - N/A, effort is funded in Project 675149, RQ-4 Capability Enhancements | | | |
| Accomplishments/Planned Programs Subtotals | 31.460 | 0.175 | 0.000 |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
| • APAF: BA04: Line Item # HAEUAV: RQ-4 | 4.250 | 12.966 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 4,354.270 |
| • APAF: BA05: Line Item # HAWK00: RQ-4 Mods | 50.022 | 32.045 | 43.968 | 0.000 | 43.968 | 76.511 | 22.590 | 132.710 | 143.228 | 167.265 | 1,083.716 |
| • APAF: BA07: Line Item # RQ4DIS: RQ-4 Post Production Support | 0.000 | 0.099 | 86.695 | 0.000 | 86.695 | 90.044 | 61.661 | 17.575 | 15.549 | 92.583 | 424.236 |

Remarks

D. Acquisition Strategy
The RQ-4 program uses an evolutionary acquisition strategy to provide the warfighter with a near-term combat capability with increased time-phased capability improvements as technology and risk achieve satisfactory levels. Northrop Grumman Corporation is the prime contractor. A suite of contract vehicles is used for development efforts: a legacy Engineering & Manufacturing Development (EMD) "C" contract is being phased out with the completion of current efforts; and Indefinite Delivery, Indefinite Quantity (IDIQ) contracts cover development, upgrade, production, retrofit, fielding, and sustainment efforts.

The program successfully completed Milestone (MS) C in February 2015 and is transitioning core program activities to the Operations and Support phase of the Defense Acquisition System over the next several years. Future required capabilities beyond the core Acquisition Category IC (ACAT) RQ-4 program are planned to be added over time as separate ACAT II and ACAT III modification programs.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675147 / RQ-4 Grnd Segment/Comm System |

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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| Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force | | | | | | | | | | | Date: May 2017 | | | | |
| Appropriation/Budget Activity 3600 / 7 | | | | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | | | | Project (Number/Name) 675147 / RQ-4 Grnd Segment/Comm System | | | | | | | |

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Global Hawk Engineering Manufacturing and Development / IDIQ Ground Segment and Communication Systems | SS/CPIF | Northrop Grumman Integrated Systems : San Diego, CA | 48.076 | 3.046 | May 2016 | 0.175 | Nov 2016 | 0.000 | | 0.000 | | 0.000 | 0.000 | 51.297 | 51.297 |
| RQ-4 Ground Segment Modernization Program (GSMP) | SS/CPIF | Northrop Grumman Integrated Systems : San Diego, CA | 0.000 | 28.414 | Jul 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 28.414 | 190.221 |
| Subtotal | | | 48.076 | 31.460 | | 0.175 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 79.711 | 241.518 |

Remarks
 Target Value of RQ-4 EMD, IDIQ, and EPIC Contracts is not segregated by Budget Project Number.
 Target Value of GSMP contract includes \$161.807M of funding in Budget Project Number 675149, RQ-4 Capability Enhancements in FY 2017 and beyond.

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Non-Prime Technical Support | Various | Various : Dayton, OH | 2.738 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 2.738 | - |
| Subtotal | | | 2.738 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 2.738 | - |

Remarks
 Target Value of the Global Hawk effort is not segregated by Budget Project Number.

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Flight Test & Evaluation | MIPR | 412 TW : Edwards AFB, CA | 2.500 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 2.500 | - |
| Subtotal | | | 2.500 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 2.500 | - |

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675147 / RQ-4 Grnd Segment/Comm System |
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| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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
Target Value of the RQ-4 effort is not segregated by Budget Project Number.

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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: A&AS | Various | Various : Dayton, OH | 0.401 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.401 | - |
| PMA: Other Gov't Cost | Various | Various : Dayton, OH | 0.200 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.200 | - |
| Subtotal | | | 0.601 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.601 | - |

Remarks
Target Value of the Global Hawk effort is not segregated by Budget Project Number.

| | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| Project Cost Totals | 53.915 | 31.460 | 0.175 | 0.000 | 0.000 | 0.000 | 0.000 | 85.550 | - |

Remarks

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675147 / RQ-4 Grnd Segment/Comm System |

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|---|------------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| Ground Segment Maintenance/Upgrades Development | ██████████ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ground Segment Modernization Program (GSMP) Development | ██████████ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Comm Systems Maintenance/Upgrades Development | ██████████ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Communication Interoperability/Enhancements Development | | | | | ████ | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675147 / RQ-4 Grnd Segment/Comm System |

Schedule Details

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Ground Segment Maintenance/Upgrades Development | 1 | 2016 | 1 | 2017 |
| Ground Segment Modernization Program (GSMP) Development | 1 | 2016 | 1 | 2017 |
| Comm Systems Maintenance/Upgrades Development | 1 | 2016 | 1 | 2017 |
| Communication Interoperability/Enhancements Development | 1 | 2017 | 1 | 2017 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | | | | Project (Number/Name) 675149 / RQ-4 Capability Enhancements | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 675149: RQ-4 Capability Enhancements | 0.000 | 0.000 | 121.838 | 167.745 | 0.000 | 167.745 | 182.744 | 188.741 | 137.708 | 141.454 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note

In FY 2017 and beyond, Program 0305220F, RQ-4, Project 675145, Block 30, Project 675146, RQ-4 Block 40, and Project 675147, Ground Segment/Comm System, most major modernization efforts have been transferred to Program 0305220F, RQ-4, Project 675149, Capability Enhancements. The transfer of these efforts allows greater visibility into Global Hawk modernization efforts.

A. Mission Description and Budget Item Justification

The RQ-4 Remotely Piloted Aircraft (RPA) provides a high altitude, deep look, long-endurance Intelligence, Surveillance, and Reconnaissance (ISR) capability that complements space and other airborne collectors during peacetime, crisis, and war-fighting scenarios. RDT&E funding in this project supports design, development, integration, and testing of capabilities needed to meet validated requirements for RQ-4 aircraft, including continuing aircraft system upgrade for current and alternate sensor payloads.

This funding supports aircraft systems upgrade to include continuing aircraft operations surety, cybersecurity, information assurance, and mission critical repair of Government Furnished Equipment (GFE). This will include systems engineering/program management, configuration and data management, test and evaluation, management services, DR/MIP Investigations, studies and analysis and fielding support for Block 30, Block 40, and Ground Segment/Comm System.

Activities include airspace and interoperability and communication enhancements and updates, periodic Operational Flight Program updates and releases, airframe and software upgrades, deficiency report resolution across RQ-4 fleet, sensor enhancements and alternate sensor upgrades including the MS-177 and the Optical Bar Camera (OBC), enhanced comms capabilities, support for demonstration and technology insertion, development and testing of ice protection system, enhanced mission flexibility to accommodate changes to mission objectives inflight, enhancements to support multi-domain contested environment operations, and studies and analysis supporting future system enhancements. Additionally, this project supports design, development, integration, and testing of items needed to meet validated requirements for Block 20/30/40 aircraft, including further development, mode creation, integration and test of the Multi-Platform Radar Technology Insertion Program (MP-RTIP) sensor capabilities, continued aircraft/communications systems upgrade, additional radar modes, reliability and maintainability improvements, Ground Segment Modernization Program (GSMP) and Communication System Modernization Program (CSMP) efforts, as well as next generation communications capabilities. GSMP resolves fleet grounding Diminishing Manufacturing Sources (DMS) and obsolescence issues associated with ground segment equipment and provides critical warfighter capabilities such as building-based multi-aircraft control. It will also enhance interoperability data dissemination as well as provide training capability. CSMP resolves critical DMS and obsolescence issues in the RQ-4 communication infrastructure and provides enhancements across the RQ-4 communication network.

RDT&E funding in this project also supports design, development, integration and testing of the weapon system's legacy ground elements and communications capabilities to enhance functionality and maintain interoperability prior to GSMP/CSMP fielding. The ground segment currently includes the Mission Control Elements

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675149 / RQ-4 Capability Enhancements |
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(MCE), the Launch and Recovery Elements (LRE), and the networking resources required to simultaneously disseminate intelligence information while remaining compliant with DoD cybersecurity network requirements to operate on the Global Information Grid.

This project supports system engineering/program management, test and evaluation, management services and fielding support for all RQ-4 projects. This reflects contracting/acquisition strategy for these common elements within the Global Hawk program to provide efficiencies.

The RQ-4 program will maintain and upgrade interoperability for Blocks 20/30/40 with system of systems partners and continue to incorporate applicable synergies with other platforms such as the U.S. Navy's Triton, other RPA weapon systems, and Processing, Exploitation & Dissemination (PED) elements. The networking capability for intelligence dissemination is required to provide the data transport interface between the Weapons System, Operations Centers, and external Intelligence Community customers.

This program will participate in the development, testing, and implementation of international standards to enhance joint, allied, and coalition interoperability. Likewise, studies and activities will be initiated to further explore the utility of incorporating the emerging architectural standards such as the USAF Unmanned Aerial System (UAS) Command and Control Initiative (UCI), the DoD's Unmanned Control Segment standards (UCS), or Open Mission Systems (OMS) as well as technology insertion activities in support of Better Buying Power (BBP).

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

| | FY 2016 | FY 2017 | FY 2018 |
|---|---------|---------|---------|
| <p>Title: RQ-4 Capability Enhancements</p> <p>Description: RQ-4 Development and Demonstration (includes enterprise management, test and evaluation, software integration, and fielding support for all RQ-4 projects as well as periodic Operational Flight Program updates and releases, studies and analysis supporting future system enhancements).</p> <p>Also supports RQ-4 development testing at the 412 Test Wing at Edwards AFB, CA and also includes funding for support from Air Force Operational Test and Evaluation Center (AFOTEC), Joint Interoperability Test Command (JITC), Distributed Common Ground System (DCGS), other interoperability partners and OGC.</p> <p>FY 2016 Accomplishments: N/A</p> <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Support required sensor upgrades and current and alternate sensor enhancements and upgrades - Conduct airspace integration activities, integration of advanced sensors, utilization of additional radar modes, and comms system enhancements - Conduct risk reduction and analysis of ice protection system, continued system interoperability and upgrades, cybersecurity and information assurance and reliability & maintainability, and associated testing - Initiate Operational Flight Program updates and releases | 0.000 | 64.641 | 90.135 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675149 / RQ-4 Capability Enhancements |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| <ul style="list-style-type: none"> - Conduct pre-contract activities supporting the Communication System Modernization Program (CSMP) and Optical Bar Camera (OBC) - Continue government test and non-prime engineering and technical support and Other Government Costs <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will conduct airspace integration activities, integration of advanced sensors, utilization of additional radar modes, and comms system enhancements - Will conduct risk reduction and analysis of ice protection system, continued system interoperability and upgrades, cybersecurity and information assurance and reliability & maintainability, and associated testing - Will continue development and testing of alternate sensors and upgrades - Will continue development of OFP releases - Will continue government test and non-prime engineering and technical support and Other Government Costs - Will begin development to integrate Radar Software Development (RSD) 1.5 software build into Block 40 Program - Will continue development of radar capabilities to include Maritime Modes Integration | | | |
| <p>Title: RQ-4 Ground Segment Modernization Program (GSMP)</p> <p>Description: GSMP resolves fleet grounding DMS and obsolescence issues associated with ground segment equipment and provides critical warfighter capabilities such as building-based multi-aircraft control. It will also enhance interoperability data dissemination as well as provide training capability.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - In project 675147 <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Conduct software development and system level testing of the GSMP - Conduct development and purchase hardware for vendor Software Integration Laboratories (SILs), Development Testing (DT) and Operational Testing (OT) locations for the GSMP - Conduct development of technical publications, courseware and a trainer for the GSMP - Conduct Preliminary Design Review (PDR) and Critical Design Review (CDR) <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will continue software development and system level testing of the GSMP - Will continue development and hardware purchases for vendor SILs, DT and OT locations for the GSMP - Will continue development technical publications, courseware and a trainer for the GSMP - Will conduct installation of the GSMP cockpits at SILs, DT and OT locations | 0.000 | 57.197 | 66.610 |
| <p>Title: RQ-4 MS-177 Sensor Integration</p> | 0.000 | 0.000 | 11.000 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675149 / RQ-4 Capability Enhancements |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Description: Integration of MS-177 multispectral sensor into Block 30 | | | |
| FY 2016 Accomplishments: - In project 675145 | | | |
| FY 2017 Plans: - In project 675145 | | | |
| FY 2018 Plans: - Will continue the integration, and testing of MS-177 on Block 30, including additional spectral bands - Will conduct MS-177 OT and Initial Operational Capability (IOC) - Will continue development of MS-177A (10-Band) | | | |
| Accomplishments/Planned Programs Subtotals | 0.000 | 121.838 | 167.745 |

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

| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| • APAF: BA04: Line Item # HAEUAV: RQ-4 | 4.250 | 12.966 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 4,354.270 |
| • APAF: BA05: Line Item # HAWK00: RQ-4 Mods | 50.022 | 32.045 | 43.968 | 0.000 | 43.968 | 76.511 | 22.590 | 132.710 | 143.228 | 167.265 | 1,083.716 |
| • APAF: BA07: Line Item # RQ4DIS: RQ-4 Post Production Support | 0.000 | 0.099 | 86.695 | 0.000 | 86.695 | 90.044 | 61.661 | 17.575 | 15.549 | 92.583 | 424.236 |

Remarks

D. Acquisition Strategy

The RQ-4 program uses an evolutionary acquisition strategy to provide the warfighter with a near-term combat capability with increased time-phased capability improvements as technology and risk achieve satisfactory levels. Northrop Grumman Corporation is the prime contractor. A suite of contract vehicles is used for development efforts: primarily, IDIQ contracts cover development, upgrade, production, retrofit, fielding, and sustainment efforts.

The program successfully completed Milestone (MS) C in February 2015 and is transitioning core program activities to the Operations and Support phase of the Defense Acquisition System over the next several years. Future required capabilities beyond the core Acquisition Category (ACAT) IC RQ-4 program will be completed as separate ACAT II and ACAT III modification programs.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675149 / RQ-4 Capability Enhancements |

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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| Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force | | | | | | | | | | | Date: May 2017 | | | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | | | | | Project (Number/Name) 675149 / RQ-4 Capability Enhancements | | | | |

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | Award Date | Cost To Complete | Total Cost | Target Value of Contract |
| Title: RQ-4 Capability Enhancements | SS/ Various | Northrop Grumman Integrated Systems : San Diego, CA | 0.000 | 0.000 | | 61.011 | Mar 2017 | 78.708 | Mar 2018 | 0.000 | | 78.708 | | 725.808 | 865.527 | 865.527 |
| RQ-4 Ground Segment Modernization Program (GSMP) | SS/CPIF | Northrop Grumman Integrated Systems : San Diego, CA | 0.000 | 0.000 | | 57.197 | Apr 2017 | 66.610 | Apr 2018 | 0.000 | | 66.610 | | 46.371 | 170.178 | 190.221 |
| RQ-4 MS-177 Sensor Integration | SS/ Various | Various : San Diego, CA | 0.000 | 0.000 | | 0.000 | | 11.000 | Apr 2018 | 0.000 | | 11.000 | | 37.431 | 48.431 | 140.229 |
| Subtotal | | | 0.000 | 0.000 | | 118.208 | | 156.318 | | 0.000 | | 156.318 | | 809.610 | 1,084.136 | 1,195.977 |

Remarks
 Target Value of the RQ-4 EMD, IDIQ, and EPIC Contracts is not segregated by Budget Project Number.
 Target Value of GSMP contract includes \$28.414M of funding in Budget Project Number 675147, RQ-4 Grnd Segment/Comm System in FY 2016.
 Target Value of MS-177 contract includes \$91.798M of funding in Budget Project Number 675145, RQ-4 Block 30.

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | Award Date | Cost To Complete | Total Cost | Target Value of Contract |
| Non Prime Technical Support | Various | Various : Dayton, OH | 0.000 | 0.000 | | 0.267 | Feb 2017 | 1.137 | Feb 2018 | 0.000 | | 1.137 | | 10.155 | 11.559 | - |
| Subtotal | | | 0.000 | 0.000 | | 0.267 | | 1.137 | | 0.000 | | 1.137 | | 10.155 | 11.559 | - |

Remarks
 Target Value of the RQ-4 effort is not segregated by Budget Project Number.

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | Award Date | Cost To Complete | Total Cost | Target Value of Contract |
| Flight Test & Evaluation | MIPR | 412 TW : Edwards AFB, CA | 0.000 | 0.000 | | 0.000 | | 4.717 | Oct 2017 | 0.000 | | 4.717 | | 122.022 | 126.739 | - |
| Subtotal | | | 0.000 | 0.000 | | 0.000 | | 4.717 | | 0.000 | | 4.717 | | 122.022 | 126.739 | - |

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date: May 2017**

| | | |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675149 / RQ-4 Capability Enhancements |
|--|--|---|

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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
Target Value of the RQ-4 effort is not segregated by Budget Project Number.

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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: A&AS | Various | Various : Dayton, OH | 0.000 | 0.000 | | 2.018 | Nov 2016 | 3.985 | Nov 2017 | 0.000 | | 3.985 | 37.619 | 43.622 | - |
| PMA: Other Government Costs | Various | Varous : Dayton, OH | 0.000 | 0.000 | | 1.345 | Oct 2016 | 1.588 | Oct 2017 | 0.000 | | 1.588 | 23.904 | 26.837 | - |
| Subtotal | | | 0.000 | 0.000 | | 3.363 | | 5.573 | | 0.000 | | 5.573 | 61.523 | 70.459 | - |

Remarks
Target Value of the RQ-4 effort is not segregated by Budget Project Number.

| | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| Project Cost Totals | 0.000 | 0.000 | 121.838 | 167.745 | 0.000 | 167.745 | 1,003.310 | 1,292.893 | - |

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force **Date:** May 2017

| | | |
|--|--|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675149 / RQ-4 Capability Enhancements |
|--|--|---|

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Sensor Enhancements & Upgrades (MS-177) Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ice Protection System Risk Reduction & Analysis | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ground Segment Maintenance/Upgrades Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ground Segment Modernization Program Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Comms Systems Maintenance/Upgrades Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Communication System Modernization Program Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Operational Flight Program Updates & Releases Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Test Support | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force **Date:** May 2017

| | | |
|--|--|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 675149 / RQ-4 Capability Enhancements |
|--|--|---|

Schedule Details

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Sensor Enhancements & Upgrades (MS-177) Development | 1 | 2017 | 3 | 2020 |
| Ice Protection System Risk Reduction & Analysis | 4 | 2017 | 3 | 2019 |
| Ground Segment Maintenance/Upgrades Development | 1 | 2017 | 4 | 2018 |
| Ground Segment Modernization Program Development | 1 | 2017 | 2 | 2020 |
| Comms Systems Maintenance/Upgrades Development | 1 | 2017 | 3 | 2019 |
| Communication System Modernization Program Development | 2 | 2019 | 4 | 2022 |
| Operational Flight Program Updates & Releases Development | 3 | 2017 | 4 | 2022 |
| Test Support | 1 | 2017 | 4 | 2022 |

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force **Date:** May 2017

| | | | | | | | | | | | | |
|--|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|--|----------------|-------------------------|-------------------|
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | | | | Project (Number/Name) 67RTIP / MP-RTIP | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 67RTIP: MP-RTIP | 226.681 | 16.092 | 7.468 | 11.935 | 0.000 | 11.935 | 11.904 | 12.117 | 12.287 | 11.088 | 0.000 | 309.572 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Project MDAP/MAIS Code: 293

Note

Beginning in FY09, the Multi-Platform Radar Technology Insertion Program (MP-RTIP) funding was transferred to program 0305220F (RQ-4) Global Hawk (GH). Therefore, the data in this package includes only FY09 and subsequent funding related to program 0305220F.

A. Mission Description and Budget Item Justification

The MP-RTIP sensor was designed as a family of modular, scalable sensors to provide next generation capabilities to support sustainable network centric operations with integrated Command and Control, Intelligence, Surveillance and Reconnaissance (C2ISR) capability. MP-RTIP provides the RQ-4 Block 40 aircraft with advanced Synthetic Aperture Radar (SAR) and Moving Target Indicator (MTI) sensor capabilities.

This project (67RTIP) includes all MP-RTIP integration efforts for the RQ-4 Block 40 Platform. Integration activities include platform integration of the MP-RTIP sensor and sustainment logistics planning support. MP-RTIP studies and development insertion include the implementation of Maritime Modes (MM), Maritime Inverse SAR (MISAR), product improvements and other advanced capabilities. In FY 2017, MP-RTIP Program Management Office began transition of future radar development efforts to the GH Block 40 Program Office.

Activities also include studies and analysis supporting current and future program planning and future modes development based on user requirements. This program is in Budget Activity 7, Operational System Development, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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

| | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Title: Multi-Platform Radar Tech Insertion Program (MP-RTIP) | 16.092 | 7.468 | 11.935 |
| Description: MP-RTIP development and integration | | | |
| FY 2016 Accomplishments: | | | |
| - Continued the development of the MP-RTIP-Radar Software Development (RSD) 1.5 software build | | | |
| - Continued rigorous testing of RSD 1.5 intermediate software builds in the Radar System Integration Lab (RSIL) | | | |
| FY 2017 Plans: | | | |
| - Continue the development of the MP-RTIP-RSD 1.5 software build (to include emergency builds if necessary). The completion of software build 1.5 will allow sustainment to perform system integration in the Global Hawk System Center (GHSC) | | | |

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|---|--|--|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 67RTIP / MP-RTIP |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| - Complete rigorous testing of RSD 1.5 final System Design and Development (SDD) software builds in the RSIL | | | |
| <i>FY 2018 Plans:</i> | | | |
| - Will complete transition to sustainment. GH Program Office will have responsibility for future radar development | | | |
| - Will begin development to integrate RSD 1.5 software build into the RQ-4 Block 40 Program | | | |
| - Will continue development of radar capabilities to include Maritime Modes integration into RQ-4 aircraft and ground systems | | | |
| Accomplishments/Planned Programs Subtotals | 16.092 | 7.468 | 11.935 |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| • APAF: BA04: Line Item # HAEUAV: RQ-4 | 4.250 | 12.966 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 4,354.270 |
| • APAF: BA05: Line Item # HAWK00: RQ-4 Mods | 50.022 | 32.045 | 43.968 | 0.000 | 43.968 | 76.511 | 22.590 | 132.710 | 143.228 | 167.265 | 1,083.716 |
| • APAF: BA07: Line Item # RQ4DIS: RQ-4 Post Production Support | 0.000 | 0.099 | 86.695 | 0.000 | 86.695 | 90.044 | 61.661 | 17.575 | 15.549 | 92.583 | 424.236 |
| • RDT&E: BA07: PE 0305238F: NATO AGS | 131.900 | 38.904 | 44.729 | 0.000 | 44.729 | 38.915 | 25.812 | 1.800 | 0.802 | 0.000 | 282.862 |

Remarks

D. Acquisition Strategy
Will complete transition to sustainment and GH Program Office will have responsibility for future radar development. Will continue development to integrate RSD 1.5 and Maritime Mode software to incorporate into Integrated Functional Capability (IFC) 9 plan.

E. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date: May 2017**

| | | |
|--|--|--|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 67RTIP / MP-RTIP |
|--|--|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| MP-RTIP | SS/CPFF | Northrop Grumman Integrated Systems : El Segundo, CA | 181.669 | 13.192 | Nov 2015 | 4.781 | Feb 2017 | 11.435 | Feb 2018 | 0.000 | | 11.435 | 47.396 | 258.473 | - |
| Subtotal | | | 181.669 | 13.192 | | 4.781 | | 11.435 | | 0.000 | | 11.435 | 47.396 | 258.473 | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| IRT Study | Various | Various : Various | 0.105 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.105 | 0.105 |
| Logistics Planning | SS/CPFF | Northrop Grumman Integrated Systems : El Segundo, CA | 3.667 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 3.667 | 3.667 |
| Subtotal | | | 3.772 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 3.772 | 3.772 |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Flight Test & Evaluation | MIPR | Various : Various | 9.536 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 9.536 | - |
| Subtotal | | | 9.536 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 9.536 | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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: A&AS | C/CPFF | Various : Various | 27.959 | 2.818 | Nov 2015 | 2.602 | Nov 2016 | 0.500 | Nov 2017 | 0.000 | | 0.500 | 0.000 | 33.879 | - |
| PMA: Other Gov't Cost | Various | Various : Boston, MA | 3.745 | 0.082 | Nov 2015 | 0.085 | Nov 2016 | 0.000 | | 0.000 | | 0.000 | 0.000 | 3.912 | - |
| Subtotal | | | 31.704 | 2.900 | | 2.687 | | 0.500 | | 0.000 | | 0.500 | 0.000 | 37.791 | - |

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date: May 2017**

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 67RTIP / MP-RTIP |
|--|--|--|

| | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| Project Cost Totals | 226.681 | 16.092 | 7.468 | 11.935 | 0.000 | 11.935 | 47.396 | 309.572 | - |

Remarks
Funds are required in FY22 to close out the entire pre-transition MP-RTIP SDD contract #F19628-00-C-0100.

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force **Date:** May 2017

| | | |
|--|--|--|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 67RTIP / MP-RTIP |
|--|--|--|

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Radar Software Build Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IOT&E Readiness & IOT&E | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SDD MP-RTIP Radar Transition to RQ-4 Block 40 Program Office | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SDD Contract Close Out | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Radar Mode Integration & Mode Development (IFC 9/10) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force **Date:** May 2017

| | | |
|--|--|--|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305220F / RQ-4 UAV | Project (Number/Name) 67RTIP / MP-RTIP |
|--|--|--|

Schedule Details

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Radars Software Build Development | 1 | 2016 | 4 | 2017 |
| IOT&E Readiness & IOT&E | 1 | 2016 | 3 | 2016 |
| SDD MP-RTIP Radar Transition to RQ-4 Block 40 Program Office | 1 | 2018 | 4 | 2018 |
| SDD Contract Close Out | 1 | 2022 | 4 | 2022 |
| Radars Mode Integration & Mode Development (IFC 9/10) | 1 | 2018 | 4 | 2022 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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|--|--|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i> |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|-------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 19.587 | 22.610 | 18.842 | 0.000 | 18.842 | 16.982 | 17.497 | 17.871 | 18.238 | Continuing | Continuing |
| 675197: <i>NCCT Core Technology</i> | - | 17.271 | 20.115 | 16.295 | 0.000 | 16.295 | 14.395 | 14.863 | 15.191 | 15.503 | Continuing | Continuing |
| 675275: <i>SUTER</i> | - | 2.316 | 2.495 | 2.547 | 0.000 | 2.547 | 2.587 | 2.634 | 2.680 | 2.735 | Continuing | Continuing |

A. Mission Description and Budget Item Justification

Network Centric Collaborative Targeting (NCCT) is the Air Force program of record responsible for developing core technologies and sub-nodal analysis tools to horizontally and/or vertically integrate network collaborative Intelligence, Surveillance and Reconnaissance (ISR) sensor systems within and across intelligence disciplines. Operational uses of core technologies can include, but are not limited to, Signals Intelligence to Signals Intelligence (SIGINT-SIGINT) correlation and Ground Moving Target Indicator to Signals Intelligence (GMTI-SIGINT) correlation. Operational uses of sub-nodal analysis tools can include, but are not limited to, determining which nodes of the adversary's Command, Control, Communications, Computers, Intelligence (C4I) network to engage or protect to achieve desired effects, and modeling execution plans to determine the need to disrupt or monitor the required network aim-points in order to redirect activities based on changing battlefield conditions. NCCT software applications employ Machine-to-Machine (M2M) interfaces and Internet Protocol (IP) connectivity to coordinate sensor cross-cues and collection activities. NCCT correlation and fusion services ingest collection data to produce a single, composite track (geo-location and identification) for high-value targets. NCCT research and development funding supports evolutionary development of the NCCT message set and network management systems (for example Operations Interfaces, Network Controllers, Fusion Engines, Data Guards, Interface to Command & Control, and Interface to Overhead Intelligence Operations (OIO)), the migration of the NCCT technologies to emerging network centric technologies such as Service Oriented Architectures (SOA), global web-enabled services, and satisfying DoD standards and Information Assurance requirements.

NCCT Core Technology develops the hardware and software to horizontally integrate dissimilar Joint and Coalition Battle Management, Command & Control (BMC2), and ISR assets and systems into integrated target tracks shared across networked platforms. NCCT Core Technology includes, but is not limited to, network management software, operator interfaces, standard network messages and formats, correlation software and data rules of interaction, NCCT multi-level security hardware and software items, and platform specific Platform Interface Modules (PIMs). Prospective Coalition, Joint or Service systems are required to fund the integration of PIMs and associated improvements to core technology software for their respective platform. Development funds are required for software modifications and necessary for continuous modernization and software technologies associated with automation, data fusion, and information assurance/cyber security while keeping pace with evolving adversary tactics, techniques, and procedures (TTPs). FY 2018 RDT&E funding addresses Air Combat Command's validated requirement for the continuous operation of NCCT within the current tactical battlespace of today as well as development in the Core Technology to provide enhanced capabilities for the strategy of operating in highly contested and Anti-Access environments.

SUTER develops concepts, Tactics/Techniques/Procedures (TTPs) and technologies for synchronizing the capabilities of ISR and non-kinetic capabilities in a coordinated fashion with traditional kinetic weapons to prosecute targets connected together or dependent upon some form of communications network. Suter's planning, execution and assessment capability is implemented in a virtual architecture available to all Air Operations Centers (AOCs), taking advantage of the military value added from the synergies of Joint composite ISR, non-kinetic, and/or kinetic strike packages operating against networked target sets. This virtualized Service

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i> |
|--|--|

Oriented Architecture (SOA) utilizes software applications which employ Machine-to-Machine (M2M) interfaces and IP communications to impact these target sets by "attacking" or influencing/shaping links, nodes or end points in the network to include: Radio Frequency (RF) and terrestrial links, switches, routers, hubs, servers, IP addresses, cell phones, antennas, radars, microwave relays, Satellite Communications (SATCOM) receivers, transceivers, etc. The three main pieces of the SUTER Concept of Operations (CONOPS) include: first, the use of SUTER's sub-nodal analysis software to determine which nodes of the adversary's C4I network to engage or protect to achieve desired effects; second, the SUTER's distributed operations architecture to tie together relevant planning cells (e.g. AOCs, Joint Information Operations Warfare Center (JIOWC), etc.) so they can collaborate in developing and modeling the execution plan(s) needed to disrupt or monitor the required network aim-points; and third, via SUTER's combined network Graphical User Interface (GUI), all involved "players" monitor the plan's execution, provide Near-Real Time (NRT) updates to the status of on-going activities, provide continuous assessment/updates of the execution of the plan, and, within authorities (Rules of Engagement/ ROEs), re-direct activities based on changing battlefield conditions. SUTER is the technology that assists Combatant Commanders and Components to exercise synchronized dynamic Command and Control (C2) of ISR, kinetic and non-kinetic Joint operations against conventional and terrorist threat networks. SUTER provides decision makers and operators supporting airborne, ship-borne, cyber and land-based C2ISR platforms and at supporting locations continuous Predictive Battlespace Awareness (PBA) of the information superiority fight. It also incorporates the Machine-to-Machine (M2M) capabilities that rapidly synchronize the employment of kinetic weapons, non-kinetic weapons and ISR assets to target challenging threat systems responsively. SUTER depicts a dynamic, multi-security-level picture of current and predicted threat network status, capitalizing on data inputs from sources such as Modernized Intelligence Database (MIDB), Net-Centric Collaborative Targeting (NCCT), Joint Targeting Database (JTDB), Computer Network Operations Database (CNODB), National Air and Space Intelligence Center (NASIC) Links and Nodes, and Integrated Broadcast Service (IBS). SUTER provides a GUI that can be tailored to support the integration of ISR, kinetic, and non-kinetic composite target packages supporting COCOM and Component specified information superiority effects and objectives. FY 2018 funding is dedicated to optimizing the SUTER architecture within a commercial cloud service (C2S) environment and improve machine-to-machine (M2M) data interfaces via several Intelligence Community data sources while updating data models to existing data sources.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|---|-----------------------|-----------------------|----------------------------|---------------------------|-----------------------------|
| Previous President's Budget | 19.587 | 22.610 | 17.788 | 0.000 | 17.788 |
| Current President's Budget | 19.587 | 22.610 | 18.842 | 0.000 | 18.842 |
| Total Adjustments | 0.000 | 0.000 | 1.054 | 0.000 | 1.054 |
| • 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 | 1.054 | 0.000 | 1.054 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i> | |

Change Summary Explanation

FY 2018 \$1M was added to integrate enhancements to NASIC data sources for National-to-Tactical fusion.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force **Date:** May 2017

| | | |
|--|--|--|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i> | Project (Number/Name) 675197 / <i>NCCT Core Technology</i> |
|--|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|-------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 675197: <i>NCCT Core Technology</i> | - | 17.271 | 20.115 | 16.295 | 0.000 | 16.295 | 14.395 | 14.863 | 15.191 | 15.503 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

Network Centric Collaborative Targeting (NCCT) is the Air Force program of record responsible for developing core technologies and sub-nodal analysis tools to horizontally and/or vertically integrate network collaborative Intelligence, Surveillance and Reconnaissance (ISR) sensor systems within and across intelligence disciplines. Operational uses of core technologies can include, but are not limited to, Signals Intelligence to Signals Intelligence (SIGINT-SIGINT) correlation and Ground Moving Target Indicator to Signals Intelligence (GMTI-SIGINT) correlation. Operational uses of sub-nodal analysis tools can include, but are not limited to, determining which nodes of the adversary's Command, Control, Communications, Computers, Intelligence (C4I) network to engage or protect to achieve desired effects, and modeling execution plans to determine the need to disrupt or monitor the required network aim-points in order to redirect activities based on changing battlefield conditions. NCCT software applications employ Machine-to-Machine (M2M) interfaces and Internet Protocol (IP) connectivity to coordinate sensor cross-cues and collection activities. NCCT correlation and fusion services ingest collection data to produce a single, composite track (geo-location and identification) for high-value targets. NCCT research and development funding supports evolutionary development of the NCCT message set and network management systems (for example Operations Interfaces, Network Controllers, Fusion Engines, Data Guards, Interface to Command & Control, and Interface to Overhead Intelligence Operations (OIO)), the migration of the NCCT technologies to emerging network centric technologies such as Service Oriented Architectures (SOA), global web-enabled services, and satisfying DoD standards and Information Assurance requirements.

NCCT Core Technology develops the hardware and software to horizontally integrate dissimilar Joint and Coalition Battle Management, Command & Control (BMC2), and ISR assets and systems into integrated target tracks shared across networked platforms. NCCT Core Technology includes, but is not limited to, network management software, operator interfaces, standard network messages and formats, correlation software and data rules of interaction, NCCT multi-level security hardware and software items, and platform specific Platform Interface Modules (PIMs). Prospective Coalition, Joint or Service systems are required to fund the integration of PIMs and associated improvements to core technology software for their respective platform. Development funds are required for software modifications and necessary for continuous modernization and software technologies associated with automation, data fusion, and information assurance/cyber security while keeping pace with evolving adversary tactics, techniques, and procedures (TTPs). FY 2018 RDT&E funding addresses Air Combat Command's validated requirement for the continuous operation of NCCT within the current tactical battlespace of today as well as development in the Core Technology to provide enhanced capabilities for the strategy of operating in highly contested and Anti-Access environments.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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

| | FY 2016 | FY 2017 | FY 2018 |
|-------------------------------|---------|---------|---------|
| Title: Core Technology | 17.271 | 20.115 | 16.295 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i> | Project (Number/Name) 675197 / <i>NCCT Core Technology</i> |

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

Description: Accomplishments and planned efforts include development and update of Network-Centric Collaborative Targeting (NCCT) Core Technology; technical support to users, and management activities

FY 2016 Accomplishments:

- Completed dual-node install of Core Tech Software version 5.0.2 for increased information technology support and centralized management and monitoring for the overall architecture
- Began development and integration of capabilities within Core Tech Software version 5.1 including Link-16 data ingest
- Evaluated certain prospective capabilities for inclusion into the development of Core Tech Software version 5.2 including collaboration of Distributed Mission Operations and Training (DMO/DMT) capability as well as additional systems and data types (e.g. Overhead Persistent Infrared fusion, national data feeds) and fusion for the technology enhancements required for NCCT to operate in a highly contested and Anti-Access environments

FY 2017 Plans:

- Completing the integration and testing of capabilities within Core Tech Software version 5.1 including Link-16 data ingest for track amplification and enhanced track identification and awareness
- Continuing evaluation of certain prospective capabilities for inclusion into the development of Core Tech Software version 5.2 including collaboration of Distributed Mission Operations and Training (DMO/DMT) capability as well as additional systems and data types (e.g. Overhead Persistent Infrared fusion, national data feeds) and fusion for the technology enhancements required for NCCT to operate in a highly contested and Anti-Access environments
- Beginning development efforts for Core Tech Software version 5.2
 - Evaluate air track sources for Air Track to SIGINT correlation capability
 - Evaluate the collaboration of Distributed Mission Operations and Training (DMO/DMT) capability as well as additional systems and data types (e.g. Overhead Persistent Infrared fusion, national data feeds) and fusion for the technology enhancements required for NCCT to operate in a highly contested and Anti-Access environments
- Evaluate prospective commercial cloud services for eventual software transition into the cloud environment for Core Tech Software version 5.3

FY 2018 Plans:

| FY 2016 | FY 2017 | FY 2018 |
|---------|---------|---------|
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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i> | Project (Number/Name) 675197 / <i>NCCT Core Technology</i> |
|--|--|--|

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| - Will complete delivery and install of NCCT software version 5.1 for track amplification and enhanced track identification and awareness via Link 16 ingest capability - Will continue development efforts for Core Tech Software version 5.2 • Evaluation of additional systems and data types, such as OPIR fusion and national data feeds and fusion for the technology enhancements required for NCCT to operate in highly contested and Anti-Access environments • Air track sources for Air Track to SIGINT correlation capability • Interface with DMO/DMT - Will begin development efforts for Core Tech Software version 5.3 • Commercial cloud services for eventual software transition into the cloud environment | | | |
| Accomplishments/Planned Programs Subtotals | 17.271 | 20.115 | 16.295 |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|---|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| • OPAF: BA03: Line Item # 832070: <i>Intelligence Comm Equipment</i> | 3.517 | 2.583 | 3.312 | 0.000 | 3.312 | 3.117 | 3.172 | 3.230 | 3.289 | Continuing | Continuing |

Remarks

D. Acquisition Strategy
 The Network-Centric Collaborative Targeting (NCCT) Core Technology capabilities are developed, maintained and sustained with baseline/incremental upgrades plus any Quick Reaction Capability (QRC) developments acquired through the 645th Aeronautical System Group (645 AESG) in accordance with their Program Management Directive (PMD), Class Justification and Approval (J&A), and Life Cycle Management Plan (LCMP) across the full spectrum of system life cycle management ("cradle to grave" support concept). Due to the rapidly changing threat environment encountered during our prolonged commitment to Overseas Contingency Operations (OCO), the acquisition program manager has the authority to redirect funding as necessary to meet current stated and emerging/evolving Combatant Commander requirements.

645 AESG, Wright Patterson AFB OH, manages the Cost Plus Fixed Fee (CPFF) contracts used to develop NCCT Core Technology. 645 AESG will develop NCCT Core Technology software on common hardware for systems and platforms designated to field this ISR capability. Individual platform program management offices may contract directly with their prime contractors or through the 645 AESG for integration of NCCT capabilities on their respective systems and platforms.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i> | Project (Number/Name) 675197 / <i>NCCT Core Technology</i> |

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i> | Project (Number/Name) 675197 / <i>NCCT Core Technology</i> |
|--|--|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Core Technology Development A | SS/CPFF | L-3 ComCept : Rockwall, TX | - | 16.271 | Jan 2016 | 5.500 | May 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Core Technology Development B | SS/CPFF | L-3 ComCept : Rockwall, TX | - | 0.000 | | 13.615 | Jul 2017 | 15.248 | Jul 2018 | 0.000 | | 15.248 | Continuing | Continuing | - |
| Subtotal | | | - | 16.271 | | 19.115 | | 15.248 | | 0.000 | | 15.248 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Security Certification/ Technical Engineering | SS/CPFF | L-3 ComCept : Rockwall, TX | - | 0.500 | Mar 2016 | 0.500 | Mar 2017 | 0.500 | Mar 2018 | 0.000 | | 0.500 | Continuing | Continuing | - |
| Subtotal | | | - | 0.500 | | 0.500 | | 0.500 | | 0.000 | | 0.500 | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | Allot | 645 AESG : Dayton, OH | - | 0.500 | Mar 2016 | 0.500 | Mar 2017 | 0.547 | Mar 2018 | 0.000 | | 0.547 | Continuing | Continuing | - |
| Subtotal | | | - | 0.500 | | 0.500 | | 0.547 | | 0.000 | | 0.547 | - | - | - |

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|---|-------------|---------|--|--------------|-------------|---------------|--|----------------|--------------------------|--|--|
| Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force | | | | | | | | Date: May 2017 | | | |
| Appropriation/Budget Activity 3600 / 7 | | | R-1 Program Element (Number/Name) PE 0305221F / Network-Centric Collaborative Targeting | | | | Project (Number/Name) 675197 / NCCT Core Technology | | | | |
| | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract | | |
| Project Cost Totals | - | 17.271 | 20.115 | 16.295 | 0.000 | 16.295 | - | - | - | | |

Remarks

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i> | Project (Number/Name) 675197 / <i>NCCT Core Technology</i> |

Schedule Details

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Core Tech Version 5.0.2 Development, Integration, and Test | 1 | 2016 | 4 | 2016 |
| Core Tech Version 5.1 Development, Integration, and Test | 2 | 2016 | 2 | 2018 |
| Core Tech Version 5.2 Development, Integration, and Test | 4 | 2016 | 2 | 2019 |
| Core Tech Version 5.3 Development, Integration, and Test | 3 | 2018 | 1 | 2021 |
| Core Tech Version 5.4 Development, Integration, and Test | 3 | 2020 | 4 | 2022 |

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|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|---|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i> | | | | Project (Number/Name) 675275 / <i>SUTER</i> | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 675275: <i>SUTER</i> | - | 2.316 | 2.495 | 2.547 | 0.000 | 2.547 | 2.587 | 2.634 | 2.680 | 2.735 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

SUTER is a project responsible for developing sub-nodal analysis tools to horizontally and/or vertically integrate network collaborative Intelligence, Surveillance, and Reconnaissance (ISR) sensor systems within and across intelligence disciplines. Operational uses of sub-nodal analysis tools would include, but are not limited to, determining which nodes of the adversary's Command, Control, Communications, Computers, Intelligence (C4I) network are engaged or protected to achieve desired effects, and modeling execution plans to determine the need to disrupt or monitor the required network aim-points in order to redirect activities based on changing battlefield conditions.

SUTER develops technologies for synchronizing the capabilities of ISR and non-kinetic capabilities in a coordinated fashion with traditional kinetic weapons to prosecute targets connected together or dependent upon some form of network. SUTER's planning, execution and assessment capability is implemented in a virtual architecture available to all Air Operations Centers (AOCs), taking advantage of the military value added from the synergies of Joint composite ISR, non-kinetic, and/or kinetic strike packages operating against networked target sets. This virtualized Service Oriented Architecture (SOA) utilizes software applications which employ machine-to-machine interfaces and Internet Protocol (IP) communications to impact these target sets by "attacking" or influencing/shaping links, nodes or end points in the network to include: Radio Frequency (RF) and terrestrial links, switches, routers, hubs, servers, IP addresses, cell phones, antennas, radars, microwave relays, Satellite Communications (SATCOM) receivers, transceivers, etc. The three main pieces of the SUTER Concept of Operations (CONOPS) include: first, the use of SUTER's sub-nodal analysis software to determine which nodes of the adversary's C4I network to engage or protect to achieve desired effects; second, the use of SUTER's distributed operations architecture to tie together relevant planning cells (e.g. AOCs, Joint Information Operations Warfare Command (JIOWC), etc.) so they can collaborate in developing and modeling the execution plan(s) needed to disrupt or monitor the required network aim-points; and third, via SUTER's combined network Graphical User Interface (GUI), all involved "players" monitor the plan's execution, provide Near-Real Time (NRT) updates to the status of on-going activities, provide continuous assessment/updates of the execution of the plan, and, within authorities (Rules of Engagement or ROEs), re-direct activities based on changing battlefield conditions.

SUTER is the technology that assists Combatant Commanders (COCOMs) and Components to exercise synchronized dynamic Command and Control (C2) of ISR, kinetic and non-kinetic Joint operations against conventional and terrorist threat networks. SUTER provides decision makers and operators supporting airborne, ship-borne, cyber and land-based Command and Control, Intelligence, Surveillance and Reconnaissance (C2ISR) platforms and at supporting locations continuous Predictive Battlespace Awareness (PBA) of the information superiority fight. It also incorporates the Machine-to-Machine (M2M) capabilities that rapidly synchronize the employment of kinetic weapons, non-kinetic weapons and ISR assets to target challenging threat systems responsively. SUTER depicts a dynamic, multi-security level picture of current and predicted threat network status, capitalizing on data inputs from sources such as Modernized Intelligence Database (MIDB), Net-Centric Collaborative Targeting (NCCT), Joint Targeting Database (JTDB), Computer Network Operations Database (CNODB), National Air and Space Intelligence Center (NASIC) Links and Nodes, and Integrated Broadcast Service (IBS). SUTER provides a GUI that can be tailored to support the integration of ISR, kinetic, and non-kinetic composite target packages supporting Combatant Commands and Component specified information superiority effects and objectives across the full spectrum of conflict from tactical operations to an Anti-Access Area Denial (A2AD) strategy. FY 2018 funding is dedicated to optimizing the SUTER architecture within a commercial cloud

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i> | Project (Number/Name) 675275 / SUTER |
|--|--|--|

service (C2S) environment and improve machine-to-machine (M2M) data interfaces via several Intelligence Community data sources while updating data models to existing data sources.

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

| | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| <p>Title: SUTER Software Development</p> <p>Description: Planned efforts include development and release of SUTER software upgrade.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Delivered virtual Service Oriented Architecture (SOA) of SUTER software providing worldwide access to all Air Operations Center (AOC) users - Continued development of further software modernization improving security management of software and network, enhanced SUTER displays adding data filtering and layering capabilities, additional data feeds, two new analytical approaches for targeting analysis - Provided a system view capability that breaks out a system into its logical and physical components - Terminated 645th Aeronautical Systems Group (645 AESG) contracts for SUTER development - Began transition of SUTER to Air Force Research Lab (AFRL) <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Continuing development of further software modernization increments improving security management and introducing flexibility upgrades for operational decision makers that will enable auto generation of target recommendations and further expansion of data sources to inject into SUTER via machine-to-machine interface - Beginning initial development of manual analysis and manual course of action capability to support target identification and to predict effects of actions executed to achieve decision maker objectives - Closing out 645 AESG contracts for SUTER development - Initiating AFRL contracts for continued SUTER development <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will continue development of manual analysis and manual course of action capability to support target identification and to predict effects of actions executed to achieve decision maker objectives - Will begin research and development of new machine-to-machine data interfaces for interfacing with several national and defense Intelligence Community data sources, while updating data models of existing interfaced data sources - Will begin research and development of interoperability with Air Operations Center and Air Force Distributed Common Ground System weapon systems • Evaluate the ability to leverage Pivotal Cloud Foundry for eventual development of commercial cloud services capability | 2.316 | 2.495 | 2.547 |
| Accomplishments/Planned Programs Subtotals | 2.316 | 2.495 | 2.547 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305221F / <i>Network-Centric Collaborative Targeting</i> | Project (Number/Name) 675275 / SUTER |
|--|--|--|

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • N/A: N/A | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - |

Remarks

D. Acquisition Strategy

Prior to FY 2017, SUTER capabilities were developed, maintained and sustained with baseline/incremental upgrades plus any Quick Reaction Capability (QRC) developments acquired through the 645 AESG. In FY 2017, due to a lack of technical maturity of SUTER's capabilities, the Air Force terminated 645 AESG activities on SUTER and transitioned SUTER program execution responsibilities to Air Force Research Laboratory (AFRL). 645 AESG will transfer FY 2018 SUTER funding to AFRL for execution. AFRL will increase the technical maturity of the SUTER software and capabilities to a level suitable for eventual transition to an Air Force Program of Record best capable to field, upgrade and sustain SUTER capabilities consistent with warfighter requirements.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i> |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 43.709 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 674819: <i>Common Data Link (CDL)</i> | - | 43.709 | 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

Common Data Link Executive Agent (CDL EA) provides the DoD standard for interoperable, multi-service, multi-agency, Intelligence, Surveillance, and Reconnaissance (ISR) datalinks for 10,000+ DoD manned/unmanned airborne and ground platforms. 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 Congressional and DoD mandates. The 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 and Congressional 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 broadcast to ground sites, airborne platforms and dismounted users. Also, CDL provides the capability to relay data via air-to-air or compatible satellite links when the asset and ground site are not in line-of-sight.

CDL EA's research and development activities support a broad swath of tactical, operational, and strategic ISR users and include achieving higher data rates, multi-access and multi-node network management, crypto upgrade, advancements needed to operate in contested environments, terminal and antenna design enhancements, operations in other spectral bands, and improving spectrum efficiency. Further, CDL development improves large area surveillance missions while supporting continuous improvements and implementation of line-of-sight platform and CDL terminal Command and Control (C2), plus increased ISR (C2ISR) capabilities. 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 Gigabit Encryption thrust enables CDL to develop a miniaturized gigabit rate Communication Security (COMSEC) device capable of managing CDL data. The miniaturized COMSEC device will allow faster throughput while reducing Size, Weight, and Power (SWaP) requirements.

This program is in Budget Activity 7, Operational System Development, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | | R-1 Program Element (Number/Name) PE 0305236F I Common Data Link Executive Agent (CDL EA) | | | | |
| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | |
| Previous President's Budget | 43.796 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Current President's Budget | 43.709 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Total Adjustments | -0.087 | 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 | 0.000 | 0.000 | | | | |
| • Other Adjustments | -0.087 | 0.000 | 0.000 | 0.000 | 0.000 | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | | | FY 2016 | FY 2017 | FY 2018 |
| Title: Common Data Link (CDL) Technology Advancement | | | | 31.709 | 0.000 | 0.000 |
| Description: CDL evolutionary terminal development, advanced technology insertion, demonstrations and studies per CDL Integrated Product Team (IPT) direction to the CDL Executive Agent (CDL EA). | | | | | | |
| FY 2016 Accomplishments: Continue development and testing of Higher Data Rates to existing and emerging terminals, while also prototyping terminal development that combines Size, Weight and Power (SWaP) improvements with higher data rate capability. Continue development of technology that allows for adapting and testing of networking, as well as more effective ground and lightweight airborne terminal components. Continue to move forward with development of multispectral operations flexibility, increased spectrum efficiency and integration of improved transmission components. Continue development of enhanced, CDL-based ISR communications capabilities across multiple platforms and rapid prototyping efforts. Continue support of emerging communication backbone architecture development across air, space and terrestrial layers, to include: agile high capacity data transport, assured communications and multi-mode access networks. | | | | | | |
| FY 2017 Plans: In FY17 these activities will be reported in Budget Activity 4, PE 0305236F, Project 641334, CDL | | | | | | |
| FY 2018 Plans: In FY18 these activities will be reported in Budget Activity 4, PE 0305236F, Project 641334, CDL | | | | | | |
| Title: Common Data Link (CDL) Specification Maintenance and Development | | | | 5.000 | 0.000 | 0.000 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>Description: CDL specification testing, maintenance, development, validation, configuration control, and distribution per CDL Integrated Product Team (IPT) direction to CDL Executive Agent (EA).</p> <p>FY 2016 Accomplishments: Continue to research and development upgrades of current and future specification employment profiles that include the adding of capabilities required to support the Joint Aerial Layer Network (JALN) High Capacity Backbone (HCB), A2AD requirements, and other emerging operational capabilities. Continue the development of spectrally efficient CDL waveform specification, while gathering requirements and planning for future mesh networking enhancements. Continue to work with CDL industry partners and DoD Services to document, validate and implement common terminal control interfaces through the use of commercially recognized standards. Maintain configuration control of the CDL architecture, standards, specifications and modules. Continue the development of CDL test equipment capable of compliance testing to the latest, validated version of CDL specifications.</p> <p>FY 2017 Plans: In FY17 these activities will be reported in Budget Activity 4, PE 0305236F, Project 641334, CDL</p> <p>FY 2018 Plans: In FY18 these activities will be reported in Budget Activity 4, PE 0305236F, Project 641334, CDL</p> | | | | |
| <p>Title: Gigabit Encryption</p> <p>Description: Develop a miniaturized gigabit rate COMSEC device capable of handling CDL data rates. Miniaturizing COMSEC components will enable faster data throughput (greater than 12 GBPS) and reduce size, weight, and power. Once developed, CDL users will have to procure COMSEC components and fund installation/integration.</p> <p>FY 2016 Accomplishments: Continue the development effort for small form factor modular COMSEC devices capable of gigabit rates. Conduct prototyping and testing of the second generation crypto core and design/development of the third generation crypto core.</p> <p>FY 2017 Plans: In FY17 these activities will be reported in Budget Activity 4, PE 0305236F, Project 641334, CDL</p> <p>FY 2018 Plans: In FY18 these activities will be reported in Budget Activity 4, PE 0305236F, Project 641334, CDL</p> | | 7.000 | 0.000 | 0.000 |
| Accomplishments/Planned Programs Subtotals | | 43.709 | 0.000 | 0.000 |
| D. Other Program Funding Summary (\$ in Millions) | | | | |
| N/A | | | | |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force Date: May 2017

Appropriation/Budget Activity
3600: *Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development*

R-1 Program Element (Number/Name)
PE 0305236F / *Common Data Link Executive Agent (CDL EA)*

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

Remarks

E. Acquisition Strategy

The Air Force, designated as the Common Data Link (CDL) Executive Agent, supported by each of the Services' CDL program's Service laboratories, the Airborne Network Division (AFLCMC/HNA), and the Defense Information Systems Agency (DISA), provide for development of interoperable ISR data links as mandated by the Assistant Secretary of Defense (Networks and Information Integration) (ASD(NII)) policy. Once CDL technology development matures, platforms are responsible for program CDL procurement, National Security Agency (NSA), Joint Interoperability Test Command (JITC), and DISA certifications, integration, and installation. Acquisition strategy varies by contract. When possible, contracts are awarded under full and open competition.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305238F / NATO AGS |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 131.900 | 38.904 | 44.729 | 0.000 | 44.729 | 38.915 | 25.812 | 1.800 | 0.802 | 0.000 | 282.862 |
| 676001: NATO AGS | - | 131.900 | 38.904 | 44.729 | 0.000 | 44.729 | 38.915 | 25.812 | 1.800 | 0.802 | 0.000 | 282.862 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | - | - |

A. Mission Description and Budget Item Justification

This program funds the U.S. contribution to the Alliance Ground Surveillance (AGS) system, a North Atlantic Treaty Organization (NATO), Direct Commercial Sale acquisition. AGS is an airborne ground surveillance capability that provides continuous, wide area surveillance in all weather conditions. It will provide NATO decision makers with near real time information and situational awareness concerning friendly, neutral and opposing ground and maritime forces to support mission planning and execution, including force protection and targeting. All NATO nations will have access to AGS collection data, creating opportunities for burden sharing with similar U.S. assets.

The AGS program includes: air and ground segment acquisitions, operations of the NATO AGS Management Agency (NAGSMA), development of operations and support concepts and definition and establishment of an initial support capability. The air segment consists of five (5) air vehicles based on unique exportable configurations of the United States Air Force Global Hawk air frame, Navy Triton command and control architecture and the U.S. Multi-Platform Radar Technology Insertion Program (MP-RTIP) radar. The U.S. will also integrate new Maritime Moving Target and Inverse Synthetic Aperture Radar capability into the MP-RTIP radar for NATO AGS. The ground segment consists of fixed site and transportable/mobile ground stations for air vehicle Command and Control (C2), data exploitation and distribution. Operations and continuing In-Service Support will be funded through a future NATO Military Commanders' Capability Package funded within the NATO Security Investment Program (NSIP).

U.S. participation in NATO AGS was ratified by Secretary of Defense (SECDEF) signature/approval of the NATO AGS Program Memorandum of Understanding (PMOU) in June 2009 and includes 15 nations. In FY 2012, OSD transferred the NATO AGS program to the U.S. Air Force (USAF) for management and execution of the Research and Development effort.

This program is in Budget Activity 7, Operational System Development, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305238F / NATO AGS |
|--|--|

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 138.400 | 38.904 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 131.900 | 38.904 | 44.729 | 0.000 | 44.729 |
| Total Adjustments | -6.500 | 0.000 | 44.729 | 0.000 | 44.729 |
| • 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 | -6.500 | 0.000 | | | |
| • SBIR/STTR Transfer | 0.000 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 44.729 | 0.000 | 44.729 |

Change Summary Explanation

FY2016: \$6.5M reprogrammed for higher USAF priorities

FY2018: \$44.729M to continue development and testing of maritime modes for MP-RTIP

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
|---|----------------|----------------|----------------|

| | | | |
|---|---------|--------|--------|
| Title: Design / Development of NATO Alliance Ground Surveillance (AGS) | 111.940 | 34.139 | 11.142 |
| Description: U.S. contribution to NATO for AGS development acquisition and initial fielding. | | | |
| Supports configuration changes at a system level. | | | |
| FY 2016 Accomplishments: | | | |
| - Continued U.S. contribution to NATO for AGS development acquisition and initial fielding | | | |
| - Supported configuration changes at a system level | | | |
| FY 2017 Plans: | | | |
| - Will continue U.S. contribution to NATO for AGS development acquisition and initial fielding | | | |
| - Will continue configuration changes at a system level | | | |
| FY 2018 Plans: | | | |
| - Will continue U.S. contribution to NATO for AGS development acquisition and initial fielding | | | |
| - Will continue configuration changes at a system level | | | |
| - Aircraft #1 & #2 will be delivered to NATO | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0305238F / NATO AGS | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| - Aircraft #3, #4 and #5 will be delivered to NATO | | | | |
| <p>Title: Design/Development of Maritime Modes</p> <p>Description: Supports development and flight testing of maritime modes capability for RTIP and additional configuration changes that cannot be performed under the direct commercial sale contract between Northrop Grumman and NAGSMA.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Continued to support development of maritime modes capability and additional configuration changes that cannot be performed under the direct commercial sale contract between Northrop Grumman and NAGSMA - NAGSMA declared a successful NATO design review <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Will continue development of maritime modes capability and additional configuration changes that cannot be performed under the direct commercial sale contract between Northrop Grumman and NAGSMA <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will continue development of maritime modes capability and additional configuration changes that cannot be performed under the direct commercial sale contract between Northrop Grumman and NAGSMA | | 18.400 | 3.889 | 33.487 |
| <p>Title: Technical Support for NATO Alliance Ground Surveillance (AGS)</p> <p>Description: Provide engineering and logistics support for NATO AGS development and initial fielding.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Continued engineering, logistics and program office support for NATO AGS development and initial fielding <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Will continue engineering, logistics and program office support for NATO AGS development and initial fielding. <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will continue engineering, logistics and program office support for NATO AGS development and initial fielding. | | 1.385 | 0.570 | 0.100 |
| <p>Title: Test and Evaluation Support for NATO Alliance Ground Surveillance (AGS)</p> <p>Description: Provide testing and evaluation via the Air Force Flight Test Center.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Accomplished first flight of aircraft #1 from production facility to Air Force Flight Test Center and initial flight test | | 0.175 | 0.306 | 0.000 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305238F / NATO AGS |
|--|--|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| - Continued detailed test and evaluation planning with the Air Force Flight Test Center | | | |
| FY 2017 Plans: - Will continue detailed test and evaluation planning with the Air Force Flight Test Center - Will support Aircraft #1 ferry flight from Air Force Flight Test Center to AGS Main Operating Base on Sigonella, Italy - Will support system level performance verification and integration with ground systems testing on aircraft #1 following its arrival to Sigonella, Italy | | | |
| FY 2018 Plans: N/A | | | |
| Accomplishments/Planned Programs Subtotals | 131.900 | 38.904 | 44.729 |

| D. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
| • RDTE: BA 07: PE 0305220F: RQ-4 UAV | 188.053 | 256.307 | 321.807 | 0.000 | 321.807 | 260.038 | 300.498 | 235.024 | 0.000 | Continuing | Continuing |

Remarks

E. Acquisition Strategy
Acquisition of the AGS system is being accomplished via a single delivery strategy. The system will be delivered via a fixed price direct commercial sale contract between Northrop Grumman Integrated Sensor Systems International, Incorporated (NGISSI) & NATO, which was signed on 20 May 2012. The program is managed by the NATO AGS Management Agency (NAGSMA).

F. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305238F / NATO AGS | Project (Number/Name) 676001 / NATO AGS |
|--|--|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| NATO AGS Design / Development | SS/FFP | NATO AGS Management Agency : Brussels, Belgium | - | 111.940 | Oct 2015 | 34.139 | Oct 2016 | 10.217 | Oct 2017 | 0.000 | | 10.217 | 0.000 | 156.296 | - |
| NATO AGS System Level Configuration Changes | SS/FFP | AFLCMC/WI : Wright Patterson, AFB, OH | - | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.000 | - |
| MP-RTIP for NATO AGS Design / Development | SS/FFP | AFLCMC/HB : Hanscom AFB, MA | - | 18.400 | Oct 2015 | 3.889 | Oct 2016 | 33.487 | Dec 2017 | 0.000 | | 33.487 | 0.000 | 55.776 | - |
| Subtotal | | | - | 130.340 | | 38.028 | | 43.704 | | 0.000 | | 43.704 | 0.000 | 212.072 | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| NATO AGS Technical Support | SS/FFP | Multiple : Hanscom, WPAFB | - | 0.748 | Apr 2016 | 0.295 | Apr 2017 | 0.100 | Dec 2017 | 0.000 | | 0.100 | 0.000 | 1.143 | - |
| Subtotal | | | - | 0.748 | | 0.295 | | 0.100 | | 0.000 | | 0.100 | 0.000 | 1.143 | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| NATO AGS Test and Evaluation Support | SS/FFP | Multiple: AFLCMC/WI, AFLCMC/HB, 412 TW, 88 CG : Hanscom, WPAFB, Edwards | - | 0.175 | Apr 2016 | 0.306 | Apr 2017 | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.481 | - |
| Subtotal | | | - | 0.175 | | 0.306 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.481 | - |

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date: May 2017**

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305238F / NATO AGS | Project (Number/Name) 676001 / NATO AGS |
|--|--|---|

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| NATO AGS Management Services | SS/FFP | Multiple : Hanscom, WPAFB, Pax River | - | 0.637 | Jul 2016 | 0.275 | Jul 2017 | 0.925 | Jul 2017 | 0.000 | | 0.925 | 0.000 | 1.837 | - |
| Subtotal | | | - | 0.637 | | 0.275 | | 0.925 | | 0.000 | | 0.925 | 0.000 | 1.837 | - |
| Project Cost Totals | | | - | 131.900 | | 38.904 | | 44.729 | | 0.000 | | 44.729 | 0.000 | 215.533 | - |

Remarks
 The Industrial Structure consists of Northrop Grumman (NGISSII) prime contractor, three subcontractors, and 15 participating nation industries that will receive direct work. There are no indirect offsets. The technical support of the NATO AGS program includes MITRE Engineering, U.S. Navy's Triton program office support, U.S. government travel, and supplies. The test and evaluation support of the NATO AGS program includes the AFMC 412 Test Wing support of Flight Testing and Frequency Management by the AFMC 88 Communication Group. The management services support of the NATO AGS program includes Advisory & Assistance Services.

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305238F / NATO AGS | Project (Number/Name) 676001 / NATO AGS |
|--|--|---|

Schedule Details

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Design and Development - NATO AGS | 1 | 2016 | 4 | 2017 |
| Aircraft #1 Ferry Flight to Main Ops Base (October 2017) | 1 | 2018 | 1 | 2018 |
| Aircraft #2 Delivery to Main Ops Base (December 2017) | 1 | 2018 | 1 | 2018 |
| Aircraft #3, #4 & #5 Delivery to Main Ops Base | 2 | 2018 | 3 | 2018 |
| System Level Performance Verification | 2 | 2018 | 3 | 2018 |
| IOC (December 2018) | 1 | 2019 | 1 | 2019 |
| FOC (December 2022) | 4 | 2022 | 4 | 2022 |
| Flight Test - NATO AGS | 1 | 2016 | 4 | 2017 |
| Design, Development, & Test - Maritime Mode | 1 | 2016 | 1 | 2022 |
| Ground Station Delivery | 3 | 2016 | 3 | 2017 |
| Tech Support - NATO AGS | 1 | 2016 | 4 | 2022 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305240F / <i>Support to DCGS Enterprise</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 28.336 | 23.084 | 26.349 | 0.000 | 26.349 | 26.779 | 27.278 | 27.752 | 28.321 | Continuing | Continuing |
| 674826: <i>Common Imagery Ground / Surface Systems</i> | - | 16.099 | 13.431 | 14.969 | 0.000 | 14.969 | 15.214 | 15.498 | 15.767 | 16.090 | Continuing | Continuing |
| 675265: <i>Common Imagery Processor (CIP)</i> | - | 12.237 | 9.653 | 11.380 | 0.000 | 11.380 | 11.565 | 11.780 | 11.985 | 12.231 | Continuing | Continuing |

A. Mission Description and Budget Item Justification

This Program Element funds 1) the Distributed Common Ground/Surface System (DCGS) Multi-Service Execution Team (MET) Office (DMO) which oversees the DCGS Integration Backbone (DIB) Development and the DCGS Test and Community Support (D-TACS) Programs, 2) the Support to DCGS Enterprise Integrated Product Team (IPT) effort, and 3) the Imagery Processing effort which consists of the Virtual Imagery Processing Capability (VIP-C) program.

1) The DMO is the persistent, working level organization supporting the DCGS Family of Systems (FoS) interoperability efforts, for which the AF is lead service. The DCGS FoS, including AF DCGS, was directed to migrate to a net-centric DoD Intelligence, Surveillance and Reconnaissance (ISR) enterprise, enabling the Services to operate and share intelligence products more effectively in a joint environment. All Services must pursue a common path based on a set of common enterprise services consistent with the Department's net-centric vision while maintaining flexibility to support the full range of warfighter missions. Specifically, DoD charged the Air Force to lead the development, upgrade, integration, test, and maintenance of the common DCGS Integration Backbone (DIB) enterprise services. The DIB is a set of enterprise standards and services that enable interoperability and component reuse. All the military Services are mandated to incorporate DIB interoperability standards through the Service DCGS Programs of Record (PoR), and are committed to DIB architecture as the migration path to common DCGS enterprise services. The DCGS FoS is the core of the Defense Intelligence Information Enterprise (DI2E), and the DIB forms the core of current DI2E interoperability. Activities also include studies and analysis to support both current program planning and execution and future program planning.

To carry out its mission, the DMO manages multiple development and test programs. The DIB Development Program is responsible for DIB Development and the DCGS Test and Community Support (D-TACS) Program provides software test, Independent Verification and Validation (IV&V), and cybersecurity development for the products developed by the DIB Development Program. The D-TACS Program also provides a wide range of Community Support to the PoRs and the DCGS Enterprise, including Cybersecurity support. The Cybersecurity effort improves DCGS Enterprise Cybersecurity practices, including reciprocity. It also involves the development and review of new Cybersecurity practices within the US Government, including providing commentary to the Committee on National Security Systems (CNSS) and DoD Risk Management Framework Technical Advisory Group (RMF TAG) as directed by the DMO.

The D-TACS Program manages the DCGS Test Laboratory (DTL) at Hanscom AFB, MA and a mobile DCGS-Imagery (DCGS-I) Testbed, currently located at Nellis AFB, NV. These facilities support software development and test and DI2E/DCGS Enterprise evaluation and test events and exercises.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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|--|---|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305240F / <i>Support to DCGS Enterprise</i> |
|--|---|

The DCGS Test Laboratory (DTL) conducts software development, test and test development, acceptance testing, including functional verification and validation and performance testing on DIB and DIB related software.

DCGS-I Testbed is an integration and test environment, used by the Services and Agency DCGS Program Offices to conduct integration of DCGS components and test interoperability interfaces with new sensors, applications, and net-centric operations. This Testbed also supports the integration and testing of DoD DCGS components prior to introduction into the operational environment. Periodic upgrades ensure the Testbed stays current with DCGS standards and architecture. The Testbed supports the annual DCGS test event Enterprise Challenge, multiple USAF Weapons School Integration (WSINT) events, USAF Warfare Center Red Flag events and Global Hawk Interoperability Tests.

2) The Support to DCGS Enterprise IPT provides support to OUSD(I), AF DCGS and NATO interoperability efforts. This includes the development, testing, and implementation of international standards (to include NATO standardization agreements) to ensure joint, allied, and coalition interoperability.

3) The Imagery Processing effort develops the Virtual Imagery Processing Capability (VIP-C) within the DCGS architecture. VIP-C accepts airborne imagery data, processes it into an exploitable format, and provides it to other elements within the weapon system and/or the DCGS Enterprise. Current efforts are transitioning the legacy imagery processor from a hardware/software capability to a virtual software capability, thereby improving enterprise processing capabilities.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded.

| B. Program Change Summary (\$ in Millions) | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|---|-----------------------|-----------------------|----------------------------|---------------------------|-----------------------------|
| Previous President's Budget | 28.336 | 23.084 | 26.273 | 0.000 | 26.273 |
| Current President's Budget | 28.336 | 23.084 | 26.349 | 0.000 | 26.349 |
| Total Adjustments | 0.000 | 0.000 | 0.076 | 0.000 | 0.076 |
| • 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 | 0.076 | 0.000 | 0.076 |

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|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|--|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305240F / Support to DCGS Enterprise | | | | Project (Number/Name) 674826 / Common Imagery Ground / Surface Systems | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 674826: <i>Common Imagery Ground / Surface Systems</i> | - | 16.099 | 13.431 | 14.969 | 0.000 | 14.969 | 15.214 | 15.498 | 15.767 | 16.090 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

This Program Element funds the Distributed Common Ground/Surface System (DCGS) Multi-Service Execution Team (MET) Office (DMO), which is the persistent, working level organization supporting the DCGS Family of Systems (FoS) interoperability efforts, for which the AF is lead service. The DCGS FoS, including AF DCGS, was directed to migrate to a net-centric DoD Intelligence, Surveillance and Reconnaissance (ISR) enterprise, enabling the Services to operate and share intelligence products more effectively in a joint environment. All Services must pursue a common path based on a set of common enterprise services consistent with the Department's net-centric vision while maintaining flexibility to support the full range of warfighter missions. Specifically, DoD charged the Air Force to lead the development, upgrade, integration, test, and maintenance of the common DCGS Integration Backbone (DIB) enterprise services. The DIB is a set of enterprise standards and services that enable interoperability and component reuse. All the military Services are mandated to incorporate DIB interoperability standards through the Service DCGS Programs of Record (PoR), and are committed to DIB architecture as the migration path to common DCGS enterprise services. The DCGS FoS is the core of the Defense Intelligence Information Enterprise (DI2E), and the DIB forms the core of current DI2E interoperability. Activities also include studies and analysis to support both current program planning and execution and future program planning.

To carry out its mission, the DMO manages multiple development and test programs. The DIB Development Program is responsible for DIB Development and the DCGS Test and Community Support (D-TACS) Program provides software test, Independent Verification and Validation (IV&V), and cybersecurity development for the products developed by the DIB Development Program. The D-TACS Program also provides a wide range of Community Support to the PoRs and the DCGS Enterprise, including Cybersecurity support. The Cybersecurity effort improves DCGS Enterprise Cybersecurity practices, including reciprocity. It also involves the development and review of new Cybersecurity practices within the US Government, including providing commentary to the Committee on National Security Systems (CNSS) and DoD Risk Management Framework Technical Advisory Group (RMF TAG) as directed by the DMO.

The D-TACS Program manages the DCGS Test Laboratory (DTL) at Hanscom AFB, MA and a mobile DCGS-Imagery (DCGS-I) Testbed, currently located at Nellis AFB, NV. These facilities support software development and test and Defense Intelligence Information Enterprise (DI2E)/DCGS Enterprise evaluation and test events and exercises.

The DCGS Test Laboratory (DTL) conducts software development, test and test development, acceptance testing, including functional verification and validation and performance testing on DIB and DIB related software.

DCGS-I Testbed is an integration and test environment, used by the Services and Agency DCGS Program Offices to conduct integration of DCGS components and test interoperability interfaces with new sensors, applications, and net-centric operations. This Testbed also supports the integration and testing of DoD DCGS components prior to introduction into the operational environment. Periodic upgrades ensure the Testbed stays current with DCGS standards and architecture. The Testbed supports

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305240F / Support to DCGS Enterprise | Project (Number/Name) 674826 / Common Imagery Ground / Surface Systems |
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the annual DCGS test event Enterprise Challenge, multiple USAF Weapons School Integration (WSINT) events, USAF Warfare Center Red Flag events and Global Hawk Interoperability tests.

The funding also provides support to OUSD(I), AF DCGS and NATO interoperability efforts. This includes the development, testing, and implementation of international standards (to include NATO standardization agreements) to ensure joint, allied, and coalition interoperability.

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

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|---------|---------|--------------|-------------|---------------|
| <p>Title: Distributed Common Ground / Surface System (DCGS) Integration Backbone</p> <p>Description: Upgrade, improve and manage the DCGS Integration Backbone (DIB).</p> <p>FY 2016 Accomplishments: - Delivered DIB version 4.3. Continued to upgrade, improve, and manage the DIB with a focus on the Distributed Data Framework (DDF) based interoperability and federation tools.</p> <p>FY 2017 Plans: - Delivered DIB version 4.4 for use by the DCGS Enterprise. Continued to upgrade, improve and manage the Data Framework (DDF) based interoperability and federation tools.</p> <p>FY 2018 Base Plans: - Continue to upgrade, improve and manage the DIB with the next major/minor version release. Upgrade DCGS-A to the latest operationally fielded DIB version. Award new DIB Development contract.</p> <p>FY 2018 OCO Plans: N/A</p> | 8.782 | 4.055 | 6.173 | 0.000 | 6.173 |
| <p>Title: DCGS Test and Community Support (D-TACS)</p> <p>Description: Provide test, independent verification and validation (IV&V) and Community Support to the DIB and the DCGS Family of Systems.</p> <p>FY 2016 Accomplishments: - Awarded new D-TACS contract which combined the activities of the DTL Test and IV&V activities, the DCGS Community Support efforts and the DCGS-I Testbed under a single program manager and single contract to achieve improved management and oversight of the Testbed and more effective integration of the DTL and Testbed. Upgraded the Testbed to support remote federation, testing and more directly support DIB development, DoD DCGS Enterprise, and AF exercise activities.</p> <p>FY 2017 Plans:</p> | 5.117 | 7.176 | 6.556 | 0.000 | 6.556 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305240F / Support to DCGS Enterprise | Project (Number/Name) 674826 / Common Imagery Ground / Surface Systems |

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

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| <p>- Provided Test, IV&V and Cybersecurity support for the DIB V4.5 Delivery to the DCGS Enterprise. Expanded Nellis-based DCGS-I Testbed support to the Enterprise and upgraded Testbed subsystems. Continued DTL hardware and software technology refresh. Supported DI2E test event Enterprise Challenge, multiple USAF Weapons School Integration (WSINT) events, USAF Warfare Center Red Flag events and Global Hawk Interoperability Tests.</p> <p>FY 2018 Base Plans: - Continue to enhance and improve the effectiveness and integration of the DTL and DCGS-I Test bed as a single integrated lab supporting DI2E test event Enterprise Challenge, multiple USAF Weapons School Integration (WSINT) events, USAF Warfare Center Red Flag events and Global Hawk Interoperability Tests. Increase and improve overall support to the DCGS Enterprise. Continue DTL and Testbed technology refresh including upgrade to downlink antenna at the Nellis Testbed.</p> <p>FY 2018 OCO Plans: N/A</p> | | | | | |
| <p>Title: Support to DCGS Enterprise</p> <p>Description: Provide support to OUSD(I), AF DCGS and NATO Interoperability Enterprise efforts.</p> <p>FY 2016 Accomplishments: - Continued to support to OUSD(I), AF DCGS and NATO Interoperability Enterprise efforts</p> <p>FY 2017 Plans: - Continue to support to OUSD(I), AF DCGS and NATO Interoperability Enterprise efforts</p> <p>FY 2018 Base Plans: - Will continue to support to OUSD(I), AF DCGS and NATO Interoperability Enterprise efforts</p> <p>FY 2018 OCO Plans: N/A</p> | 2.200 | 2.200 | 2.240 | 0.000 | 2.240 |
| Accomplishments/Planned Programs Subtotals | 16.099 | 13.431 | 14.969 | 0.000 | 14.969 |

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

N/A

Remarks

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305240F / Support to DCGS Enterprise | Project (Number/Name) 674826 / Common Imagery Ground / Surface Systems |

D. Acquisition Strategy

The Air Force uses an evolutionary acquisition approach with version releases and periodic upgrades to develop, field, and upgrade the system. The Air Force structures contracts to provide the improved capabilities through full and open competition to the maximum extent possible. For management, the Air Force leads the Multi-Service Execution Team and the DCGS Multi-Service Execution Team (MET) Office (DMO) which coordinates the Joint Service requirements for the DIB in support of USD(I) direction.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305240F / Support to DCGS Enterprise | Project (Number/Name) 674826 / Common Imagery Ground / Surface Systems |
|--|--|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| DIB Modernization, Integration, DT and Interoperability | C/T&M | Various : Various | - | 8.782 | Jan 2016 | 4.055 | Jan 2017 | 6.173 | Jan 2018 | 0.000 | | 6.173 | Continuing | Continuing | - |
| DCGS Test and Community Support | C/CPFF | Various : Various | - | 4.288 | Jun 2016 | 5.996 | Jun 2017 | 5.135 | Jun 2018 | 0.000 | | 5.135 | Continuing | Continuing | - |
| Subtotal | | | - | 13.070 | | 10.051 | | 11.308 | | 0.000 | | 11.308 | - | - | - |

Remarks
 Testbed modernization and licenses is an IDIQ contract with annual award of CPFF delivery orders. Target value of contract represents expected award value for FY17.
 DIB modernization target value of contract represents the ceiling of the contract.

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| DCGS Team Support for DCGS Enterprise | C/Various | Various : Various | - | 2.200 | Jul 2016 | 2.200 | Jul 2017 | 2.240 | Apr 2018 | 0.000 | | 2.240 | Continuing | Continuing | - |
| Subtotal | | | - | 2.200 | | 2.200 | | 2.240 | | 0.000 | | 2.240 | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Mgmt Services | C/CPFF | Various : Bedford, MA | - | 0.351 | Apr 2016 | 0.316 | Apr 2017 | 0.567 | Apr 2018 | 0.000 | | 0.567 | Continuing | Continuing | - |

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305240F / Support to DCGS Enterprise | Project (Number/Name) 674826 / Common Imagery Ground / Surface Systems | |

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | | | | | |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|--|--|--|--|
| | 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 | | | | |
| Field DIB 2017 4.4 | | | | | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | | | | | | | |
| Test Bed Event: Global Hawk Block 30 Flight Test | | | | | ■ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Test Bed Event: Red Flag 17-1 | | | | | | ■ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Test Bed Event: Global Hawk Block 40 Flight Test | | | | | | ■ | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Test Bed Event: Red Flag 17-3 | | | | | | | ■ | | | | | | | | | | | | | | | | | | | | | | | | | |
| Test Bed Event: Enterprise Challenge-17 | | | | | | | ■ | | | | | | | | | | | | | | | | | | | | | | | | | |
| Test Bed Event: Red Flag 18-1 | | | | | | | | | | ■ | | | | | | | | | | | | | | | | | | | | | | |
| Test Bed Event: Red Flag 18-3 | | | | | | | | | | | ■ | | | | | | | | | | | | | | | | | | | | | |
| Test Bed Event: Enterprise Challenge-18 | | | | | | | | | | | | ■ | | | | | | | | | | | | | | | | | | | | |
| Field DIB 2018 4.5 | | | | | | | | | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | | | | | | | |
| Field DIB 2019 4.6 | | | | | | | | | | | | | ■ | ■ | ■ | ■ | | | | | | | | | | | | | | | | |
| Field DIB 2020 4.7 | | | | | | | | | | | | | | | | | ■ | ■ | ■ | ■ | | | | | | | | | | | | |
| Field DIB 2021 4.8 | | | | | | | | | | | | | | | | | | | | | ■ | ■ | ■ | ■ | | | | | | | | |
| Field DIB 2022 4.9 | | | | | | | | | | | | | | | | | | | | | | | | | ■ | ■ | ■ | ■ | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305240F / Support to DCGS Enterprise | Project (Number/Name) 674826 / Common Imagery Ground / Surface Systems |

Schedule Details

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Field DIB 2017 4.4 | 1 | 2017 | 4 | 2017 |
| Test Bed Event: Global Hawk Block 30 Flight Test | 1 | 2017 | 1 | 2017 |
| Test Bed Event: Red Flag 17-1 | 2 | 2017 | 2 | 2017 |
| Test Bed Event: Global Hawk Block 40 Flight Test | 2 | 2017 | 2 | 2017 |
| Test Bed Event: Red Flag 17-3 | 3 | 2017 | 3 | 2017 |
| Test Bed Event: Enterprise Challenge-17 | 3 | 2017 | 3 | 2017 |
| Test Bed Event: Red Flag 18-1 | 2 | 2018 | 2 | 2018 |
| Test Bed Event: Red Flag 18-3 | 3 | 2018 | 3 | 2018 |
| Test Bed Event: Enterprise Challenge-18 | 4 | 2018 | 4 | 2018 |
| Field DIB 2018 4.5 | 1 | 2018 | 4 | 2018 |
| Field DIB 2019 4.6 | 1 | 2019 | 4 | 2019 |
| Field DIB 2020 4.7 | 1 | 2020 | 4 | 2020 |
| Field DIB 2021 4.8 | 1 | 2021 | 4 | 2021 |
| Field DIB 2022 4.9 | 1 | 2022 | 4 | 2022 |

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force **Date: May 2017**

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305240F / Support to DCGS Enterprise | Project (Number/Name) 675265 / Common Imagery Processor (CIP) |
|--|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 675265: Common Imagery Processor (CIP) | - | 12.237 | 9.653 | 11.380 | 0.000 | 11.380 | 11.565 | 11.780 | 11.985 | 12.231 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The Imagery Processing effort develops the Virtual Imagery Processing Capability (VIP-C) within the DCGS architecture. VIP-C accepts airborne imagery data, processes it into an exploitable format, and provides it to other elements within the weapon system and/or the DCGS Enterprise. Current efforts are transitioning the legacy imagery processor from a hardware/software capability to a virtual software capability, thereby improving enterprise processing capabilities. Efforts continue to keep the capability on track to handle the current sensors. Activities also include testing, development, and demonstrations integrating updated and new/emerging sensors into DCGS.

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

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|---------|---------|--------------|-------------|---------------|
| Title: Imagery Processor | 12.237 | 9.653 | 11.380 | - | 11.380 |
| Description: Continue developing VIP-C to keep pace with growing sensor baseline. | | | | | |
| FY 2016 Accomplishments: - Fielded VIP-C Versions 3.38 and 3.4, which developed imagery processing capability to keep pace with growing sensor baseline and matured open processing framework to rapidly integrate new sensors and algorithms | | | | | |
| FY 2017 Plans: - Fielding VIP-C versions to continue to develop imagery processing capability to keep pace with growing sensor baseline and centralizing imagery processing at ingest locations | | | | | |
| FY 2018 Base Plans: - Will field new VIP-C versions to continue developing imagery processing capability to keep pace with growing sensor baseline and centralizing imagery processing at ingest locations | | | | | |
| Accomplishments/Planned Programs Subtotals | 12.237 | 9.653 | 11.380 | - | 11.380 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305240F / Support to DCGS Enterprise | Project (Number/Name) 675265 / Common Imagery Processor (CIP) |
|--|--|---|

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • OPAF: BA04: Line Item #846080: DCGS-AF | 3.526 | 3.532 | 3.611 | 0.000 | 3.611 | 3.697 | 3.780 | 3.521 | 3.585 | Continuing | Continuing |

Remarks

D. Acquisition Strategy

For imagery processing the Air Force uses an evolutionary acquisition approach with increments and spirals to develop, field, and upgrade the system and structure contracts for the improved capabilities through full and open competition to the maximum extent possible. In terms of management, Air Force leads the Cross Service Working Group that aligns imagery processing capabilities across the Joint Services in support of USD(I)direction.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305240F / Support to DCGS Enterprise | Project (Number/Name) 675265 / Common Imagery Processor (CIP) |
|--|--|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Imagery Processing Software Development | C/CPAF | Various : Various | - | 12.237 | Mar 2016 | 9.653 | Mar 2017 | 11.380 | Mar 2018 | 0.000 | | 11.380 | Continuing | Continuing | - |
| Subtotal | | | - | 12.237 | | 9.653 | | 11.380 | | 0.000 | | 11.380 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| | | | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|--|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| Project Cost Totals | | | - | 12.237 | 9.653 | 11.380 | 0.000 | 11.380 | - | - | - |

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305240F / Support to DCGS Enterprise | Project (Number/Name) 675265 / Common Imagery Processor (CIP) |
|--|--|---|

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|-------------------------|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| Software Release (3.38) | ■ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Software Release (3.40) | | ■ | ■ | | | | | | | | | | | | | | | | | | | | | | | | | |
| Software Release (3.42) | | | | ■ | ■ | | | | | | | | | | | | | | | | | | | | | | | |
| Software Release (3.44) | | | | | | ■ | ■ | | | | | | | | | | | | | | | | | | | | | |
| Software Release (3.46) | | | | | | | | ■ | ■ | | | | | | | | | | | | | | | | | | | |
| Software Release (3.48) | | | | | | | | | | ■ | ■ | | | | | | | | | | | | | | | | | |
| Software Release (3.50) | | | | | | | | | | | | ■ | ■ | | | | | | | | | | | | | | | |
| Software Release (3.52) | | | | | | | | | | | | | | ■ | ■ | | | | | | | | | | | | | |
| Software Release (3.x) | | | | | | | | | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305240F / Support to DCGS Enterprise | Project (Number/Name) 675265 / Common Imagery Processor (CIP) |

Schedule Details

| Events | Start | | End | |
|-------------------------|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Software Release (3.38) | 1 | 2016 | 1 | 2016 |
| Software Release (3.40) | 2 | 2016 | 3 | 2016 |
| Software Release (3.42) | 4 | 2016 | 1 | 2017 |
| Software Release (3.44) | 2 | 2017 | 3 | 2017 |
| Software Release (3.46) | 4 | 2017 | 1 | 2018 |
| Software Release (3.48) | 2 | 2018 | 3 | 2018 |
| Software Release (3.50) | 4 | 2018 | 1 | 2019 |
| Software Release (3.52) | 2 | 2019 | 3 | 2019 |
| Software Release (3.x) | 4 | 2019 | 4 | 2022 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

| | |
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| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0305258F I Advanced Evaluation Program |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 0.000 | 116.143 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 675895: SPECIAL PROGRAM | - | 0.000 | 116.143 | 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

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.

B. Program Change Summary (\$ in Millions)

| | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|-------------------------------------|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 116.143 | 152.226 | 0.000 | 152.226 |
| Current President's Budget | 0.000 | 116.143 | 0.000 | 0.000 | 0.000 |
| Total Adjustments | 0.000 | 0.000 | -152.226 | 0.000 | -152.226 |
| • 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 | -152.226 | 0.000 | -152.226 |

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

| | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> |
|---|----------------|----------------|----------------|
| Title: Special Programs | - | 116.143 | - |
| Description: Special Programs | | | |
| FY 2017 Plans: Special Programs | | | |
| Accomplishments/Planned Programs Subtotals | | | |
| | - | 116.143 | - |

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
|------------------|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| • N/A: N/A | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305258F / <i>Advanced Evaluation Program</i> |
|--|--|

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|

Remarks

E. Acquisition Strategy

N/A

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305265F / <i>GPS III Space Segment</i> |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 147.398 | 179.188 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 676007: <i>DASS Integration, GPS</i> | - | 1.286 | 1.295 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 67A019: <i>GPS III</i> | - | 146.112 | 177.893 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |

A. Mission Description and Budget Item Justification

In FY2018, PE 0305265F, GPS III Space Segment efforts were transferred to PE 1203265F, GPS III Space Segment, due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203265F.

| B. Program Change Summary (\$ in Millions) | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 147.398 | 179.188 | 0.000 | 0.000 | 0.000 |
| Total Adjustments | 147.398 | 179.188 | 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 | 147.398 | 179.188 | 0.000 | 0.000 | 0.000 |

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|--|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305265F / GPS III Space Segment | | | | Project (Number/Name) 676007 / DASS Integration, GPS | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 676007: DASS Integration, GPS | - | 1.286 | 1.295 | 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 not provided.

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|--|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305265F / GPS III Space Segment | | | | Project (Number/Name) 67A019 / GPS III | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 67A019: GPS III | - | 146.112 | 177.893 | 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 not provided.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305600F / <i>International Intelligence Technology and Architectures</i> |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 2.298 | 2.360 | 3.491 | 0.000 | 3.491 | 3.527 | 3.579 | 3.725 | 3.774 | Continuing | Continuing |
| 675898: <i>International Intelligence Technology and Arc</i> | - | 2.298 | 2.360 | 3.491 | 0.000 | 3.491 | 3.527 | 3.579 | 3.725 | 3.774 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

International Intelligence Technology and Architectures oversees, manages, and provides the United States (US) component of the multi-national Battlefield Information Collection and Exploitation System (US BICES) with a collaborative environment and intelligence sharing enterprise required for processing and disseminating critical intelligence information between and among US, North Atlantic Treaty Organization (NATO), allied and coalition forces. The US BICES program procures and maintains a standing intelligence information sharing capability across Department of Defense (DoD), Combat Support Agencies, and multiple Combatant Commands (CCMD) for the Under Secretary of Defense, Intelligence (USD (I)). At the request of USD (I), US BICES is extended beyond U.S. European Command (USEUCOM) into all CCMDs and is known as US BICES Extended (US BICES-X). US BICES provides an "enduring" US and Coalition interoperable intelligence sharing multi-level secure technical architecture utilizing releasable elements of the Defense Intelligence Information Enterprise (DI2E) framework and functions to support the full spectrum of intelligence operations and dissemination throughout the DoD community. Also, it enables instantiation of US BICES/BICES-X as the intelligence contribution to the Mission Partner Environment (MPE).

Research and Development funding will:

- Provide increased intelligence information sharing capabilities in support of US and coalition forces utilizing the US BICES and NATO virtual networks within the Afghanistan theater and provide increased database information via Distributed Common Ground System – Army.
- Provide an increase in intelligence disciplines (Imagery Intelligence, Signal Intelligence, and potential Human Intelligence) in support of US and Allied/Coalition forces that currently is very limited to the warfighter. Increased intelligence advanced analytics tools will be migrated from Joint Intelligence Operation Center-IT and DI2E developments and will significantly increase the timeliness of intelligence and bring US BICES/NATO Special Operations Forces Headquarters/NATO Intelligence Fusion Center capabilities into the current technology baselines.
- Develop and provide a federated Trusted Network Environment (TNE) that incorporates the Asian Pacific intelligence Information Network being developed to support the National Defense Strategy as we transition out of Afghanistan and into the Pacific.
- Provide multi-level security intelligence bi-laterals and multi-laterals to meet Combatant Commander Integrated Priority Lists.
- Develop the Coalition Partner Network for CENTCOM, the Coalition Information Exchange Network for SOUTHCOM, and the Coalition Partner Network for EUCOM and AFRICOM.
- Develop the US BICES connections with these bi-lateral and multi-lateral federated TNEs that make up the US BICES-X Enterprise Network in support of Commander SOCOM requirements for conventional and coalition operations as the US migrates into other Combatant Command regions.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

| | |
|---|---|
| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0305600F / International Intelligence Technology and Architectures |
|---|---|

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 2.298 | 2.360 | 2.491 | 0.000 | 2.491 |
| Current President's Budget | 2.298 | 2.360 | 3.491 | 0.000 | 3.491 |
| Total Adjustments | 0.000 | 0.000 | 1.000 | 0.000 | 1.000 |
| • 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 | 1.000 | 0.000 | 1.000 |

Change Summary Explanation

The FY2018 increase supports additional design, development, testing, and technical refresh for cross-domain capabilities (such as the Trusted Network Environment (TNE)), new BICES-enabled ISR capabilities, and new Geospatial Intelligence and biometric tools for the U.S. BICES Enterprise. This will enable the BICES Program Office (BPO) to: a) modernize and transform the US BICES/US BICES-X worldwide enterprise; b) align US BICES/US BICES-X with the Joint Information environment (JIE) and the Defense Intelligence Information Environment (DI2E) standards, process, and framework; c) develop a cybersecurity roadmap and implement improved cybersecurity assessment tools; and d) smartly enhance capability, capacity, and scalability across the US BICES/US BICES-X enterprise seeking improved integration with the Distributed Common Ground/Surface System (DCGS) family of Systems.

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

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| Title: International Intelligence Technology and Architectures | 2.298 | 2.360 | 3.491 | - | 3.491 |
| Description: Continue the research and development in emerging and maturing technologies and capabilities for modernizing and transforming US BICES/BICES-X for improved agility, scalability, access, cybersecurity, and data and information sharing tools and infrastructure. | | | | | |
| FY 2016 Accomplishments: Continued the Certification Test and Evaluation (CT&E) of the next release of the Trusted Network Environment (TNE), providing improvements to existing capabilities, and new services supporting telephony, cross-domain virtual desktop, and data replication capabilities. Research began for the implementation of new services and capabilities, which include advanced search capabilities within the TNE, metadata handling, and restricted user communities for isolating authoritative data sources, integration of multi-domain relational database operations, | | | | | |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305600F / <i>International Intelligence Technology and Architectures</i> |
|--|--|

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

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|---------|---------|--------------|-------------|---------------|
| and an application programming interface that will enhance information sharing through the use of existing applications like Share Point with the TNE. | | | | | |
| FY 2017 Plans: Complete a separate Certification Test and Evaluation (CT&E) for an interim accelerated release of the Trusted Network Environment (TNE) to support the fielding of telephony and cross-domain virtual desktop services more quickly than currently scheduled. Fielding the interim release of the TNE, v2.2. | | | | | |
| FY 2018 Base Plans: Continue the research and development for future releases of the Trusted Network Environment (TNE), to include Identity and Access Management (IdAM), peer-federated chat services, and adding video to the telephony services. Begin the Certification Test and Evaluation (CT&E) of new capabilities, to include the implementation and certification of new services such as video teleconferencing (VTC), metadata handling, restricted user communities for isolating authoritative data sources, integration of multi-domain relational database operations, and an application programming interface that will enhance information sharing through the use of existing applications like Share Point with the TNE. | | | | | |
| Accomplishments/Planned Programs Subtotals | 2.298 | 2.360 | 3.491 | - | 3.491 |

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| • Other Procurement, Air Force: <i>Classified</i> | 0.250 | 18.358 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| • 832050 Other Procurement, Air Force: <i>International Intelligence Technology and Architecture</i> | 0.000 | 0.000 | 22.335 | 8.873 | 31.208 | 15.139 | 15.398 | 15.680 | 15.967 | Continuing | Continuing |

Remarks

FY2017 and prior procurement funding was appropriated under a classified Other Procurement, Air Force P-1 line item.

E. Acquisition Strategy

Utilize existing competitively awarded General Dynamics Mission Systems (GDMS) contract number FA8240-14-D-2751. The contract is structured as a fixed price incentive fee with one base year and four option years and a period of performance beginning 1 June 2014 through 31 May 2019.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

Appropriation/Budget Activity
3600: *Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development*

R-1 Program Element (Number/Name)
PE 0305600F / *International Intelligence Technology and Architectures*

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date: May 2017**

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305614F / JSPOC Mission System |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|-------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 80.669 | 87.889 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 67A030: <i>Infrastructure</i> | - | 30.018 | 27.526 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 67A031: <i>Mission Applications</i> | - | 38.270 | 20.496 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 67A035: <i>INCREMENT 3</i> | - | 12.381 | 39.867 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |

A. Mission Description and Budget Item Justification

In FY2018, PE 0305614F, JSPOC Mission System efforts were transferred to PE 1203614F, JSPOC Mission System due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203614F.

B. Program Change Summary (\$ in Millions)

| | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|-------------------------------------|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 80.669 | 87.889 | 0.000 | 0.000 | 0.000 |
| Total Adjustments | 80.669 | 87.889 | 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 | 80.669 | 87.889 | 0.000 | 0.000 | 0.000 |

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force **Date:** May 2017

| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305614F / JSPOC Mission System | | | | Project (Number/Name) 67A030 / Infrastructure | | | |
|--|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|---|----------------|-------------------------|-------------------|
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 67A030: <i>Infrastructure</i> | - | 30.018 | 27.526 | 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 not provided.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force **Date: May 2017**

| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305614F / JSPOC Mission System | | | | Project (Number/Name) 67A031 / Mission Applications | | | |
|--|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|---|----------------|-------------------------|-------------------|
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 67A031: <i>Mission Applications</i> | - | 38.270 | 20.496 | 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 not provided.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305614F / JSPOC Mission System | | | | Project (Number/Name) 67A035 / INCREMENT 3 | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 67A035: INCREMENT 3 | - | 12.381 | 39.867 | 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 not provided.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305881F / <i>Rapid Cyber Acquisition</i> |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 3.036 | 4.280 | 4.899 | 0.000 | 4.899 | 4.336 | 4.416 | 4.493 | 4.585 | Continuing | Continuing |
| 670374: <i>Electronic Combat Spt, C3 Protection/Multi-Mission, Technology and Spt</i> | - | 3.036 | 4.280 | 4.899 | 0.000 | 4.899 | 4.336 | 4.416 | 4.493 | 4.585 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

Rapid Cyber Acquisition (RCA) provides combatant commanders with the ability to rapidly respond to emerging cyber needs. RCA provides rapid fielding of capabilities in three areas: defend the Air Force portion of the DoD Global Information Grid (GIG) in response to emerging threats; network attack and cyber exploitation capabilities through all phases of warfare; and new cyber operational capabilities that address cyber gaps in evolving mission areas.

RCA delivers operational cyber capabilities to 24th Air Force (24 AF) warfighters in mission-relevant timeframes. RCA provides capabilities in support of US national security interests, to counter current and future cyber threats, and to enhance the nation's ability to operate in cyberspace. It expedites cyber development and modifications of USAF and DoD cyber capabilities. RCA provides solution sets for cyberspace operations: attack, defense, command and control/situational awareness, exploitation, critical infrastructure support, combat support and cybersecurity products and services. RCA provides integration, and technical support to other Service and Government Agency activities to leverage select Air Force-developed technologies and/or operational capabilities. RCA will develop materiel or non-materiel cyber solutions, conduct rapid prototyping, integration and transition activities for cyber systems. Activities include, but are not limited to: development of software/hardware systems; integration and transition of lab-developed cyber capabilities to the warfighter; testing and evaluation; program management administration, studies, analysis, pilots, demonstrations, and risk reduction for emerging technologies.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305881F / <i>Rapid Cyber Acquisition</i> |
|--|--|

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 3.149 | 4.280 | 4.885 | 0.000 | 4.885 |
| Current President's Budget | 3.036 | 4.280 | 4.899 | 0.000 | 4.899 |
| Total Adjustments | -0.113 | 0.000 | 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 | -0.113 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 0.014 | 0.000 | 0.014 |

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Title: RCA Hardware/Software Development | 3.036 | 4.080 | 4.300 |
| Description: Hardware and software cyber security enhancement in support of offensive, defensive, command and control/ situational awareness weapon system requirements. | | | |
| FY 2016 Accomplishments: | | | |
| - Developed urgent cyber operational capabilities: | | | |
| -- Cyber Operations Research Terminals (details classified) | | | |
| -- Developed Secure data warehouse | | | |
| -- Automated Compliance Tracking | | | |
| -- CMF Team Site Infrastructure | | | |
| - Provided technical support to other Services | | | |
| FY 2017 Plans: | | | |
| - Continue development of: | | | |
| -- Strategic Worldwide Integration Capability (SWIC)/Net-Cross Domain Solutions (NetCDS) effort in support of the Cyber Command Control System (C3MS). | | | |
| -- Automated Cyber Tool Development (ACTD) in support of OCO. | | | |
| -- Developed Access in support of the Cyber Vulnerability Assessment/Hunter (CVA/H) weapon system | | | |
| - Begin development of: | | | |
| -- Mission Oriented Mapping (MOM) in support of CVA/H weapon system. | | | |
| -- Single Sign-On and Router Defense Phase 1 in support of the Air Force Cyber Defense (ACD) weapon system | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0305881F / <i>Rapid Cyber Acquisition</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <ul style="list-style-type: none"> -- Voice Over Internet Protocol (VOIP) Monitoring in support of Cyberspace Defense Analysis (CDA) weapon system -- Router Defense Phase 1 for ACD weapon system -- Network Vulnerability Assessment in support of the Cyber Security Control System (CSCS) weapon system - Continue to provide technical support efforts to other Services - Begin to provide technical support to other Government Agencies <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will continue testing of capabilities developed prior to future fielding - Will continue actions to provide a secure network environment for required test events - Will continue to provide independent operational and technical assessments of cyber capabilities and vulnerabilities | | | | |
| <p>Title: RCA Hardware Integration</p> <p>Description: Integrates organically developed and/or acquired capabilities for the following AF Weapon System Sustainment (WSS) programs: Cyberspace Vulnerability Assessment/Hunter (CVA/H), Cyber Security Control System (CSCS), Cyberspace Defense Analysis (CDA), Air Force Cyber Defense (ACD), and Cyber Command and Control Mission System (C3MS).</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - N/A <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Begin integration efforts and technical support to the fielding of RCA efforts to the Air Force other Services, and other Government Agencies - Begin leveraging select Air Force developed technologies and/or operational capabilities <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will continue testing of capabilities developed prior to future fielding - Will continue actions to provide a secure network environment for required test events - Will continue to provide independent operational and technical assessments of cyber capabilities and vulnerabilities | | 0.000 | 0.100 | 0.499 |
| <p>Title: Test & Evaluation</p> <p>Description: Provides a secure network environment to support testing in preparation for the fielding of RCA efforts.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - N/A <p>FY 2017 Plans:</p> | | 0.000 | 0.100 | 0.100 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305881F / <i>Rapid Cyber Acquisition</i> |
|--|--|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| - Begin test of and technical support to the fielding of RCA efforts to the Air Force, other Services, and other Government Agencies - Begin leveraging and evaluating select Air Force developed technologies and/or operational capabilities FY 2018 Plans: - Will continue testing of capabilities developed prior to future fielding - Will continue actions to provide a secure network environment for required test events - Will continue to provide independent operational and technical assessments of cyber capabilities and vulnerabilities | | | |
| Accomplishments/Planned Programs Subtotals | 3.036 | 4.280 | 4.899 |

| D. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
| • N/A: N/A | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - |

Remarks

E. Acquisition Strategy

Rapid Cyber Acquisition utilizes a tailorable acquisition strategy that facilitates rapid delivery of material and non-material solutions to solve operational cyber needs. This approach allows flexibility for solutions to enter into the acquisitions process at any phase of the acquisitions life cycle management system. These plans meet the written acquisition planning requirements and guidance. All plans will contain sufficient information for the Milestone Decision Authority to determine readiness to enter into the applicable phase of the acquisition process. Rapid Cyber Acquisition considers existing contracting vehicles, including but not limited to: Network Centric Solutions (NETCENTS), NETCENTS 2, Information Technology Enterprise Solutions-2 (ITES-2), Government-Wide Acquisition Contract vehicles (Alliant, Encore II, Solutions for Enterprise-Wide Procurement IV (SEWP IV)), General Services Administration Federal Supply Schedules, HNCY Cyber Indefinite Delivery Indefinite Quantity (IDIQ) contract, National Security Agency vehicles and Cyber Warfare Systems Branch Class Justification and Approval document. Multiple award contractual vehicles, such as National Aeronautics and Space Administration's SEWP IV, provide a wide range of commercially-available products and services that should be able to meet many requirements related to Rapid Cyber Acquisition. These multiple-award vehicles have already met the statutory requirements of the Competition in Contracting Act and only require that Rapid Cyber Acquisition provide a fair opportunity to all contract holders, in accordance with Federal Acquisition Regulation 16.505, unless an exception to fair opportunity applies.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0305906F / NCMC - TW/AA System |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 0.000 | 4.951 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 4.951 |
| 67A051: Space Superiority - Advanced Intelligence Systems | - | 0.000 | 4.951 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 4.951 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

In FY2018, PE 0305906F, NCMC - TW/AA System efforts were transferred to PE 1203906F NCMC - TW/AA System due to the creation of a new Major Force Program for Space. FY2017 funding is now documented in the exhibits for PE 1203906F.

B. Program Change Summary (\$ in Millions)

| | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|-------------------------------------|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 4.951 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 0.000 | 4.951 | 0.000 | 0.000 | 0.000 |
| Total Adjustments | 0.000 | 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 | 0.000 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Change Summary Explanation

FY17: Funding added to complete an Analysis of Alternatives for the Integrated Tactical Warning and Attack Assessment (ITW/AA) Command and Control (C2) system.

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

| | FY 2016 | FY 2017 | FY 2018 |
|---------------------------------|---------|---------|---------|
| Title: N/A | 0.000 | 4.951 | 0.000 |
| Description: N/A | | | |
| FY 2016 Accomplishments: | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305906F / NCMC - TW/AA System |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| N/A | | | |
| <i>FY 2017 Plans:</i> N/A | | | |
| <i>FY 2018 Plans:</i> N/A | | | |
| Accomplishments/Planned Programs Subtotals | 0.000 | 4.951 | 0.000 |

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

N/A

Remarks

E. Acquisition Strategy

N/A

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305913F / <i>NUDET Detection System (SPACE)</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 14.403 | 21.093 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 672808: <i>Nuc Detonation Det Sys (sensors)</i> | - | 14.403 | 21.093 | 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

In FY2018, PE 0305913F, NUDET Detection System efforts were transferred to PE 1203913F, NUDET Detection System, due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203913F.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 14.403 | 21.093 | 0.000 | 0.000 | 0.000 |
| Total Adjustments | 14.403 | 21.093 | 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 | 14.403 | 21.093 | 0.000 | 0.000 | 0.000 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date: May 2017**

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305940F / <i>Space Situation Awareness Operations</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 23.416 | 93.802 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 670004: <i>Other STRATCOM Activities</i> | - | 0.000 | 73.652 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 67A017: <i>Sensor Service Life Extension Program</i> | - | 23.416 | 20.150 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |

A. Mission Description and Budget Item Justification

In FY2018, PE 0305940F, BA07, Space Situational Awareness Operations efforts were transferred to PE 1203940F, BA07, Space Situational Awareness Operations due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203940F.

B. Program Change Summary (\$ in Millions)

| | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|-------------------------------------|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 23.416 | 93.802 | 0.000 | 0.000 | 0.000 |
| Total Adjustments | 23.416 | 93.802 | 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 | 23.416 | 93.802 | 0.000 | 0.000 | 0.000 |

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force **Date: May 2017**

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|--|---|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0305940F / <i>Space Situation Awareness Operations</i> | Project (Number/Name) 670004 / <i>Other STRATCOM Activities</i> |
|--|---|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| <i>670004: Other STRATCOM Activities</i> | - | 0.000 | 73.652 | 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 not provided.

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0305940F / <i>Space Situation Awareness Operations</i> | | | | Project (Number/Name) 67A017 / <i>Sensor Service Life Extension Program</i> | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 67A017: <i>Sensor Service Life Extension Program</i> | - | 23.416 | 20.150 | 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 not provided.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305984F / <i>Personnel Recovery Command & Ctrl (PRC2)</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 0.000 | 0.000 | 2.445 | 0.000 | 2.445 | 2.485 | 2.531 | 2.575 | 2.628 | Continuing | Continuing |
| 675221: <i>Personnel Recovery Command and Control (PRC2)</i> | - | 0.000 | 0.000 | 2.445 | 0.000 | 2.445 | 2.485 | 2.531 | 2.575 | 2.628 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note
 In FY 2018, PE 0207410F, Air & Space Operations Center (AOC), Project Number 675221, Personnel Recovery Command and Control (PRC2), efforts were transferred to PE 0305984F, Personnel Recovery Command & Ctrl (PRC2), Project Number 675221, Personnel Recovery Command and Control (PRC2), in order to improve visibility on Service's fair share of development funding for this joint interest program. This is not a new start.

A. Mission Description and Budget Item Justification

This project funds operational development necessary to acquire, modify, and sustain a segment of Air Force's C2 capabilities and services associated with Personnel Recovery. The Personnel Recovery Command and Control (PRC2) program develops and delivers tools and services for planning, collaborating and managing search and rescue efforts, as well as disseminating related information to all personnel recovery mission coordinators across PR network. PRC2 provides an adaptive and networked system, delivering timely situational awareness information supporting personnel accountability and recovery mission management worldwide. PRC2 delivers a globally accessible, collaborative, interoperable and integrated set of capabilities to prevent, prepare for and respond to joint/coalition military personnel recovery activities, and civilian rescue missions. The Joint Personnel Recovery (JPR) Initial Capability Document (ICD) (2012) articulates capabilities needed for PRC2.

The system collects, stores and delivers personnel/identity biometric data, emergency locator beacon registrations, isolated personnel reports, evasion plans of action, incident reports and other information management capabilities. The information is used for predictive, preventive and personnel vulnerability analysis and assessment in support of Personnel Recovery across Department of Defense and other national and international entities.

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

In FY18, Personnel Recovery Mission Software (PRMS) modifications are required to develop and field PRMS 5.0 to enable the transition from the existing Web Forms implementation to a Model View Controller (MVC) implementation. This release will also address known Deficiency Reports (DR), incorporate user inputs, facilitate reducing maintenance costs to operate PRMS, updating the User Interface (UI) to a modern design, and increase overall efficiency. Additionally, Personnel Recovery Mission Manager (PRMM) modifications will import/validate Isolated Personnel (IP) events/alerts, import/validate Isolated Personnel (IP) events/alerts and enable case files for Defense Prisoner of War/Missing Personnel Office (DPMO) and Joint Personnel Recovery Agency (JPRA).

BA7 - This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0305984F I Personnel Recovery Command & Ctrl (PRC2) |
|---|--|

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 0.000 | 0.000 | 2.445 | 0.000 | 2.445 |
| Total Adjustments | 0.000 | 0.000 | 2.445 | 0.000 | 2.445 |
| • 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 | 2.445 | 0.000 | 2.445 |

Change Summary Explanation

In FY 2018, PE 0207410F, Air & Space Operations Center (AOC), Project Number 675221, Personnel Recovery Command and Control (PRC2), efforts were transferred to PE 0305984F, Personnel Recovery Command & Ctrl (PRC2), Project Number 675221, Personnel Recovery Command and Control (PRC2), in order to improve visibility on Service's fair share of development funding for this joint interest program. This is not a new start.

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Title: Personnel Recovery Command and Control (PRC2) | 0.000 | 0.000 | 2.095 |
| Description: PRC2 is developing and delivering tools and services for planning and managing search and rescue efforts, and disseminating related information. | | | |
| FY 2016 Accomplishments: N/A | | | |
| FY 2017 Plans: N/A | | | |
| FY 2018 Plans: - Continue development of PRMM version 3.0.0 (formerly PRMM version 3.0 maintenance release fielding) - Develop and field PRC 4.0.0 Enclave | | | |
| Title: Test and Evaluation | 0.000 | 0.000 | 0.350 |
| Description: Test and Evaluation | | | |
| FY 2016 Accomplishments: | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0305984F / <i>Personnel Recovery Command & Ctrl (PRC2)</i> |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| N/A | | | |
| FY 2017 Plans: N/A | | | |
| FY 2018 Plans: - Will test and evaluation PRMS version 5.0 and PRMM version 3.0.0 - Continue to test PRMM 2.0 | | | |
| Accomplishments/Planned Programs Subtotals | 0.000 | 0.000 | 2.445 |

| D. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
| • 834520: <i>Theater Battle Management C2 System</i> | 1.255 | 1.252 | 1.286 | 0.000 | 1.286 | 1.310 | 1.333 | 1.357 | 1.382 | 0.00 | 0.000 |

Remarks

E. Acquisition Strategy
 PRC2 product support is provided to the program office by the 517th Software Maintenance Squadron (517 SMXS), Hill AFB Utah, in accordance with a memorandum of agreement and on a fee for service basis. This strategy to utilize the 517 SMXS for agile product development and sustainment was reviewed and approved by the Air Force Program Executive Officer for Battle Management, and implemented in mid-FY 2014. The work done by the 517 SMXS includes, but is not limited to, modernization development, sustainment support services, and software maintenance of the PRC2 system.

F. Performance Metrics
 Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0307577F / <i>Intelligence Mission Data (IMD)</i> |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 0.000 | 0.000 | 8.684 | 0.000 | 8.684 | 4.148 | 2.048 | 1.269 | 1.294 | Continuing | Continuing |
| 675306: <i>Analysis Enterprise</i> | - | 0.000 | 0.000 | 5.074 | 0.000 | 5.074 | 1.347 | 1.248 | 1.269 | 1.294 | Continuing | Continuing |
| 675307: <i>TARGETING ENTERPRISE RESEARCH</i> | - | 0.000 | 0.000 | 3.610 | 0.000 | 3.610 | 2.801 | 0.800 | 0.000 | 0.000 | Continuing | Continuing |

Note

This program, BA 07 PE 0307577F, project 675306, IMD Production Tools, is a new start.

This program, BA 07 PE 0307577F, project 675307, Operational Reconnaissance ELINT Capabilities, is a new start.

This program, BA 07 PE 0307577F, project 675307, Advanced NCTR Collection, is a new start.

A. Mission Description and Budget Item Justification

Intelligence Mission Data (IMD) is part of the ELINT initiative to improve overall USAF intelligence, surveillance, and reconnaissance (ISR) capability through development and use of sensor data from non-ISR platforms and innovative use of sensors. This program pursues operational reconnaissance capabilities for transition through development, testing, demonstration and implementation efforts across all platforms. The IMD program objective is to provide increased battlespace awareness through the use of sensors/platforms to achieve effects beyond what those sensor/platforms were originally designed. This Electronic Warfare (EW) data provides high fidelity collection on detected emissions within the electromagnetic spectrum as encountered by the platform during normal conduct of the mission. Utilizing machine-to-machine interfaces for data transfer from platforms to ISR analysts during combat operations will provide a prime source of information when fused with other data sources and will help to resolve anomalies without degradation of the platform's EW sensor's primary mission/function. IMD will be stored long term in the Electronic Warfare Data Management System (EWDMS) and made available to multiple customers. This data will be used to aid in reprogramming EW sensors for increased platform survivability as well as advanced analytics for intelligence purposes.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0307577F / <i>Intelligence Mission Data (IMD)</i> |
|--|--|

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 0.000 | 0.000 | 8.684 | 0.000 | 8.684 |
| Total Adjustments | 0.000 | 0.000 | 8.684 | 0.000 | 8.684 |
| • 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 | 8.684 | 0.000 | 8.684 |

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0307577F / Intelligence Mission Data (IMD) | Project (Number/Name) 675306 / Analysis Enterprise |
|--|---|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|-----------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 675306: Analysis Enterprise | - | 0.000 | 0.000 | 5.074 | 0.000 | 5.074 | 1.347 | 1.248 | 1.269 | 1.294 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note
This program, BA 07 PE 0307577F, project 675306, IMD Production Tools, is a new start.

A. Mission Description and Budget Item Justification

In FY 2018, PE 0207431F, Combat Air Intelligence Systems, Intelligence Mission Data efforts were transferred to new for 2018 PE 0307577F, Intelligence Mission Data (IMD), in order to provide better oversight of IMD research and development. (+\$5.074M)

Intelligence Mission Data efforts in BPAC 675306, Analysis Enterprise, fund RDT&E for IMD Production Tools. These tools enable the collection, storage, and dissemination of Electronic Intelligence (ELINT) gathered during operational missions by currently fielded air platforms.

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

| | FY 2016 | FY 2017 | FY 2018 |
|--|---------|---------|---------|
| Title: IMD Production Tools | - | - | 5.074 |
| Description: Development of software tools to facilitate the production & dissemination of actionable electronic intelligence based on intelligence mission data | | | |
| FY 2018 Plans: Development of software tools to facilitate the production & dissemination of actionable electronic intelligence based on intelligence mission data | | | |
| Accomplishments/Planned Programs Subtotals | | | |
| | - | - | 5.074 |

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

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--------------------------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Line Item • N/A: N/A | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - |

Remarks

D. Acquisition Strategy

N/A

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0307577F / <i>Intelligence Mission Data (IMD)</i> | Project (Number/Name) 675306 / <i>Analysis Enterprise</i> |

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0307577F / <i>Intelligence Mission Data (IMD)</i> | | | | Project (Number/Name) 675307 / <i>TARGETING ENTERPRISE RESEARCH</i> | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 675307: <i>TARGETING ENTERPRISE RESEARCH</i> | - | 0.000 | 0.000 | 3.610 | 0.000 | 3.610 | 2.801 | 0.800 | 0.000 | 0.000 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note

This program, BA 07 PE 0307577F, project 675307, Operational Reconnaissance ELINT Capabilities, is a new start.
 This program, BA 07 PE 0307577F, project 675307, Advanced NCTR Collection, is a new start.

A. Mission Description and Budget Item Justification

In FY 2018, PE 0207431F, Combat Air Intelligence Systems, Intelligence Mission Data efforts were transferred to new for 2018 PE 0307577F, Intelligence Mission Data (IMD), in order to provide better oversight of IMD research and development. (+\$5.074M)

Intelligence Mission Data efforts in BPAC 675307, Targeting Enterprise Research, fund RDT&E for Operational Reconnaissance ELINT Capabilities; Tactical Data Recorder; Advanced Non-cooperative Target Recognition (NCTR) Collection.

These tools enable the collection, storage, and dissemination of Electronic Intelligence (ELINT) gathered during operational missions by currently fielded air platforms.

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

| | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Title: Operational Reconnaissance ELINT Capabilities | - | - | 1.805 |
| Description: RDT&E efforts to develop recording, storage, and dissemination systems for ELINT gathered during operational missions. | | | |
| FY 2018 Plans: RDT&E efforts to develop recording, storage, and dissemination systems for ELINT gathered during operational missions. | | | |
| Title: Advanced NCTR Collection | - | - | 1.805 |
| Description: RDT&E efforts to accurately characterize and disseminate information about targets based on information gathered by aircraft NCTR system. | | | |
| FY 2018 Plans: RDT&E efforts to accurately characterize and disseminate information about targets based on information gathered by aircraft NCTR system. | | | |
| Accomplishments/Planned Programs Subtotals | - | - | 3.610 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0307577F / Intelligence Mission Data (IMD) | Project (Number/Name) 675307 / TARGETING ENTERPRISE RESEARCH |

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0308699F / <i>Shared Early Warning (SEW)</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 0.845 | 6.366 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 674838: <i>Shared Early Warning System</i> | - | 0.845 | 6.366 | 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

In FY 2018, PE 0308699F, Shared Early Warning (SEW) efforts were transferred to PE 1203699F, Shared Early Warning (SEW) due to the creation of a new Major Force Program for Space. FY 2016 and FY 2017 funding is now documented in the exhibits for PE 1203699F.

| B. Program Change Summary (\$ in Millions) | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 0.845 | 6.366 | 0.000 | 0.000 | 0.000 |
| Total Adjustments | 0.845 | 6.366 | 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 | -0.004 | 0.000 | | | |
| • Other Adjustments | 0.849 | 6.366 | 0.000 | 0.000 | 0.000 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | 0.000 | 33.962 | 15.599 | 10.219 | 0.000 | 10.219 | 133.708 | 135.938 | 113.522 | 33.750 | 0.000 | 476.698 |
| 675248: <i>C-130H Avionics Modernization Program (AMP) Increment 1</i> | 0.000 | 33.962 | 8.421 | 1.965 | 0.000 | 1.965 | 13.109 | 7.215 | 0.000 | 0.000 | 0.000 | 64.672 |
| 675250: <i>C-130H Avionics Modernization Program (AMP) Increment 2</i> | 0.000 | 0.000 | 7.178 | 8.254 | 0.000 | 8.254 | 120.599 | 128.723 | 113.522 | 33.750 | 0.000 | 412.026 |

A. Mission Description and Budget Item Justification

In FY 2017, C-130H Avionics Modernization Program (AMP) Increment 2 was a new start.

The FY2018 funding was reduced by \$13.700M from "C-130H Avionics Modernization Program (AMP) Increment 1" to account for the availability of prior year execution balances and adjust to the FY17 Program Office Cost Estimate. FY2018 funding for C-130H AMP Increment 2 was also reduced by \$66.800M to adjust to the approved FY17 Program Office Estimate.

The C-130H is a medium sized tactical transport aircraft providing multi-purpose theater support throughout the globe. The C-130H fleet supports several diverse Air Force roles, including but not limited to tactical and inter-theater airlift and airdrop support, Arctic resupply, special operations support, aeromedical evacuation, aerial spraying, firefighting duties, and natural disaster and humanitarian relief missions.

C-130H AMP Increment 1 addresses modifications to meet airspace compliance mandates and safety requirements. RDT&E efforts will cover design, integration, developmental and operational test, trial kit buy and installation, Initial Spares, Peculiar Support Equipment, Type 1 training and C-130H aircrew and maintenance training systems and courseware development efforts.

C-130H AMP Increment 2 includes digital avionics upgrades (e.g. Flight Management System, improved navigation), cockpit modernization (e.g. glass/engine flight displays) and resolves select obsolescence and Diminishing Manufacturing Source (DMS) issues. RDT&E efforts will cover software development, design, integration, developmental and operational test, trial kit buy and installation, technical order development validation and verification, Initial Spares, Peculiar Support Equipment, SIL development, Type 1 training and C-130H aircrew and maintenance training systems and courseware development efforts.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full-rate production and anticipate production funding in the current or subsequent fiscal year.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron |
|--|--|

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 33.962 | 15.599 | 90.697 | 0.000 | 90.697 |
| Current President's Budget | 33.962 | 15.599 | 10.219 | 0.000 | 10.219 |
| Total Adjustments | 0.000 | 0.000 | -80.478 | 0.000 | -80.478 |
| • 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 | -80.478 | 0.000 | -80.478 |

Change Summary Explanation

FY18 includes a reduction of \$13.7M from "C-130H AMP Increment 1" to account for availability of prior year execution balances and adjust to FY17 Program Office Estimate.

FY18 includes a reduction of \$66.8M in "C-130H AMP Increment 2" to adjust to the approved FY17 Program Office Estimate.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron | | | | Project (Number/Name) 675248 / C-130H Avionics Modernization Program (AMP) Increment 1 | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 675248: C-130H Avionics Modernization Program (AMP) Increment 1 | 0.000 | 33.962 | 8.421 | 1.965 | 0.000 | 1.965 | 13.109 | 7.215 | 0.000 | 0.000 | 0.000 | 64.672 |
| Quantity of RDT&E Articles | - | - | - | 4 | - | 4 | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The C-130H AMP Increment 1 program performs modifications to meet airspace compliance and safety mandates; the mod includes automatic dependent surveillance-broadcast (ADS-B) Out, enhanced Mode S, 8.33 kHz radios, and cockpit voice recorder/digital flight data recorder (CVR/DFDR).

RDT&E efforts will include but not be limited to design, integration, developmental and operational test, trial kit buy and installation, Initial Spares, Peculiar Support Equipment, Type 1 training and C-130H aircrew and maintenance training systems and courseware development efforts (including MODE 5 effort for the trainers). Obsolescence and diminishing manufacturing sources (DMS) issues will be resolved with solutions that may include life of type buys or bridge buys. DMS efforts to include removal of end of-life software/hardware within simulators systems and move to a modular, common open system architecture that is sustainable and cyber-resilient. Implement requirements and standards defined under the Simulator Common Architecture Requirements and Standards (SCARS) initiative.

The C-130H AMP Increment 1 program modifies 176 aircraft (170x C-130Hs and 6x LC-130Hs) consisting of H3s, H2.5s, H2s and H1s; and includes 131 Air National Guard aircraft, and 45 Air Force Reserve aircraft. Potential of up to an additional 4 production kits (not included in the funding line) for National Science Foundation aircraft. The modification effort will have up to 6 prototype aircraft representative of variations in the mission designs and required for accomplishment of the C-130H AMP Increment 1 Engineering and Manufacturing Development (EMD) phase. The remaining aircraft will be modified in the production phase.

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

| | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Title: C-130H AMP Increment 1 | 33.962 | 8.421 | 1.965 |
| Description: Refined and completed the requirements definition phase of the program, followed by integration planning, and the Engineering and Manufacturing Development (EMD) phase activities. | | | |
| FY 2016 Accomplishments: Developed documentation, Request for Proposal (RFP) developed and released, began source selection and ramped up Engineering and Manufacturing Development (EMD) phase activities. | | | |
| FY 2017 Plans: Continuation of EMD activities including Milestone B, Contract Award, design and integration, Preliminary and Critical Design Reviews. | | | |
| FY 2018 Plans: | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron | Project (Number/Name) 675248 / C-130H Avionics Modernization Program (AMP) Increment 1 |

| | | | |
|--|----------------|----------------|----------------|
| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
| Continuation of EMD activities including design & integration, trial kit assembly and installations on test aircraft, peculiar support equipment and initial spares buy, technical order development and validation/verification, development and operational testing. | | | |
| Accomplishments/Planned Programs Subtotals | 33.962 | 8.421 | 1.965 |

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

| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| • APAF: BA05: Line Item # C13000: C-130 | 70.000 | 0.000 | 15.500 | 0.000 | 15.500 | 51.543 | 15.261 | 3.878 | 4.329 | 0.000 | 189.582 |
| • APAF: BA06: Line Item # 000999: Initial Spares/Repair Parts | 0.000 | 0.000 | 2.814 | 0.000 | 2.814 | 8.221 | 6.401 | 6.516 | 6.633 | 0.000 | 30.585 |

Remarks
C-130H AMP Increment 1 Procurement funding begins in FY18; however, the program also received a congressional add of \$70M APAF in FY16.

D. Acquisition Strategy

C-130H AMP Increment 1 acquisition strategy (30 Sept 2015) is to conduct a full and open competitive source selection for ADS-B Out and Enhanced Mode S followed by a Federal Acquisition Regulation (FAR) Part 15 contract award. Current efforts are primarily focused on the execution of Engineering and Manufacturing Development (EMD). Contract awarded in 2nd quarter FY17.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron | | | | Project (Number/Name) 675250 / C-130H Avionics Modernization Program (AMP) Increment 2 | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 675250: C-130H Avionics Modernization Program (AMP) Increment 2 | 0.000 | 0.000 | 7.178 | 8.254 | 0.000 | 8.254 | 120.599 | 128.723 | 113.522 | 33.750 | 0.000 | 412.026 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | 3 | 1 | - | | |

A. Mission Description and Budget Item Justification

The C-130H AMP Increment 2 upgrades the C-130H fleet with comprehensive avionics and cockpit modernization which replaces aging unreliable equipment and adds combat capability enhancements. It also addresses select obsolescence and diminishing manufacturing sources (DMS) issues with solutions that may include life of type buys or bridge buys. DMS efforts to include removal of end-of-life software/hardware within simulators systems and move to a modular, common open system architecture that is sustainable and cyber-resilient. Implement requirements and standards defined under the Simulator Common Architecture Requirements and Standards(SCARS)initiative.

RDT&E efforts include but are not limited to software development, design, integration, developmental & operational test, trial kit buy and installation, technical order development validation and verification, Peculiar Support Equipment, Initial Spares, SIL development, Type 1 training, and C-130H aircrew and maintenance training systems and courseware development efforts.

The C-130H AMP Increment 2 program modifies a minimum of 176 aircraft (170x C-130Hs and 6x LC-130Hs) consisting of H3s, H2.5s, H2s and H1s; and includes 131 Air National Guard aircraft, and 45 Air Force Reserve aircraft. Potential of an additional 4 production kits (not included in funding line above); for National Science Foundation aircraft. The modification effort will have up to 8 prototype aircraft representative of variations in the mission designs and required for accomplishment of the Engineering and Manufacturing Development (EMD) phase. The remaining aircraft will be modified in the production phase.

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

| | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Title: C-130H Avionics Modernization Program (AMP) Increment 2 | 0.000 | 7.178 | 8.254 |
| Description: Refined and completed the requirements definition phase of the program, followed by integration planning and the Engineering and Manufacturing Development (EMD) phase activities. | | | |
| FY 2016 Accomplishments: N/A | | | |
| FY 2017 Plans: EMD activities including market research, documentation development, Request for Proposal (RFP) issuance, Source Selection and Milestone B preparation. | | | |
| FY 2018 Plans: | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0401115F / C-130 Airlift Squadron | Project (Number/Name) 675250 / C-130H Avionics Modernization Program (AMP) Increment 2 |

| | | | |
|--|----------------|----------------|----------------|
| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
| Continuation of EMD phase activities including Source Selection and Milestone B preparation. | | | |
| Accomplishments/Planned Programs Subtotals | 0.000 | 7.178 | 8.254 |

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

| Line Item | FY 2016 | FY 2017 | FY 2018 | FY 2018 | FY 2018 | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To | |
|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|------------|------------|
| | | | Base | OCO | Total | | | | | Complete | Total Cost |
| • APAF: BA05: Line Item # C13000: C-130 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 58.114 | 160.989 | Continuing | Continuing |
| • APAF: BA06: Line Item # 000999: Initial Spares/Repair Parts | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 6.555 | 14.952 | Continuing | Continuing |

Remarks

The C-130H Avionics Modernization Program (AMP) Increment 2 procurement funding begins in FY21.

D. Acquisition Strategy

C-130H AMP Increment 2 acquisition strategy intends to conduct a full and open competitive source selection followed by contract award. Current efforts are primarily defining the program requirements and pre-contract efforts in preparation for the Engineering and Manufacturing Development (EMD) source selection. The current schedule reflects EMD contract to be awarded in 1st quarter FY19.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

| | |
|--|---|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401119F / <i>C-5 Airlift Squadrons (IF)</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 22.766 | 66.146 | 22.758 | 0.000 | 22.758 | 21.803 | 0.000 | 0.000 | 0.000 | 0.000 | 133.473 |
| 675358: <i>C-5 Mission Computer-Mission Sys Equip-Weather Radar</i> | - | 7.403 | 11.837 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 19.240 |
| 675359: <i>CNS/ATM Mode5 Swift Broadband BLOS/LOS Radio</i> | - | 15.363 | 54.309 | 22.758 | 0.000 | 22.758 | 21.803 | 0.000 | 0.000 | 0.000 | 0.000 | 114.233 |

A. Mission Description and Budget Item Justification

675358: The C-5 core mission computer (CMC)/Weather Radar modification project is a comprehensive sustainment modification to mitigate the obsolescence of the current CMC and weather radar. This effort centers on modifying the current mission computer by replacing core processing module (CPM) cards to obtain sufficient capacity to support integration of new system capabilities with margin for growth by upgrading module cards and correcting any mission essential deficiencies identified during development. Also, the effort includes replacement of the weather radar with a commercial off-the-shelf color weather radar. The modified mission computer will allow for current and future throughput growth of additional processing requirements to meet calendar year 2020 communication, navigation, surveillance/air traffic management mandates.

675359: The C-5 communication, navigation, surveillance/air traffic management (CNS/ATM) modification project is a comprehensive effort to ensure appropriate system design architectures are developed and equipment is installed on the C-5 to allow aircraft operation in accordance with civil airspace access mandates for both the US National Airspace System (NAS) and international civil airspace. Additionally, the program will add equipment to meet outstanding National Security Agency mandates for encryption of voice communications. The C-5 CNS/ATM program ensures systems standardization and interoperability with other DoD systems to the maximum extent possible and directly supports airworthiness certification of the C-5. CNS/ATM requirements include, but are not limited to, capabilities such as automatic dependent surveillance-broadcast out (ADS-B Out), identification friend or foe (IFF) Mode 5, satellite communication equipment replacement, and beyond line-of-sight voice radio replacement. It is anticipated equipment will be predominately commercial off-the-shelf or non-developmental items.

Automatic Dependent Surveillance-Broadcast Out (ADS-B Out) is a next generation surveillance technology that transitions key aspects of Air Traffic Control from terrestrial based technologies to satellite enabled technologies to provide controllers a more accurate picture of aircraft positioning.

The FY 2018 funding was reduced by \$8 million for higher AF priorities. The C-5 CNS/ATM program also rephased \$15.934 million of FY 2018 funds into FY 2019. Total adjustment in FY 2018 was \$23.934 million.

In FY 2016 CNS/ATM was a new start.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401119F / <i>C-5 Airlift Squadrons (IF)</i> |
|--|---|

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 22.864 | 66.146 | 46.692 | 0.000 | 46.692 |
| Current President's Budget | 22.766 | 66.146 | 22.758 | 0.000 | 22.758 |
| Total Adjustments | -0.098 | 0.000 | -23.934 | 0.000 | -23.934 |
| • 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 | -0.098 | 0.000 | -23.934 | 0.000 | -23.934 |

Change Summary Explanation

The FY 2018 funding was reduced by \$8 million for higher AF priorities. The C-5 CNS/ATM program also rephased \$15.934 million of FY 2018 funds into FY 2019. Total adjustment in FY 2018 was \$23.934 million.

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|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|---|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0401119F / C-5 Airlift Squadrons (IF) | | | | Project (Number/Name) 675358 / C-5 Mission Computer-Mission Sys Equip-Weather Radar | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 675358: C-5 Mission Computer-Mission Sys Equip-Weather Radar | - | 7.403 | 11.837 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 19.240 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The C-5 core mission computer (CMC)/weather radar (WxRdr) program is a comprehensive sustainment modification to mitigate the obsolescence of the current CMC and WxRdr. This effort centers around modifying the current mission computer to obtain sufficient capacity/capability to support integration of new system capabilities with margin for growth by upgrading module cards and correcting any mission essential deficiencies identified during development. Also, the effort includes replacement of the weather radar with a commercial off-the-shelf weather radar. Mission systems equipment includes, but is not limited to, a redesign of the C-5 lavatory system. Examples of other mission systems equipment include troop seats, crew entry door and ladder, and interior trim.

The current C-5 CMC has reached maximum capacity and cannot integrate required aircraft systems and capabilities to include the weather radar; flight management system (FMS); and communication, navigation, surveillance (CNS)/air traffic management (ATM) requirements. These requirements include capabilities such as the automatic dependent surveillance-broadcast out (ADS-B Out), and identification, friend or foe (IFF) mode 5. The new CMC will allow for current and future throughput growth of additional processing requirements to meet calendar year 2020 CNS/ATM mandates.

The modification helps to maintain aircraft availability as the new weather radar replaces the current APS-133 weather radar system, which is experiencing severe diminishing manufacturing source (DMS) issues. Failure to upgrade the CMC to support calendar year 2020 CNS/ATM mandates and a new weather radar will create a significant operational impact. DMS issues will be resolved to support continued production and installation of requirements for the C-5 fleet. Further, DMS issues will be resolved to support continued operations through studies, bridge buys, life-of-type buys, development, and redesign efforts.

The C-5 mission systems equipment (MSE) program updates the lavatory system. The current lavatory system suffers inoperability and leakage of liquid sodium hypochlorite causing severe corrosion and burnt wires in the landing gear control panels. A redesign of the MSE will increase safety, mitigate risk, and reduce man-hours required to repair extensive damage.

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

| | | | |
|--|----------------|----------------|----------------|
| | FY 2016 | FY 2017 | FY 2018 |
| Title: C-5 Mission Computer / Weather Radar Program | 7.403 | 11.837 | - |
| Description: Core mission computer modification and weather radar replacement will enable the C-5 to achieve wartime mission requirements by maintaining fleet availability (mission capable rate) and program management administration (PMA). | | | |
| FY 2016 Accomplishments: | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0401119F / C-5 Airlift Squadrons (IF) | Project (Number/Name) 675358 / C-5 Mission Computer-Mission Sys Equip-Weather Radar |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Supported completion of formal qualification testing, installation and functional check of hardware, design and development of aircrew and maintenance training system modification, developmental test and evaluation, and operational test completing in FY17. | | | |
| <i>FY 2017 Plans:</i> Will support completion of formal qualification testing, installation and functional check of hardware, design and development of aircrew and maintenance training system modification, developmental test and evaluation, and operational test completing in FY17. | | | |
| Accomplishments/Planned Programs Subtotals | 7.403 | 11.837 | - |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| • APAF: BA05: Line Item # C00500: C-5 | 0.000 | 19.814 | 30.460 | 0.000 | 30.460 | 40.212 | 36.709 | 5.040 | 0.000 | 0.000 | 132.235 |
| • APAF: BA06: Line Item # 000999: Initial Spares | 0.000 | 1.559 | 2.172 | 0.000 | 2.172 | 2.111 | 2.294 | 0.000 | 0.000 | 0.000 | 8.136 |
| • APAF: BA07: Line Item # 000075: Other Production | 0.000 | 0.694 | 5.067 | 0.000 | 5.067 | 4.551 | 0.000 | 0.000 | 0.000 | 0.000 | 10.312 |

Remarks

D. Acquisition Strategy

Core mission computer/weather radar program: Engineering, manufacturing, development (EMD) for the core mission computer and weather radar began in FY13. The acquisition strategy for this project considered every opportunity to use commercial components to modernize the C-5 core mission computer and weather radar and maintain aircraft availability in support of mobility missions worldwide. The strategy is for the prime contractor, Lockheed Martin Aero (LMA), to procure the core mission computer cards and weather radar, integrate and test those components, and install on two (2) EMD aircraft. LMA was placed on contract in March 2014. The sole-source contract is predominately CPIF (Cost Plus Incentive Fee) with some FFP (Firm Fixed Price) elements.

Mission Systems Equipment program: The mission systems equipment redesign requires RDT&E funding for commercial off-the-shelf (COTS) proofing. Funds are required for validation and verification of the lavatory design and installation. The Mission Systems Equipment contract method was competitive through the Defense Technical Information Center (DTIC). Wyle Science, Technical, and Engineering Group was the selected source, and the contract type is Cost Plus Fixed Fee (CPFF).

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0401119F / <i>C-5 Airlift Squadrons (IF)</i> | Project (Number/Name) 675358 / <i>C-5 Mission Computer-Mission Sys Equip-Weather Radar</i> |

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|---|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0401119F / C-5 Airlift Squadrons (IF) | | | | Project (Number/Name) 675359 / CNS/ATM Mode5 Swift Broadband BLOS/LOS Radio | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 675359: CNS/ATM Mode5 Swift Broadband BLOS/LOS Radio | - | 15.363 | 54.309 | 22.758 | 0.000 | 22.758 | 21.803 | 0.000 | 0.000 | 0.000 | 0.000 | 114.233 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

C-5 communication, navigation, surveillance/air traffic management (CNS/ATM) program is a comprehensive effort to ensure appropriate CNS/ATM system design architectures are developed and equipment is installed on the C-5 to allow aircraft operation in accordance with civil airspace access mandates for both the US national airspace system (NAS) and international civil airspace. Also, the program will add equipment to meet outstanding National Security Agency mandates for encryption of voice communications. The C-5 CNS/ATM program ensures system standardization and interoperability with other DoD systems to the maximum extent possible and directly supports airworthiness certification of the C-5. CNS/ATM requirements include, but are not limited to, capabilities such as automatic dependence surveillance-broadcast out (ADS-B Out), identification friend or foe (IFF) mode 5, satellite communication equipment replacement, and beyond line-of-sight voice radio replacement. It is anticipated equipment will be predominately commercial off-the-shelf or non-developmental items.

The current ARC-210 radio for VHF voice communications is facing diminishing manufacturing source (DMS) supply issues and additionally will no longer be capable of providing secure voice communications due to the development of new crypto algorithms. Addition of next generation ARC-210 radios and associated cryptologic equipment will enable the C-5 to meet NSA mandates for secure communications and allow aircrews to continue to communicate securely over VHF, UHF, HF, or MILSATCOM.

The current generation of satellites that support services used on the C-5 to provide oceanic controller/pilot data link communications (CPDLCs) to air traffic control and aircraft communications addressing and reporting system (ACARS) beyond-line-of-sight command and control messages will no longer be functional after 2016. The next generation of satellites will accommodate legacy C-5 SATCOM equipment for an interim period of time to allow for integration of upgraded SATCOM equipment compatible with this satellite constellation. Without this modification, the C-5 will be unable to fly oceanic tracks and will not be able to meet aircraft separation distance requirements for civil airspace access.

Automatic Dependent Surveillance-Broadcast Out (ADS-B Out) is a next generation surveillance technology that transitions key aspects of air traffic control from terrestrial based technologies to satellite enabled technologies to provide controllers a more accurate picture of aircraft positioning. ADS-B Out will allow aircraft to provide continuous broadcast of aircraft position to both controllers and other aircraft equipped with ADS-B In capable avionics. International mandates for ADS-B Out for civil airspace access call for equipage by 2020.

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

| | | | |
|-----------------------|----------------|----------------|----------------|
| | FY 2016 | FY 2017 | FY 2018 |
| Title: CNS/ATM | 15.363 | 54.309 | 22.758 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0401119F / C-5 Airlift Squadrons (IF) | Project (Number/Name) 675359 / CNS/ATM Mode5 Swift Broadband BLOS/LOS Radio |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| <p>Description: C-5 CNS/ATM program will install multiple aircraft avionic equipment pieces to enable the C-5 to meet multiple NSA encryption and international/national airspace access mandates while mitigating diminishing manufacturing source issues.</p> <p>FY 2016 Accomplishments: CNS/ATM system design supported incorporation of ARC-210 Gen V radios, SATCOM replacement equipment, ADS-B Out, and IFF mode 5 into the C-5. Efforts include software design as well as hardware analysis for compatibility with existing C-5 system architecture.</p> <p>FY16 funding supported software design of all the areas to incorporate the various requirements as well as hardware analysis for compatibility with existing systems.</p> <p>FY 2017 Plans: CNS/ATM system design supports incorporation of ARC-210 Gen V radios, SATCOM replacement equipment, ADS-B Out, and IFF mode 5 into the C-5. Efforts include software design as well as hardware analysis for compatibility with existing C-5 system architecture.</p> <p>FY17 funding supports software design of all the areas to incorporate the various requirements as well as hardware analysis for compatibility with existing systems.</p> <p>FY 2018 Plans: CNS/ATM system design supports incorporation of ARC-210 Gen V radios, SATCOM replacement equipment, ADS-B Out, and IFF mode 5 into the C-5. Efforts will include software design as well as hardware analysis for compatibility with existing C-5 system architecture. Ensure test cases are prepared and ready to support the start of qualification testing.</p> <p>FY18 funding supports formal qualification testing, software integration, equipment installation, and functional check of hardware.</p> | | | |
| Accomplishments/Planned Programs Subtotals | 15.363 | 54.309 | 22.758 |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| • APAF: BA05: Line Item # C00500: C-5 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 34.443 | 35.972 | 20.269 | 30.980 | 0.00 | 121.664 |
| • APAF: BA06: Line Item # 000999: Initial Spares | 0.000 | 0.789 | 0.000 | 0.000 | 0.000 | 6.015 | 5.457 | 8.046 | 0.000 | 0.00 | 20.307 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0401119F / C-5 Airlift Squadrons (IF) | Project (Number/Name) 675359 / CNS/ATM Mode5 Swift Broadband BLOS/LOS Radio |

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

| Line Item | FY 2016 | FY 2017 | FY 2018 | FY 2018 | FY 2018 | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To | Total Cost |
|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|------------|
| | | | Base | OCO | Total | | | | | Complete | |
| • APAF: BA07: Line Item # 000075: Other Production | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.012 | 3.052 | 3.102 | 3.206 | 0.00 | 9.372 |

Remarks

D. Acquisition Strategy

CNS/ATM program: Engineering and Manufacturing Development (EMD) for incorporation of the ARC-210 Gen V radio, SATCOM replacement equipment, ADS-B Out, and IFF mode 5 into the C-5 began in Dec 2016. The acquisition strategy for this program will consider every opportunity to use commercial components to modernize the C-5 CNS/ATM equipment to meet CY2020 mandates for global civil airspace access. The strategy is for the prime contractor, Lockheed Martin Aero (LMA), to procure CNS/ATM equipment, develop software, test and integrate those components, and install on two (2) EMD aircraft. The equipment integration will require RDT&E funding for commercial off-the-shelf and non-developmental item proofing.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

| | | |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0401119F / C-5 Airlift Squadrons (IF) | Project (Number/Name) 675359 / CNS/ATM Mode5 Swift Broadband BLOS/LOS Radio |
|--|--|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 |
| CNS/ATM hardware/ software design, development, integration, data management, technical data rights, systems engineering, program management, and spares | Various | Lockheed Martin Aero : Marietta, GA | - | 13.649 | Dec 2016 | 45.494 | Dec 2016 | 15.108 | Feb 2018 | 0.000 | | 15.108 | Continuing | Continuing | 88.151 |
| Subtotal | | | - | 13.649 | | 45.494 | | 15.108 | | 0.000 | | 15.108 | - | - | 88.151 |

Remarks
Total Cost and Target Value of Contract will not agree because cost to complete funds are not allowed as an input.

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 |
| CNS/ATM Other Government Cost | Various | AFLCMC/WLS : Dayton, OH | - | 0.024 | Apr 2016 | 1.001 | Jun 2017 | 1.342 | Feb 2018 | 0.000 | | 1.342 | Continuing | Continuing | 2.397 |
| CNS/ATM Training | Various | Lockheed Martin Aero : Marietta, GA | - | 0.000 | | 0.009 | Jun 2017 | 0.120 | Feb 2018 | 0.000 | | 0.120 | Continuing | Continuing | 0.255 |
| CNS/ATM Peculiar Support Equipment | Various | Lockheed Martin Aero : Marietta, GA | - | 0.000 | | 0.000 | | 0.009 | Feb 2018 | 0.000 | | 0.009 | Continuing | Continuing | 0.018 |
| CNS/ATM Trainers & Simulators | Various | Various : Various | - | 0.095 | Dec 2016 | 2.855 | Dec 2016 | 0.600 | Feb 2018 | 0.000 | | 0.600 | Continuing | Continuing | 4.175 |
| Subtotal | | | - | 0.119 | | 3.865 | | 2.071 | | 0.000 | | 2.071 | - | - | 6.845 |

Remarks
Total Cost and Target Value of Contract will not agree because cost to complete funds are not allowed as an input.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

| | | |
|--|--|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0401119F / C-5 Airlift Squadrons (IF) | Project (Number/Name) 675359 / CNS/ATM Mode5 Swift Broadband BLOS/LOS Radio |
|--|--|---|

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| CNS/ATM System Test/Qual/SIL | Various | Lockheed Martin Aero : Marietta, GA | - | 0.667 | Dec 2016 | 4.174 | Dec 2016 | 1.475 | Feb 2018 | 0.000 | | 1.475 | Continuing | Continuing | 7.901 |
| CNS/ATM System Test - Government | Various | Edwards AFB : CA | - | 0.025 | May 2016 | 0.287 | Apr 2017 | 1.000 | Feb 2018 | 0.000 | | 1.000 | Continuing | Continuing | 4.287 |
| Subtotal | | | - | 0.692 | | 4.461 | | 2.475 | | 0.000 | | 2.475 | - | - | 12.188 |

Remarks
Total Cost and Target Value of Contract will not agree because cost to complete funds are not allowed as an input.

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| CNS/ATM Program Management Administration | Various | AFLCMC/WLS : Dayton, OH | - | 0.902 | Sep 2016 | 0.085 | Jun 2017 | 2.700 | Feb 2018 | 0.000 | | 2.700 | Continuing | Continuing | 5.836 |
| CNS/ATM Travel | Various | AFLCMC/WLS : Dayton, OH | - | 0.001 | Oct 2016 | 0.404 | Oct 2016 | 0.404 | Feb 2018 | 0.000 | | 0.404 | Continuing | Continuing | 1.213 |
| Subtotal | | | - | 0.903 | | 0.489 | | 3.104 | | 0.000 | | 3.104 | - | - | 7.049 |

Remarks
Total Cost and Target Value of Contract will not agree because cost to complete funds are not allowed as an input.

| | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|--------------------|----------------|----------------|---------------------|--------------------|----------------------|-------------------------|-------------------|---------------------------------|
| Project Cost Totals | | - | 15.363 | 54.309 | 22.758 | 0.000 | 22.758 | - | - |

Remarks
Total Cost and Target Value of Contract will not agree because cost to complete funds are not allowed as an input.

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0401119F / C-5 Airlift Squadrons (IF) | Project (Number/Name) 675359 / CNS/ATM Mode5 Swift Broadband BLOS/LOS Radio |

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| Milestone B | | | | ■ | | | | | | | | | | | | | | | | | | | | | | | | |
| Engineering, Manufacturing, and Development (EMD) | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| EMD Contract Awards | | | | ■ | | | | | | | | | | | | | | | | | | | | | | | | |
| Preliminary Design Review | | | | | | | | ■ | | | | | | | | | | | | | | | | | | | | |
| Critical Design Review | | | | | | | | ■ | | | | | | | | | | | | | | | | | | | | |
| Development Test and Evaluation | | | | | | | | | | | | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | | | |
| Operational Test and Evaluation | | | | | | | | | | | | | | | | ■ | | | | | | | | | | | | |
| Milestone C | | | | | | | | | | | | | | | | ■ | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0401119F / C-5 Airlift Squadrons (IF) | Project (Number/Name) 675359 / CNS/ATM Mode5 Swift Broadband BLOS/LOS Radio |

Schedule Details

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Milestone B | 4 | 2016 | 4 | 2016 |
| Engineering, Manufacturing, and Development (EMD) | 4 | 2016 | 4 | 2019 |
| EMD Contract Awards | 1 | 2017 | 1 | 2017 |
| Preliminary Design Review | 3 | 2017 | 3 | 2017 |
| Critical Design Review | 4 | 2017 | 4 | 2017 |
| Development Test and Evaluation | 4 | 2018 | 3 | 2019 |
| Operational Test and Evaluation | 4 | 2019 | 4 | 2019 |
| Milestone C | 3 | 2019 | 3 | 2019 |

Note

CNS/ATM will support completion of formal qualification testing, installation and functional check of hardware, design and development of aircrew and maintenance training system modification, and developmental test and evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401130F / <i>C-17 Aircraft (IF)</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|-------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 36.082 | 12.430 | 34.287 | 0.000 | 34.287 | 49.547 | 10.584 | 10.746 | 25.356 | Continuing | Continuing |
| 672569: <i>C-17A Aircraft</i> | - | 36.082 | 12.430 | 34.287 | 0.000 | 34.287 | 49.547 | 10.584 | 10.746 | 25.356 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note

This program, BA 07 PE 0401130F, project 672569, Command and Control Capsules (Roll -On Conference Capsule (ROCC) formerly referred to as Silver Bullet Replacement), is a new start.

This program, BA 07 PE 0401130F, project 672569, Real Time In Cockpit (RTIC), is a new start.

This program, BA 07 PE 0401130F, project 672569, Fixed Installation Satellite Antenna (FISA), is a new start.

A. Mission Description and Budget Item Justification

The FY 2018 funding request was reduced by \$37.276M million to account for the availability of prior year execution balances.

The C-17 can perform the entire spectrum of airlift missions and is specifically designed to operate effectively and efficiently in both strategic and theater environments. Airlift provides essential flexibility when responding to contingencies on short notice anywhere in the world. It is a major element of America's national security strategy and constitutes the most responsive means of meeting mobility requirements. Specific tasks associated with the airlift mission include deployment, employment, sustaining support, retrograde, and combat redeployment. Not only can the C-17 deliver outsize cargo to austere tactical environments, but it also reduces ground time during airland operations. The C-17 will perform its airlift mission well into this century.

C-17 RDT&E funding efforts support, but are not limited to: Aircraft performance improvements and airspace access mandates (i.e., Communications/Navigation Improvements); flight test activities and facilities; development of solutions for obsolescence and safety of flight issues; systems engineering/program management administration support; support for avionics laboratories; block development/change management; proposal preparation for new projects; cost estimating and engineering/acquisition studies not related to requirements generation.

In FY18 the major efforts are: Replacement Heads-Up Display (RHUD), Fire Filter Mitigation, and Beyond Line of Sight (BLOS).

Filter Fire Mitigation which is a redesign of the shutoff valve.

BLOS includes, but is not limited to: Narrowband tactical satellite communications Mobile User Objective System (MUOS); both Aero-I/Aero-H multi-channel voice and data upgrades delivered via an intermediate-gain antenna; next-generation Military GPS receiver (M-Code); and upgrades for Ku/Ka band satellite communications.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401130F / <i>C-17 Aircraft (IF)</i> |
|--|---|

Command and Control Capsules to replace non-airworthy Silver Bullet Capsules includes development/design. Effort will allow US Government senior leaders and staff to work, communicate, and rest in airworthy capsules during long range missions into threat areas, with the protection of the C-17A Globemaster III's defensive systems capability.

Real Time In Cockpit (RTIC) enhancements integrate a situational awareness (SA) capability that allows aircrew to communicate with ground crew during airlift, airdrop, and other joint operations.

Fixed Installation Satellite Antenna (FISA) enables high bandwidth satellite communications, allowing for greater, in flight situational awareness.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 48.807 | 12.430 | 71.563 | 0.000 | 71.563 |
| Current President's Budget | 36.082 | 12.430 | 34.287 | 0.000 | 34.287 |
| Total Adjustments | -12.725 | 0.000 | -37.276 | 0.000 | -37.276 |
| • 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 | -2.181 | 0.000 | | | |
| • SBIR/STTR Transfer | -10.544 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | -37.276 | 0.000 | -37.276 |

Change Summary Explanation

FY16: Funding was reduced by \$12.725M. \$2.181M for a reprogramming and \$10.544M for Small Business Innovation Research (SBIR).

FY18: The FY 2018 funding request was reduced by \$37.276M million to account for the availability of prior year execution balances.

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Title: Replacement Heads-up Display | 13.712 | 5.901 | 4.370 |
| Description: Replacement Heads-up Display (RHUD) project develops, integrates and installs a new HUD providing supportability/improved reliability & maintainability while providing growth to support future planned capability improvements. | | | |

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|---|--|---|----------------|----------------|
| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0401130F / <i>C-17 Aircraft (IF)</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>RHUD was removed from the Common Configuration (CC) major thrust to allow management greater program visibility and oversight. Starting with the FY16 RHUD funds will be displayed in this thrust.</p> <p>FY 2016 Accomplishments: Continued development of RHUD preflight test hardware and software development. Support for on-going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation are included in the overall program cost.</p> <p>FY 2017 Plans: Continued development of RHUD. Program will conduct primary flight test and acceptance. Support for software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation are included in the overall program cost.</p> <p>FY 2018 Plans: Completes RHUD. FY18 funds are for risk reduction support for second flight test and associated engineering design adjustments. Support for on-going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation are included in the overall program cost.</p> | | | | |
| <p>Title: Filter Fire Mitigation (formerly referred to as Extended Range Onboard Inert Gas Generating System II)</p> <p>Description: Filter Fire Mitigation is a program that redesigns the OBIGGS II shutoff valve and makes software changes to the Warning and Caution Computer (WCC). It includes support for on-going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation.</p> <p>FY 2016 Accomplishments: Redesigned OBIGGS II shut off valve to eliminate the potential for OBIGGS II filter fires and improve fuel efficiency. It included support for on-going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation.</p> | | 22.370 | - | - |
| <p>Title: Beyond Line of Sight</p> <p>Description: Beyond Line-Of-Sight (BLOS) modernization modification is a development, integration, and retrofit program for C-17 communications. BLOS modifies and improves hardware and software for voice and data communications on the C-17. The program will modify both integrated aircraft avionics as well as back-end mission communications and could utilize both military and commercial satellite systems to extend communication ranges. The current efforts include but are not limited to Aero-I/Aero-H modernization (multi-channel voice and data delivered via an intermediate-gain antenna), increased broadband and</p> | | 0.000 | 6.529 | 16.592 |

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|--|--|---|----------------|----------------|
| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0401130F / <i>C-17 Aircraft (IF)</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| secure data capability. It includes support for on-going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation. | | | | |
| FY 2016 Accomplishments: N/A | | | | |
| FY 2017 Plans: BLOS efforts will include work on: Narrowband tactical satellite communications Mobile User Objective System (MUOS); both Aero-I/Aero-H multi-channel voice and data upgrades delivered via an intermediate-gain antenna; next-generation military GPS receiver (M-Code); upgrades for Ku/Ka band satellite communications; and upgrades to the ARC-210 radio. It will include support for on-going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation. | | | | |
| FY 2018 Plans: BLOS efforts will include work on: Narrowband tactical satellite communications Mobile User Objective System (MUOS); both Aero-I/Aero-H multi-channel voice and data upgrades delivered via an intermediate-gain antenna; next-generation military GPS receiver (M-Code); upgrades for Ku/Ka band satellite communications; and upgrades to the ARC-210 radio. It will include support for on-going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation. | | | | |
| Title: Command and Control Capsules (Roll -On Conference Capsule (ROCC) formerly referred to as Silver Bullet Replacement) | | - | - | 13.000 |
| Description: Command and Control Capsules to replace non-airworthy Silver Bullet Capsules includes development/design. Effort will allow US Government senior leaders and staff to work, communicate, and rest in airworthy capsules during long range missions into threat areas, with the protection of the C-17A Globemaster III's defensive systems capability. Specifically, development phase of the Roll-On Conference Capsule (ROCC), (formerly referred to as the Silver Bullet Replacement (SBR) program) will require non-recurring engineering, manufacture of the prototype capsule and testing to define an airworthy configuration for the Capsules. Final design will permit safe occupancy and use of SBR Capsules and Steel Eagle equipment during all phases of flight to include unpressurized flight conditions. Support for flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation are included in the overall cost. | | | | |
| FY 2018 Plans: Roll-On Conference Capsules (ROCC)(formerly referred to as Silver Bullet Replacement (SBR) Capsules) development/design begins in FY18 and completes in FY20. Development phase of SBR program will require non-recurring engineering, manufacture | | | | |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

| | |
|--|---|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401130F / <i>C-17 Aircraft (IF)</i> |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| of the prototype capsule and testing to define an airworthy configuration for the capsules. It will include flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation. | | | |
| Title: Real Time In Cockpit (RTIC) Description: Real Time In Cockpit (RTIC) Development of a Link-16 capability (air to air data transfer) and implementation/integration of ARC-210 Gen 6 radios. It includes support for on-going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation. FY 2018 Plans: Real Time In Cockpit (RTIC) Development of a Link-16 capability (air to air data transfer) and implementation/integration of ARC-210 Gen 6 radios. It includes support for on-going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation. | - | - | 0.125 |
| Title: Fixed Installation Satellite Antenna (FISA) Description: Fixed Installation Satellite Antenna (FISA) includes SATCOM system which includes an antenna, radome, LRUs, wiring, and patch panel which enables high bandwidth satellite communications, allowing for greater, in flight situational awareness. It includes support for on-going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation. FY 2018 Plans: Fixed Installation Satellite Antenna (FISA) includes SATCOM system which includes an antenna, radome, LRUs, wiring, and patch panel which enables high bandwidth satellite communications, allowing for greater, in flight situational awareness. It includes support for on-going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation. | - | - | 0.200 |
| Accomplishments/Planned Programs Subtotals | 36.082 | 12.430 | 34.287 |

| D. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| • APAF: BA05: Line Item # C01700: C-17A | 43.697 | 21.555 | 125.525 | 0.000 | 125.525 | 125.352 | 134.964 | 98.077 | 96.839 | 0.000 | 597.032 |
| • APAF: BA07: Line Item # C01700: C-17A | 15.054 | 23.559 | 12.028 | 0.000 | 12.028 | 6.310 | 0.000 | 0.000 | 0.000 | 0.000 | 54.951 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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|--|---|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401130F / <i>C-17 Aircraft (IF)</i> |
|--|---|

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • APAF: BA06: Line Item # 000999: <i>Initial Spares/Repair Parts</i> | 13.970 | 9.400 | 73.248 | 0.000 | 73.248 | 12.955 | 19.343 | 13.852 | 14.012 | 0.000 | 168.984 |
| • APAF: BA03: Line Item # 834070: <i>Mobility Command and Control</i> | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 10.603 | 0.000 | 0.000 | 0.000 | 0.00 | 10.603 |

Remarks

E. Acquisition Strategy

The C-17 Acquisition Strategy is based on several separate contracts to support the entire scope of the C-17 weapon system. Globemaster Operational Enhancement (GLOBE) is an indefinite delivery, indefinite quantity (IDIQ) contract used to purchase services and research articles (through delivery orders) to support all RDT&E with our prime contractor. In addition, purchase orders are used to support flight test activities within the projects at Edwards AFB. Additional contract vehicles could be utilized as required.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

| | | |
|--|--|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0401130F / C-17 Aircraft (IF) | Project (Number/Name) 672569 / C-17A Aircraft |
|--|--|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| C-17 RHUD- Replacement Heads Up Display | Various | Boeing : Long Beach, CA | - | 13.712 | Nov 2015 | 5.901 | Nov 2016 | 4.370 | Nov 2017 | 0.000 | | 4.370 | 0.000 | 23.983 | 23.983 |
| C-17 Filter Fire Mitigation- (formerly referred to as Extended Range Onboard Inert Gas Generating System II) | Various | Boeing : Long Beach, CA | - | 22.370 | Mar 2017 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 22.370 | 22.370 |
| C-17 BLOS- Beyond Line of Sight | Various | Boeing : Long Beach, CA | - | 0.000 | | 6.529 | Jul 2017 | 16.592 | Nov 2017 | 0.000 | | 16.592 | Continuing | Continuing | - |
| C-17 ROCC- Roll -On Conference Capsule- (formerly referred to as Command and Control Capsules) (Silver Bullet Replacement) | C/CPIF | Small Business : TBD | - | 0.000 | | 0.000 | | 13.000 | Jun 2018 | 0.000 | | 13.000 | 0.000 | 13.000 | - |
| C-17 Common Configuration- Real Time In Cockpit (RTIC) | C/TBD | TBD : TBD | - | 0.000 | | 0.000 | | 0.125 | Jun 2018 | 0.000 | | 0.125 | 0.000 | 0.125 | - |
| C-17 Common Configuration- Fixed Installation Satellite Antenna (FISA) | Various | BOEING : Long Beach, CA | - | 0.000 | | 0.000 | | 0.200 | Jun 2018 | 0.000 | | 0.200 | 0.000 | 0.200 | - |
| Subtotal | | | - | 36.082 | | 12.430 | | 34.287 | | 0.000 | | 34.287 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force **Date: May 2017**

| | | |
|--|--|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0401130F / C-17 Aircraft (IF) | Project (Number/Name) 672569 / C-17A Aircraft |
|--|--|---|

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Beyond Line Of Sight (BLOS) (ACAT III) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - Aero-I/Aero-H Obsolescence | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- Aero-I/Aero-H Replacement- Request for Proposal | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- Aero-I/Aero-H Replacement - Advanced Technology demonstration | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| - CNS/ATM Phase II-COMM MOD | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- CNS/ATM Phase II- COMM MOD- Request for Proposal | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Filter Fire Mitigation (ACAT III) (formerly referred to as OBIGGS II Filter Fire- HW Fix) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- Filter Fire Mitigation (formerly referred to as ER/OBIGGS II) contract award | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RHUD (ACAT III) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -- RHUD System Test Readiness Review | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RHUD Flight Test begins | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Command and Control Capsules (Roll-On Conference Capsules (ROCC) formerly referred to as Silver Bullet Replacement) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Real Time In Cockpit (RTIC) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fixed Installation Satellite Antenna (FISA) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force **Date:** May 2017

| | | |
|--|--|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0401130F / C-17 Aircraft (IF) | Project (Number/Name) 672569 / C-17A Aircraft |
|--|--|---|

Schedule Details

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Beyond Line Of Sight (BLOS) (ACAT III) | 4 | 2017 | 4 | 2021 |
| - Aero-I/Aero-H Obsolescence | 1 | 2018 | 3 | 2020 |
| -- Aero-I/Aero-H Replacement- Request for Proposal | 4 | 2017 | 4 | 2017 |
| -- Aero-I/Aero-H Replacement - Advanced Technology demonstration | 3 | 2018 | 3 | 2018 |
| - CNS/ATM Phase II-COMM MOD | 4 | 2017 | 4 | 2021 |
| -- CNS/ATM Phase II- COMM MOD- Request for Proposal | 3 | 2017 | 3 | 2017 |
| Filter Fire Mitigation (ACAT III) (formerly referred to as OBIGGS II Filter Fire- HW Fix) | 2 | 2017 | 3 | 2019 |
| -- Filter Fire Mitigation (formerly referred to as ER/OBIGGS II) contract award | 2 | 2017 | 2 | 2017 |
| RHUD (ACAT III) | 1 | 2016 | 2 | 2019 |
| -- RHUD System Test Readiness Review | 2 | 2017 | 2 | 2017 |
| RHUD Flight Test begins | 3 | 2017 | 3 | 2017 |
| Command and Control Capsules (Roll-On Conference Capsules (ROCC) formerly referred to as Silver Bullet Replacement) | 3 | 2018 | 2 | 2019 |
| Real Time In Cockpit (RTIC) | 3 | 2018 | 3 | 2019 |
| Fixed Installation Satellite Antenna (FISA) | 3 | 2018 | 3 | 2018 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

| | |
|--|--|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401132F / C-130J Program |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | 242.300 | 31.410 | 16.776 | 26.821 | 0.000 | 26.821 | 10.825 | 0.660 | 0.671 | 0.684 | 30.396 | 360.543 |
| 675061: C-130J | 242.300 | 31.410 | 16.776 | 26.821 | 0.000 | 26.821 | 10.825 | 0.660 | 0.671 | 0.684 | 30.396 | 360.543 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | - | - |

Program MDAP/MAIS Code: 220

A. Mission Description and Budget Item Justification

The C-130J is a medium-sized transport aircraft capable of performing a variety of combat delivery (tactical airlift) operations across a broad range of mission environments. The C-130J aircraft, with its extended (by 15 feet) fuselage, provides additional cargo carrying capacity for the USAF combat delivery mission compared with legacy C-130E/H and the C-130J (short). Special mission variants of the C-130J conduct airborne psychological operations (EC-130J), weather reconnaissance (WC-130J), search and rescue (HC-130J), and special operations (MC-130J and AC-130J). All aircraft variants must be capable of worldwide operations.

This project provides RDT&E funding for required capabilities that are grouped as "Block" upgrades or "Capability" updates. Content/requirements for block modifications is documented in International Program Directives (IPDs) as determined in the Cooperative Systems and Software Upgrade Requirements Management (COSSURM) process. This project will integrate the common-core capabilities developed under this program into the HC-130J, MC-130J and AC-130J.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)

| | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|-------------------------------------|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 25.010 | 16.776 | 18.344 | 0.000 | 18.344 |
| Current President's Budget | 31.410 | 16.776 | 26.821 | 0.000 | 26.821 |
| Total Adjustments | 6.400 | 0.000 | 8.477 | 0.000 | 8.477 |
| • 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 | 6.400 | 0.000 | | | |
| • SBIR/STTR Transfer | 0.000 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 8.477 | 0.000 | 8.477 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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|--|--|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401132F / C-130J Program |
|--|--|

Change Summary Explanation

In 2016 the Department inadvertently removed too much funding. A \$6.4M reprogramming was required to fully fund Block 8.1.

The FY 2018 funding request was increased by \$8.4 million to fund the non-recurring engineering required to meet the January 2020 ADS-B Out mandate.

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

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|---------|---------|--------------|-------------|---------------|
| <p>Title: Cooperative Systems and Software Upgrade Requirements Management (COSSURM)</p> <p>Description: COSSURM - Collects potential requirements for inclusion into a Block Upgrade or Capability Management Update.</p> <p>FY 2016 Accomplishments: Funds sent to the United Kingdom for COSSURM support.</p> <p>FY 2017 Plans: Continuation of CMU COSSURM requirements review and analysis.</p> <p>FY 2018 Base Plans: Continuation of CMU COSSURM requirements review and analysis.</p> | 0.050 | 0.380 | 0.390 | - | 0.390 |
| <p>Title: Block 7.0</p> <p>Description: BLOCK 7.0: Adds Link 16, a new Flight Management System (FMS), Civil Global Positioning System (GPS) Navigation, and a Special Mission Processor-Interface (SMP-I). Defense Contract Management Agency Support is included here.</p> <p>FY 2016 Accomplishments: Completed DO178B software testing. DO178B is the software certification standard for commercial aircraft.</p> | 0.300 | - | - | - | - |
| <p>Title: Block 8.1</p> <p>Description: BLOCK 8.1 Adds Identification Friend or Foe (IFF) Mode 5, Civil Data Link, Automatic Dependent Surveillance - Broadcast (ADS-B), Air Traffic Services (ATS)/Airline Operational Control (AOC) Data Link for Line of Sight (LOS) and Beyond Line of Sight (BLOS) communication, enhanced covert lighting, improved Public Address(PA) System, and Approach Procedure with Vertical guidance (APV)/ Localizer Performance with Vertical guidance (LPV) approach capability. Several avionics platforms are impacted that include Flight Management System Software, Mission Computer Software, Bus Interface Unit software, and Maintenance Management System.</p> | 29.220 | 14.112 | 22.404 | - | 22.404 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401132F / C-130J Program |
|--|--|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|---------|---------|--------------|-------------|---------------|
| <p><i>FY 2016 Accomplishments:</i> Continued to work towards the completion of Block 8.1 Common Core hardware and software development and delta DT&E which is in progress. Initiated integration development for combined Block 7.0/8.1 TKI efforts, and continued to work towards installation of the Block 8.1 hardware TKI installation on the USAF short aircraft.</p> <p><i>FY 2017 Plans:</i> Complete integration development for the combined Block 7.0/8.1 USAF stretch and short aircraft, continue integration development for the combined Block 7.0/8.1 follow on TKIs and continue the development of the Block 8.1 ADS-B Out.</p> <p><i>FY 2018 Base Plans:</i> Continue the development of the Block 8.1 ADS-B Out.</p> | | | | | |
| <p><i>Title:</i> Test & Evaluation</p> <p><i>Description:</i> Test and evaluation planning, conduct, and support for developmental, and operational testing.</p> <p><i>FY 2016 Accomplishments:</i> Held a mission computer upgrade design review and completed ground and flight regression testing. Completed customer lab demo testing, and held an ACTFAST/TACC customer demo. Continued to work towards FCA/PCA completion.</p> <p><i>FY 2017 Plans:</i> Block 8.1 DO178B/FMET testing to satisfy partner nation aircraft compliance will be completed. Continuation of test planning and support for follow on TKIs.</p> <p><i>FY 2018 Base Plans:</i> Continuation of test planning and support for follow on TKIs.</p> | 0.500 | 0.950 | 0.577 | - | 0.577 |
| <p><i>Title:</i> Capability Management Update (CMU)</p> <p><i>Description:</i> CMU's refine Block upgrade modifications that improve operational effectiveness, satisfy emerging operational needs, and enhance human machine interface (HMI) to allow a workload that meets human factors standards and maintains the present crew complement. Avionics software impacted includes Flight Management System (FMS) Software, Mission Computer (MC) Software, Bus Interface Unit (BIU) software, and Maintenance Management System. In addition, four Block 7.0 deficiencies were identified to be fixed within the CMU program; Autotune, Autothrottle, ICS ACAWS, and IFF Mode V.</p> | 0.220 | 0.583 | 2.950 | - | 2.950 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401132F / C-130J Program |
|--|--|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|---------|---------|-----------------|----------------|------------------|
| <i>FY 2016 Accomplishments:</i> Common Core CMU 1.0 identified additional items based on Block 7.0 deficiencies and have been integrated into Final Qualification Testing 3 of the mission computer, and additional items such as TAWS database have been initiated. | | | | | |
| <i>FY 2017 Plans:</i> Continuation of Common Core software development. | | | | | |
| <i>FY 2018 Base Plans:</i> Continuation of Common Core software development. | | | | | |
| <i>Title:</i> Other AMC Initiatives <i>Description:</i> C-130J initiatives/studies. | 1.120 | 0.751 | 0.500 | - | 0.500 |
| <i>FY 2016 Accomplishments:</i> Wheel/Brake System Improvement (WBSI) Brake Energy/Takeoff Landing Data (TOLD) Data Collection continued. Mission Planning software studies and updates continued. | | | | | |
| <i>FY 2017 Plans:</i> Continue Wheel/Brake System Improvement (WBSI) Brake Energy/Takeoff Landing Data (TOLD) Data Collection continue. Mission Planning software studies and updates continue. | | | | | |
| <i>FY 2018 Base Plans:</i> Complete Wheel/Brake System Improvement (WBSI) Brake Energy/Takeoff Landing Data (TOLD) Data Collection. Mission Planning software studies and updates continue. | | | | | |
| Accomplishments/Planned Programs Subtotals | 31.410 | 16.776 | 26.821 | - | 26.821 |

| D. Other Program Funding Summary (\$ in Millions) | | | FY 2018 Base | FY 2018 OCO | FY 2018 Total | | | | | | Cost To Complete | Total Cost |
|--|---------|---------|-----------------|----------------|------------------|---------|---------|---------|---------|-------|---------------------|------------|
| Line Item | FY 2016 | FY 2017 | | | | FY 2019 | FY 2020 | FY 2021 | FY 2022 | | | |
| • APAF: BA05: Line Item # C1300J: C-130J Mods | 29.713 | 89.424 | 171.230 | 8.400 | 179.630 | 131.049 | 145.170 | 109.301 | 165.385 | 0.00 | 849.672 | |
| • APAF: BA 05: Line Item # C130J0: C-130J | 0.000 | 0.000 | 10.727 | 0.000 | 10.727 | 10.920 | 12.254 | 12.496 | 12.774 | 0.000 | 59.171 | |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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|--|--|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401132F / C-130J Program |
|--|--|

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

| Line Item | FY 2016 | FY 2017 | FY 2018 | FY 2018 | FY 2018 | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To | |
|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----------|------------|
| | | | Base | OCO | Total | | | | | Complete | Total Cost |
| • APAF: BA02: Line Item # C130J0: C-130J | 850.554 | 378.667 | 68.326 | 0.000 | 68.326 | 36.153 | 8.341 | 36.610 | 38.301 | 1,612.013 | 3,028.965 |
| • APAF: BA07 Line Item # C130J0: C-130J | 0.000 | 0.000 | 102.000 | 0.000 | 102.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 | 102.000 |

Remarks

E. Acquisition Strategy

The C-130J aircraft will be modified using a "block upgrade" strategy. The CNS/ATM, navigation safety requirement will initially, be met in three block upgrades. Block 6.0 development was funded from FY03-07. Block 7.0 started in FY07, and Block 8.1 which began in FY12. Subsequently, C-130J modifications will be grouped into smaller CNS/ATM software only updates known as Capability Management Updates (CMU). Other AMC initiatives are upgrades to hardware and software that have arisen after the formation of the block upgrades and CMUs.

In order to better manage the fleet and to avoid having to simultaneously support three separate aircraft configurations (Block 6, Block 7 and Block 8.1) the USAF has decided to combine the Block 7 and Block 8.1 mods. This will allow the aircraft and trainers to only have to be modified one time.

The proportion of CNS/ATM and navigation safety requirements allocated to Blocks 6.0 through 8.1 was determined via a design trade study conducted by Lockheed Martin (the C-130J prime contractor) and verified by the C-130J system program office and AMC. The development costs are being shared via a global Project Arrangement (PA) by the United States (USAF, USMC, USCG), the United Kingdom, Italy, Australia, Denmark, Canada, and Norway. An international program office (IPO), with USAF lead (Wright Patterson AFB, OH), manages the block upgrades development effort. Retrofit of a Block on the aircraft is the responsibility of each nation.

In order to meet the Federal Aviation Administration 2020 mandate the USAF will install the Block 8.1 ADS-B Out/Mode V IFF solution on all C-130J variants not scheduled to receive Block 8.1 by January 2020. This is Mod #8649, ADS-B Out Acceleration. All C-130Js will still require Block 8.1.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

| | | |
|--|--|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0401132F / C-130J Program | Project (Number/Name) 675061 / C-130J |
|--|--|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| C-130J Block 7.0, Air Force Life Cycle Mgmt Ctr (AFMC), WPAFB, OH | SS/CPAF | Lockheed Martin Aeronautics : Marietta, GA | 129.951 | 0.300 | Nov 2015 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 130.251 | 129.503 |
| C-130J Block 8.1, Air Force Life Cycle Mgmt Ctr (AFMC), WPAFB, OH | SS/CPAF | Lockheed Martin Information Sysyems : Marietta, GA | 42.192 | 26.320 | Apr 2016 | 11.957 | Apr 2017 | 20.254 | Apr 2018 | 0.000 | | 20.254 | 25.698 | 126.421 | 180.030 |
| C-130J Capability Management Upgrades (CMU) 1 & 2, Air Force Life Cycle Mgmt Ctr (AFMC), WPAFB, OH | SS/CPAF | Lockheed Martin Aero : Marietta, GA | 0.000 | 0.220 | May 2016 | 0.583 | May 2017 | 2.950 | May 2018 | 0.000 | | 2.950 | 12.900 | 16.653 | 6.480 |
| C-130J AMC-Initiatives, Air Force Life Cycle Mgmt Ctr (AFMC), WPAFB, OH | SS/CPAF | Lockheed Martin Aero : Marietta, GA | 49.331 | 1.120 | Feb 2016 | 0.746 | Feb 2017 | 0.500 | Feb 2018 | 0.000 | | 0.500 | 4.629 | 56.326 | 14.730 |
| Subtotal | | | 221.474 | 27.960 | | 13.286 | | 23.704 | | 0.000 | | 23.704 | 43.227 | 329.651 | 330.743 |

Remarks
C-130J Block 8.1 Total Cost is below Target Value of Contract to account for the expected cost reduction initiatives on this Cost Plus Award Fee Contract.

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| C-130J Block 8.1 DT and E | PO | EGLIN AFB : Eglin, FL | 0.000 | 0.500 | Nov 2015 | 0.950 | Nov 2016 | 0.577 | Nov 2017 | 0.000 | | 0.577 | 0.000 | 2.027 | 7.490 |
| Subtotal | | | 0.000 | 0.500 | | 0.950 | | 0.577 | | 0.000 | | 0.577 | 0.000 | 2.027 | 7.490 |

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0401132F / C-130J Program | Project (Number/Name) 675061 / C-130J |
|--|--|---|

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| C-130J IPO Support | TBD | N/A : TBD | 5.008 | 2.900 | Nov 2015 | 2.160 | Nov 2016 | 2.150 | Nov 2017 | 0.000 | | 2.150 | 0.000 | 12.218 | 5.014 |
| C-130J COSSURM | TBD | RAF : TBD | 15.818 | 0.050 | Jan 2016 | 0.380 | Jan 2017 | 0.390 | Jan 2018 | 0.000 | | 0.390 | 0.000 | 16.638 | 2.443 |
| Subtotal | | | 20.826 | 2.950 | | 2.540 | | 2.540 | | 0.000 | | 2.540 | 0.000 | 28.856 | 7.457 |

Remarks
The COSSURM contract is managed by the United Kingdom Royal Air Force (RAF)

| | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| Project Cost Totals | 242.300 | 31.410 | 16.776 | 26.821 | 0.000 | 26.821 | 43.227 | 360.534 | - |

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force **Date:** May 2017

| | | |
|--|--|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0401132F / C-130J Program | Project (Number/Name) 675061 / C-130J |
|--|--|---|

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Block 8.1 Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Block 8.1 Development Test & Evaluation | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Block 8.1 FCA/ PCA (Functional & Physical Configuration Audit) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Block 7.0/ 8.1 Trial Kit Installation (TKI) 2 - 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CMU #1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0401132F / C-130J Program | Project (Number/Name) 675061 / C-130J |
|--|--|---|

Schedule Details

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Block 8.1 Development | 1 | 2016 | 4 | 2016 |
| Block 8.1 Development Test & Evaluation | 1 | 2016 | 1 | 2017 |
| Block 8.1 FCA/ PCA (Functional & Physical Configuration Audit) | 2 | 2016 | 1 | 2017 |
| Block 7.0/ 8.1 Trial Kit Installation (TKI) 2 - 7 | 1 | 2016 | 1 | 2019 |
| CMU #1 | 3 | 2016 | 2 | 2018 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

| | |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401134F / <i>Large Aircraft IR Countermeasures (LAIRCM)</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 5.802 | 5.166 | 5.283 | 0.000 | 5.283 | 5.367 | 5.465 | 5.560 | 5.674 | Continuing | Continuing |
| 674942: <i>Large Aircraft Infrared Counter Measures (LAIRCM)</i> | - | 5.802 | 5.166 | 5.283 | 0.000 | 5.283 | 5.367 | 5.465 | 5.560 | 5.674 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The Large Aircraft Infrared Countermeasures (LAIRCM) system is an evolutionary acquisition program that provides significantly improved defensive systems capability for DoD aircraft to counter the infrared (IR) man-portable air-defense systems (MANPADS) missile threat. The current LAIRCM system configuration [AN/AAQ-24V] consists of missile warning sensors (MWS), a laser transmitter assembly, control interface unit (CIU) or control interface unit replacement (CIUR) and processors to detect, track, jam and counter incoming IR missiles. The number of sensors and transmitter assemblies per aircraft is determined by the size and signature of the aircraft. The system is fully automatic following system power-up. LAIRCM requirements are documented in the multi-command Operational Requirements Document (ORD) LAIRCM ORD 314-92, validated on 03 Aug 98. The system was first fielded on the C-17 aircraft.

The baseline program development is complete and consists of the small laser transmitter assembly (SLTA), ultra-violet MWS, processor, CIU and a repeater (on some aircraft) to meet the need for advanced IR countermeasures. The Guardian Laser Transmitter Assembly (GLTA) is an upgrade to the baseline transmitter equipment to improve reliability, enhance performance, address obsolescence issues, reduce mass and improve overall functionality. First production GLTA delivery occurred in June 08.

Development of the Next Generation Missile Warning System (NexGen MWS) is complete and includes new hardware that improves capability. Baseline equipment (ultra-violet MWS) will be retrofitted with the NexGen MWS as it becomes available. Developmental test/operational test (DT/OT) was conducted in FY10 with initial operational test and evaluation (IOT&E) in FY11.

LAIRCM upgrades include, but are not limited to hardware and software upgrades and testing of the LAIRCM system to maintain defensive capability against new and emerging threats.

Current and future efforts include Threat Analysis; Modeling, Simulation and Emulation Test; Hardware, Software and Firmware Upgrades; Virtual System Integration Lab (SIL) Development; and Studies and Analysis.

Threat Analysis: Threat analysis encompasses the activities to support threat exploitation analysis of a variety of threats (both known and emerging) against the current LAIRCM jam code with the intent of determining if jam code updates are required. Typical threat analysis activities include: Threat seeker characterization; model development for advanced threat IR seekers; development and testing of new infrared countermeasures concepts, techniques, and hardware; new technology assessment for potential incorporation into the LAIRCM system, and the evaluation/exploitation of new threats and threat characteristics relative to IRCM.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force Date: May 2017

Appropriation/Budget Activity
3600: *Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development*

R-1 Program Element (Number/Name)
PE 0401134F / *Large Aircraft IR Countermeasures (LAIRCM)*

Modeling, Simulation, and Emulation Testing: Modeling, simulation, and emulation activities verify and validate the information obtained from the threat analysis activities. These activities include: Evaluation of infrared countermeasures (IRCM) techniques used in defeating real threat hardware; developing and evaluating jam code; validating and verifying integration of LAIRCM system components to newly developed jam codes, software or hardware; evaluating system effectiveness; performing platform integration support tests; and conducting predictive risk reduction tests prior to Live Missile Fire Test (LMFT) or on aircraft flight testing.

Hardware, Software, and Firmware Upgrades: Includes changes of any kind to any LAIRCM hardware components/support equipment with the purpose of adding capability, features, and enhancements which do not presently exist to ensure the LAIRCM system remains viable against current and emerging threats.
----Hardware upgrade activities include engineering tasks required to design, develop, test and produce new capabilities, features, and enhancements, and changes of any kind to any portion of LAIRCM hardware with the purpose of adding capability, features and enhancements which do not presently exist.
----Software upgrade activities include engineering tasks required to design, develop, and test the new or modified code that result in new capabilities, features, and enhancements and changes of any kind to any portion of LAIRCM software with the purpose of adding capability, features and enhancements which do not presently exist. Software upgrades can occur in any of the Line Replaceable Unit (LRU) Operation Flight Programs as well as any of the software residing in other LAIRCM-associated components including those systems which support development and test or the LAIRCM support equipment.
----Firmware upgrade activities include engineering tasks required to design, develop, and test the upgrades and those changes resulting from hardware and software updates/modifications as well as firmware upgrades which add new features.

Virtual SIL Development: Incrementally design, develop, integrate, and test software code and purchase associated infrastructure (i.e., computers, servers, commercial-off-the-shelf (COTS) software, etc.) necessary to develop and implement a virtual SIL providing a critical capability for testing the LAIRCM system to ensure continued effectiveness against current and emerging threats.

Studies and Analysis: Includes logistics, programmatic, and engineering studies and analysis activities to ensure continued system viability and sustainability and compliance with acquisition directives. These activities may include the evaluation of low cost/high payback opportunities to reduce software development/implementation cost, enhance production efficiency, and improve life cycle costs through increased reliability and reduced repair and return cost.

Program management and administration efforts consist of, but are not limited to, contract services and government costs.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

| | |
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| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0401134F / Large Aircraft IR Countermeasures (LAIRCM) |
|---|--|

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 6.802 | 5.166 | 5.267 | 0.000 | 5.267 |
| Current President's Budget | 5.802 | 5.166 | 5.283 | 0.000 | 5.283 |
| Total Adjustments | -1.000 | 0.000 | 0.016 | 0.000 | 0.016 |
| • 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 | -1.000 | 0.000 | | | |
| • SBIR/STTR Transfer | 0.000 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 0.016 | 0.000 | 0.016 |

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| <p>Title: LAIRCM Threat Analysis</p> <p>Description: Encompasses the activities to support threat exploitation analysis of a variety of threats against the current LAIRCM jam code with the intent of determining if jam code updates are required.</p> <p>FY 2016 Accomplishments: Worked on Threat Analysis in the Guided Weapon Evaluation Facility (GWEF), and Dynamic Infrared Missile Evaluation Facility (DIME) Lab.</p> <p>GWEF: Evaluated Hardware In The Loop (HITL) effectiveness for LAIRCM against a new threat; Modernized radiometer calibration station for improved field radiometer accuracy; and Improve seeker rate table characterization capability.</p> <p>DIME: Evaluated "hybrid" jam code; Provided characterization of the LAIRCM laser; Evaluated new laser technology for possible future uses; Completed development of a threat hybrid simulation; Verified operation of a threat modified to support static testing; Collected test data of modified threat to support digital model development; completed initial characterization and countermeasure testing of the threat system; and Developed/validated the MOSIAC IRCM Digital simulation system.</p> <p>FY 2017 Plans: Continue to work on Threat analysis in the GWEF, to include purchase of assets, and DIME Lab.</p> <p>FY 2018 Plans:</p> | 3.682 | 2.055 | 2.150 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0401134F / <i>Large Aircraft IR Countermeasures (LAIRCM)</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| Continue to work on Threat analysis in the GWEF, to include purchase of assets, and DIME Lab. | | | | |
| Title: LAIRCM Modeling, Simulation and Emulation Testing Description: Activities that verify and validate the information obtained from threat analysis activities. FY 2016 Accomplishments: Continue work in Modeling, Simulation and Emulation Tests. This is a continued effort from LAIRCM Development in previous years. VSIL Description: VSIL incrementally designs, develops, integrates, and tests software code and purchases associated infrastructure (i.e., computers, servers, COTS software, etc.) necessary to develop and implement a virtual SIL providing a critical capability for testing the LAIRCM system to ensure continued effectiveness against current and emerging threats. FY 2017 Plans: Will continue to work in Modeling, Simulation and Emulation Tests. This is a continued effort from LAIRCM Development in previous years. FY 2018 Plans: Will continue to work in Modeling, Simulation and Emulation Tests. This is a continued effort from LAIRCM Development in previous years. | | 0.877 | 0.911 | 0.887 |
| Title: LAIRCM Hardware/Software/Firmware Upgrades Description: Hardware/Software/Firmware Upgrades include changes of any kind to any LAIRCM hardware components/support equipment with the purpose of adding capability, features, and enhancements which do not presently exist to ensure the LAIRCM system remains viable against current and emerging threats. FY 2016 Accomplishments: N/A FY 2017 Plans: Will continue to make changes of any kind to any LAIRCM hardware components/support equipment with the purpose of adding capability, features, and enhancements which do not presently exist to ensure the LAIRCM system remains viable against current and emerging threats. | | 0.000 | 0.207 | - |
| Title: LAIRCM Virtual SIL Development | | 0.000 | 1.429 | 1.396 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401134F / <i>Large Aircraft IR Countermeasures (LAIRCM)</i> |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| <p>Description: VSIL incrementally designs, develops, integrates, and tests software code and purchases associated infrastructure (i.e., computers, servers, COTS software, etc.) necessary to develop and implement a virtual SIL providing a critical capability for testing the LAIRCM system to ensure continued effectiveness against current and emerging threats.</p> <p>FY 2016 Accomplishments: N/A</p> <p>FY 2017 Plans: Will continue to design, develop, integrate, and test software code and purchase associated infrastructure (i.e., computers, servers, COTS software, etc.) necessary to develop and implement a virtual SIL providing a critical capability for testing the LAIRCM system to ensure continued effectiveness against current and emerging threats.</p> <p>FY 2018 Plans: Will continue to design, develop, integrate, and test software code and purchase associated infrastructure (i.e., computers, servers, COTS software, etc.) necessary to develop and implement a virtual SIL providing a critical capability for testing the LAIRCM system to ensure continued effectiveness against current and emerging threats.</p> | | | |
| <p>Title: LAIRCM Studies and Analysis</p> <p>Description: Includes logistics, programmatic, and engineering studies and analysis activities to ensure continued system viability and sustainability and compliance with acquisition directives. These activities may include the evaluation of low cost/high payback opportunities to reduce software development/implementation cost, enhance production efficiency, and improve life cycle costs through increased reliability and reduced repair and return cost.</p> <p>FY 2016 Accomplishments: Completed the Product Support (PS) Business Case Analysis (BCA) which is a regulatory requirement to review and validate the program's overarching sustainment strategy. Initiated the best Value IR Sensor Study which provides Headquarters Air Mobility Command (HQ AMC) with an IR sensor comparison of the current IR sensor and the newly developed advanced threat warning (ATW) sensor; purpose of analysis is to determine the best value IR sensor solution.</p> <p>FY 2017 Plans: Will initiate an engineering focused LAIRCM system Critical Program Information (CPI) Assessment and Review Study.</p> <p>FY 2018 Plans: Will initiate an engineering focused LAIRCM system Critical Program Information (CPI) Assessment and Review Study.</p> | 1.243 | 0.564 | 0.850 |
| Accomplishments/Planned Programs Subtotals | 5.802 | 5.166 | 5.283 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401134F / <i>Large Aircraft IR Countermeasures (LAIRCM)</i> |
|--|---|

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • APAF: BA05: Line Item # LAIRCM: <i>Large Aircraft Infrared Countermeasures</i> | 84.335 | 135.801 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 | 233.295 |

Remarks

E. Acquisition Strategy

Efforts awarded on an annual basis, exercising existing contract options, support threat analysis and system effectiveness. The LAIRCM program office partners with the Air Force Research Laboratory (AFRL) and the 782d Test Squadron to conduct threat analysis research and Modeling, Simulation, and Emulation Testing. AFRL contracts with the Guided Weapon Evaluation Facility (GWEF) to provide hardware-in-the-loop developmental test simulation capability on a level-of-effort (LOE) basis. AFRL's Dynamic Infrared Missile Evaluation (DIME) Laboratory performs threat analysis. The existing LAIRCM contract may be used to award the various study efforts.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0401218F / KC-135s |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 0.000 | 0.000 | 9.942 | 0.000 | 9.942 | 3.519 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 675261: KC-135 Upgrades | - | 0.000 | 0.000 | 9.942 | 0.000 | 9.942 | 3.519 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The program will replace the obsolete Inmarsat Aero-I system with an Iridium system. Inmarsat's existing third generation satellites (I-3) which provide Aero-I services will no longer be functional after 2023. Aero-I services are used to provide oceanic Controller/Pilot Data Link Communications (CPDLC) to Air Traffic Control and Aircraft Communications Addressing and Reporting System (ACARS) Beyond Line of Sight (BLOS) Command and Control (C2) messages to 618th Tactical Air Control Center (TACC) Global Decision Support System. The procurement effort modifies 338 C/KC-135s and 19 Simulators. Funding may be used to address Diminishing Manufacturing Sources (DMS) issues.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 0.000 | 0.000 | 9.942 | 0.000 | 9.942 |
| Total Adjustments | 0.000 | 0.000 | 9.942 | 0.000 | 9.942 |
| • 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 | 9.942 | 0.000 | 9.942 |

Change Summary Explanation

FY18 funding initiates a New Start for KC-135 AERO-I SATCOM Replacement.

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Title: KC-135 Aero-I SATCOM | - | - | 9.942 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401218F / KC-135s |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Description: Development and Test of Iridium Aero-I. Aero-I services are used to provide oceanic Controller/Pilot Data Link Communications (CPDLC) to Air Traffic Control and Aircraft Communications Addressing and Reporting System (ACARS) Beyond Line of Sight (BLOS) Command and Control (C2) messages to 618th Tactical Air Control Center (TACC) Global Decision Support System. FY 2018 Plans: Development and Test of Iridium Aero-I SATCOM. | | | |
| Accomplishments/Planned Programs Subtotals | - | - | 9.942 |

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • APAF: BA05: Line Item # C13500: C-135 | 48.868 | 64.136 | 69.428 | 0.000 | 69.428 | 87.804 | 102.479 | 105.326 | 109.104 | 0.00 | 587.145 |

Remarks

E. Acquisition Strategy
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F. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401219F / KC-10s |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 1.597 | 0.000 | 7.933 | 0.000 | 7.933 | 6.618 | 0.020 | 0.000 | 0.000 | 0.000 | 16.168 |
| 675195: <i>Aircraft Modernization Program (AMP)</i> | - | 1.597 | 0.000 | 7.933 | 0.000 | 7.933 | 6.618 | 0.020 | 0.000 | 0.000 | 0.000 | 16.168 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | - | - |

A. Mission Description and Budget Item Justification

The KC-10 is an aerial refueling asset built on the commercial DC-10 airframe. This aircraft creates an air bridge enabling rapid global mobility and global strike missions. There are 59 KC-10A aircraft in the USAF tanker fleet.

Mode 5 is a FAA mandated upgrade program to the USAF Identification Friend or Foe (IFF) system, the primary means of command and control aircraft identification. Mode 5 increases anti-spoofing capabilities and lowers the possibility of aircraft/aircrew loss due to misidentification of friendly aircraft. The KC-10 modification program includes a Mode 5 capable APX-119 transponder, a new KIV-77 crypto applique and integration/control through the CDU-7000F flight management computer.

An FAA mandated Automatic Dependent Surveillance-Broadcast (ADS-B) upgrade to the KC-10 is also included as part of Mode 5 to meet DO-260B requirements set by the FAA. Both Identification Friend or Foe (IFF) Mode 5 and Automatic Dependent Surveillance - Broadcast (ADS-B) Out are mandated programs (JROCM 047-07 and FAA Advisory Circular 20-165A) that have a required incorporation NLT 1 Jan 2020 (ADS-B) and 1 July 2020 (Mode 5). Both modifications are accomplished by modification of the APX-119 Line Replaceable Unit (LRU) and can easily be accomplished at the same time and at a significant cost savings to the USAF.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

The program will include a Technology Maturation Risk Reduction Study (TMRR), Formal EMD, Procurement and Installation on KC-10 aircraft.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401219F / KC-10s |
|--|--|

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 1.799 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 1.597 | 0.000 | 7.933 | 0.000 | 7.933 |
| Total Adjustments | -0.202 | 0.000 | 7.933 | 0.000 | 7.933 |
| • 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 | -0.149 | 0.000 | | | |
| • SBIR/STTR Transfer | -0.053 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 7.933 | 0.000 | 7.933 |

Change Summary Explanation

Change in FY18 funding profile is based on accelerating the program schedule to meet FAA mandate (1 Jan 2020).

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Title: KC-10 Mode 5 IFF | 1.597 | - | 7.933 |
| Description: FAA mandated upgrade to the IFF system to increase anti-spoofing and exploitation capabilities and lower the possibility of aircraft/aircrew loss due to misidentification of friendly aircraft. | | | |
| FY 2016 Accomplishments: The Mode 5 program has completed the following pre-system development efforts to support an FY18 PDR. - Updated ADM approved (30 Sep 16) to proceed with a TMRR Study. - TMRR effort on contract (22 Mar 17). | | | |
| FY 2018 Plans: Engineering design and analysis effort (EMD) will include upgrading the APX-119 transponder with Mode 5 capability, replacing the KIV-119 with a KIV-77 and integration/control through the CDU-7000B. | | | |
| Accomplishments/Planned Programs Subtotals | 1.597 | - | 7.933 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401219F / KC-10s |
|--|--|

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • APAF: BA05: Line Item # C01000: KC-10A (ATCA) | 5.611 | 4.570 | 4.243 | 0.000 | 4.243 | 6.095 | 5.149 | 3.992 | 3.472 | 0.000 | 33.132 |

Remarks

E. Acquisition Strategy

The acquisition strategy will be a sole source RDT&E effort followed by procurement of kits and modification of KC-10 aircraft.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401314F / <i>Operational Support Airlift</i> |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | 0.000 | 46.453 | 13.817 | 6.681 | 0.000 | 6.681 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 66.951 |
| 676024: <i>VC-25 Avionics Modernization Program</i> | 0.000 | 46.453 | 13.817 | 6.681 | 0.000 | 6.681 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 66.951 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | - | - |

Program MDAP/MAIS Code: 425

A. Mission Description and Budget Item Justification

VC-25A Avionics Modernization Program (AMP) assures unrestricted global access to civilian and military airspace to support the President of the United States as Head of State, Chief Executive, and Commander in Chief. AMP upgrades use a systems approach to aid pilot awareness and alleviate task saturation enhancing safety in a high technology concentrated airspace environment. VC-25A AMP is a required modification to ensure the viability of the Presidential support airlift fleet until the Presidential Aircraft Recapitalization (PAR) program is fielded.

AMP complies with mandates for civil Automatic Dependent Surveillance-Broadcast (ADS-B) Out and Identification Friend or Foe (IFF) Mode 5 and provides an improved Advisory Vertical Navigation (VNAV) capability. It will incorporate multiple subsystems, to include, but not limited to, maneuver camera system, large cockpit displays, and navigation radios to increase the utility and safety of the VC-25A. Provisions for the military ADS-B Out will also be provided. Installations are aligned with the aircraft heavy maintenance schedule.

In FY 2018, Project 676024 VC-25 Avionics Modernization Program is complete.

BA-7 - This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0401314F I Operational Support Airlift |
|--|---|

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 46.453 | 13.817 | 6.662 | 0.000 | 6.662 |
| Current President's Budget | 46.453 | 13.817 | 6.681 | 0.000 | 6.681 |
| Total Adjustments | 0.000 | 0.000 | 0.019 | 0.000 | 0.019 |
| • 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 | 0.019 | 0.000 | 0.019 |

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Title: Design and Test | 46.453 | 13.817 | 6.681 |
| Description: Design and Test efforts included stand-up of a Systems Integration Laboratory (SIL), non-recurring engineering, material buys for the SIL, as well as design, test and evaluation, and installation of the avionics systems. All modifications to be performed on the aircraft must be proven on the ground prior to installation. | | | |
| FY 2016 Accomplishments: Funding used for material buys, Install kit, Ground Test and Flight Test. | | | |
| FY 2017 Plans: Funding will be used for Installation, Ground Test and Flight Test. | | | |
| FY 2018 Plans: Funding will be used for Installation, Ground Test and Flight Test. | | | |
| Accomplishments/Planned Programs Subtotals | | | 6.681 |

| D. Other Program Funding Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| • APAF: BA05: Line Item #C02500: VC-25A | 0.000 | 0.000 | 18.000 | 0.000 | 18.000 | 9.000 | 0.000 | 0.000 | 0.000 | 0.000 | 145.039 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force Date: May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401314F / <i>Operational Support Airlift</i> |
|--|--|

E. Acquisition Strategy
VC-25A AMP is accomplished by developmental integration of commercial off-the-shelf systems, hardware procurement and installation is accomplished to align with heavy maintenance depot schedules. An Undefinitized Contract Action (UCA) was issued in Jun 12. The UCA was definitized with a Cost Plus Incentive Fee (CPIF) type contract April 2014. The CPIF contract covers the engineering RDT&E effort through Critical Design Review in FY15. The remaining RDT&E effort including the first kit, install and flight test was awarded in FY15 and concludes in FY18 with delivery of the first aircraft.

F. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0401314F / <i>Operational Support Airlift</i> | Project (Number/Name) 676024 / <i>VC-25 Avionics Modernization Program</i> |
|--|--|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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-25 AMP Engineering | SS/CPIF | Oklahoma City : Tinker, AFB, OK | 0.000 | 45.453 | Feb 2016 | 12.817 | Feb 2017 | 6.681 | Jan 2018 | 0.000 | | 6.681 | 0.000 | 64.951 | - |
| Subtotal | | | 0.000 | 45.453 | | 12.817 | | 6.681 | | 0.000 | | 6.681 | 0.000 | 64.951 | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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-25 AMP Program Management Activities | SS/CPIF | OC-ALC : Oklahoma City, OK | 0.000 | 1.000 | Jan 2016 | 1.000 | Jan 2017 | 0.000 | | 0.000 | | 0.000 | 0.000 | 2.000 | - |
| Subtotal | | | 0.000 | 1.000 | | 1.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 2.000 | - |

| | | | Prior Years | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|--|--|-------------|---------|--|---------|--|--------------|--|-------------|--|---------------|------------------|------------|--------------------------|
| Project Cost Totals | | | 0.000 | 46.453 | | 13.817 | | 6.681 | | 0.000 | | 6.681 | 0.000 | 66.951 | - |

Remarks

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0401314F / <i>Operational Support Airlift</i> | Project (Number/Name) 676024 / <i>VC-25 Avionics Modernization Program</i> |

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| Systems Integration Laboratory engineering | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kit #1 Procurement | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Kit #1 Installation | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Test and Evaluation | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0401314F / <i>Operational Support Airlift</i> | Project (Number/Name) 676024 / <i>VC-25 Avionics Modernization Program</i> |

Schedule Details

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Systems Integration Laboratory engineering | 1 | 2016 | 2 | 2016 |
| Kit #1 Procurement | 1 | 2016 | 4 | 2016 |
| Kit #1 Installation | 1 | 2017 | 4 | 2017 |
| Test and Evaluation | 4 | 2017 | 4 | 2018 |

Note
AMP contract award March 2012, followed by systems integration laboratory engineering.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401318F / CV-22 |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | 37.698 | 26.821 | 28.702 | 22.519 | 0.000 | 22.519 | 16.641 | 14.731 | 14.985 | 15.293 | 41.970 | 219.360 |
| 676033: <i>CV-22 RDT&E POST PRODUCTION</i> | 37.698 | 26.821 | 28.702 | 22.519 | 0.000 | 22.519 | 16.641 | 14.731 | 14.985 | 15.293 | 41.970 | 219.360 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Program MDAP/MAIS Code: 212
Project MDAP/MAIS Code(s): N42

Note

Improved Inlet Solution (IIS) project title changed to Nacelle Improvements.

A. Mission Description and Budget Item Justification

The CV-22 is the Air Force Special Operations Forces (SOF) variant of the joint multi-mission V-22 tilt-rotor aircraft. The aircraft provides long-range infiltration, exfiltration, and re-supply of SOF in politically sensitive and hostile/denied areas. The Navy is the lead service for the joint V-22 program and has overall responsibility for managing all V-22 variants, including the Air Force CV-22 variant. CV-22 RDT&E funding provides for the development, integration, and testing of mission critical aircraft modifications to improve operational effectiveness, platform survivability, and aircraft availability.

Block 20: RDT&E funding provides for improved long-range communications, situational awareness capabilities, and aircraft software upgrades needed to address operational requirements specified in the V-22 Block C/20 Capabilities Production Document (CPD).

Enhanced Self-Deployment: RDT&E funding provides for the design, development, and testing of aircraft modifications to improve aircraft self-deployment capabilities (e.g., operating range, global response time), to evaluate emerging threats to the aircraft and mission accomplishment, and to identify and assess emerging air vehicle, propulsion system, avionics, electronic warfare, and weapon system capability requirements and potential solutions to satisfy these requirements.

Nacelle Improvements (Formerly Improved Inlet Solution IIS): RDT&E funding provides for design, development, and testing of V-22 Nacelle Improvements. This major budget thrust was formerly met by the IIS program. During IIS development, it was realized there are other components in the V-22 nacelle that require readiness improvements and can benefit from the synergy of development simultaneous with IIS; including, but not limited to, the Infrared Suppressor (IRS), Generator Control Unit (GCU), nacelle wiring, heat exchanger, and the nacelle structure. The IIS major budget thrust scope has been expanded to encompass these broader common nacelle improvements for both the CV-22 and MV-22 fleets. These improvements will increase Engine Time on Wing (ETOW) and overall aircraft readiness/availability, reduce platform operating life cycle costs, and mitigate impacts to aircraft performance. These improvements will be integrated, tested, and fielded as a single modification to minimize cost and impact on fleet operations and readiness.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401318F / CV-22 |
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Other/Future Capabilities: The V-22 Joint Program Office continually assesses user-specified requirements for improved operational safety, suitability, and mission effectiveness. Funding also provides for future modification planning, and for aircraft engineering changes/upgrades to address diminishing manufacturing source (DMS) and component obsolescence issues that adversely affect aircraft readiness and operational availability rates.

Unites States Special Operations Command (USSOCOM) and the Air Force (AF) jointly fund many CV-22 development projects. USSOCOM funds the development, integration, and testing of SOF-unique mission equipment and capabilities, while the AF funds service-common/basic air vehicle enhancements, CV-22 implementation, and testing of MV-22 configuration changes, the integration of Air Force and Navy maintenance and information systems used with the CV-22, and support for aircraft qualification and operational testing. USSOCOM and AF jointly fund corrective measures for identified aircraft deficiencies, and for Block 20 development. Block 20 Increments 1 and 3 were developed with AF funds, and Increment 2 was developed with USSOCOM funds.

This program is in Budget Activity 7, Operational Systems Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 27.776 | 16.702 | 17.455 | 0.000 | 17.455 |
| Current President's Budget | 26.821 | 28.702 | 22.519 | 0.000 | 22.519 |
| Total Adjustments | -0.955 | 12.000 | 5.064 | 0.000 | 5.064 |
| • 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 | -0.955 | 0.000 | | | |
| • Other Adjustments | 0.000 | 12.000 | 5.064 | 0.000 | 5.064 |

Change Summary Explanation

FY17: The Request for Additional Appropriations (RAA) increased the FY17 budget by \$12M to address emergency warfighting readiness requirements.

FY18: The FY2018 funding was increased by \$5.064 million for IBS SIRFC Ethernet, DIRCM ATW (LSPR), and Nacelle Improvements (formerly Improved Inlet Solution (IIS)).

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Title: Enhanced Self-Deployment Capabilities | 16.225 | 14.182 | 5.548 | 0.000 | 5.548 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401318F / CV-22 |
|--|---|

| | | | | | |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|

Description: Incrementally develops capabilities to enhance self-deployment capabilities, such as improved ice protection, engine performance, navigation, communications, and battle space awareness/networking capabilities; electronic warfare; weapons systems; defensive avionics systems; weight reduction initiatives; modular avionics/cyber security implementation; airborne networking, and changes to the underlying aircraft systems necessary to enable these capabilities. The enhanced self-deployment capabilities major thrust contains funding for initial risk reduction and trade studies that may impact other existing major thrusts, or result in new major thrusts.

FY 2016 Accomplishments:
Conducted risk reduction and assessment of emerging and existing technologies (e.g., weapon systems, improved engine performance, and weight reduction initiatives). Conducted design/development activities to integrate an Intelligence Broadcast Receiver (IBR) upgrade (obsolescence issue) to receive near real time intel data. Conducted System Requirement Review (SRR) and critical design review (CDR) for Directional Infrared Counter Measures (DIRCM) with Advanced Threat Warning (ATW) sensors upgrade.

FY 2017 Plans:
Conduct risk reduction and assessment of emerging and existing technologies. Continue design and development activities to integrate the IBR upgrade to receive near real time intel data. Conduct DIRCM w/ATW operational test and evaluation.

FY 2018 Base Plans:
Conduct risk reduction and assessment of emerging and existing technologies. Continue design and development activities to integrate the IBR upgrade.

FY 2018 OCO Plans:
N/A

| | | | | | |
|---|--------|--------|--------|-------|--------|
| Title: Nacelle Improvements (Formerly Improved Inlet Solution (IIS)) | 10.596 | 14.520 | 16.971 | 0.000 | 16.971 |
|---|--------|--------|--------|-------|--------|

Description: Nacelle Improvements (Formerly Improved Inlet Solution IIS): RDT&E funding provides for design, development, and testing of V-22 Nacelle Improvements. This major budget thrust was formerly met by the IIS program. During IIS development, it was realized there are other components in the V-22 nacelle that require readiness improvements and can benefit from the synergy of development simultaneous with IIS; including, but not limited to, the Infrared Suppressor (IRS), Generator Control Unit (GCU), nacelle wiring, heat exchanger, and the nacelle structure. The IIS major budget thrust scope has been expanded to encompass these broader

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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|--|---|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401318F / CV-22 |
|--|---|

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

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|---------|---------|--------------|-------------|---------------|
| <p>Nacelle Improvements for both the CV-22 and MV-22 fleets. These improvements will increase Engine Time on Wing (ETOW) and overall aircraft readiness/availability, reduce platform operating life cycle costs, and mitigate impacts to aircraft performance.</p> <p>Provides for modifications to the CV-22 nacelle and propulsion system to reduce sand/dust and other particulate matter ingestion, increase engine time on wing and overall aircraft readiness/availability rates, and reduce operations and support costs. This is Air Force Special Operations Command's #1 modification priority for the CV-22 weapon system. Provides for new-construction, zero-time nacelles with structural improvements and vibration reductions.</p> <p>Provides a common configuration Generator Control Unit (GCU) that will be compatible with existing V-22 Variable Frequency Generator (VFG) and Constant Frequency Generator (CFG), support relocation of the GCU, support future generator capacity upgrades and be compatible with advanced prognostic diagnostic technology developed to control all 4 generators more efficiently; increasing V-22 reliability, maintainability and supportability for the fleet.</p> <p>Provides for Analysis of Alternatives, prototyping and demonstration of new Infrared Suppressor (IRS) candidate systems for the V-22. Provides for down-select to a new IRS design, Enginee...</p> <p>FY 2016 Accomplishments: IIS: Completed design and development. Redesigned Bypass Door Upper Inlet. Conducted post-CDR development activities. Conducted wind tunnel icing testing, developed hardware for test aircraft, and developed/delivered Joint Avionics Software Suite (JASS) software for DT&E.</p> <p>GCU: Conducted trade studies to determine optimal locations for relocated GCUs. Defined interfaces and created Interface Control Documents leveraging on RDT&E, Navy trade studies.</p> <p>IRS: Conducted Computational Fluid Dynamics modeling of nacelle airflow. Analyzed failure modes of incumbent IRS system. Conducted component redesign trade study. Sought and evaluated potential sources of new design IRS or improved current IRS. Leveraged findings of trade studies conducted and funded by RDT&E, Navy.</p> <p>FY 2017 Plans:</p> | | | | | |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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|--|---|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401318F / CV-22 |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| IIS: Analyze results of icing wind tunnel testing, conduct Test Readiness Review (TRR), modify test aircraft, begin DT&E, and assess aircraft software changes. GCU: Conduct requirements analysis and Systems Requirements Review (SRR) leveraging RDT&E, Navy. IRS: Conduct prototype demonstration test flights, conduct Analysis of Alternatives, and down-select new IRS solution leveraging RDT&E, Navy. FY 2018 Base Plans: IIS: Complete DT&E, analyze DT&E results, correct deficiencies found during DT&E, begin OT&E. GCU: Begin EMD of GCU redesign/relocate. Competitively select redesigned GCU. IRS: Begin EMD of new IRS solution, begin OT&E planning. FY 2018 OCO Plans: N/A | | | | | |
| Accomplishments/Planned Programs Subtotals | 26.821 | 28.702 | 22.519 | 0.000 | 22.519 |

| D. Other Program Funding Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| • RDT&E, DW: BA07: PE 1160403BB: <i>Special Operations, Aviation Systems</i> | 0.000 | 15.590 | 14.259 | 0.000 | 14.259 | 21.635 | 27.961 | 8.000 | 0.000 | 0.000 | 90.438 |
| • PDW: BA02: Line Item Special Ope...: <i>CV-22 Modification</i> | 33.582 | 24.708 | 42.178 | 0.000 | 42.178 | 22.724 | 27.726 | 31.563 | 47.210 | 314.225 | 2,428.189 |
| • APAF: BA04: Line Item #V022A0: <i>CV-22 (MYP)</i> | 64.500 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 4,318.234 |
| • APAF: BA05: Line Item #V02200: <i>CV-22 Mods</i> | 58.603 | 63.395 | 60.990 | 0.000 | 60.990 | 68.843 | 70.825 | 72.131 | 73.575 | 515.433 | 1,127.136 |
| • APAF: BA07: Line Item # COV220: CV-22 <i>Post-Production Support</i> | 3.353 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 20.284 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

| | |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401318F / CV-22 |
|--|---|

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

| Line Item | FY 2016 | FY 2017 | FY 2018 | FY 2018 | FY 2018 | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To | |
|--|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|------------|
| | | | Base | OCO | Total | | | | | Complete | Total Cost |
| • APAF: BA07: Line Item # V02200: CV-22 (MYP) | 0.000 | 0.000 | 4.500 | 0.000 | 4.500 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 4.500 |
| • RDT&E,N: BA05: PE 0604262N: V-22A | 76.366 | 174.423 | 173.742 | 0.000 | 173.742 | 137.519 | 167.116 | 94.629 | 118.777 | 184.398 | 10,252.729 |

Remarks

In addition to the funding identified in the table above, prior year funding includes \$520.411 in RDT&E, DW, BA07, PE 1160421BB: Special Operations, CV-22 Development, and \$413.235M in RDT&E, AF, BA05, PE 0401318F: CV-22

E. Acquisition Strategy

The V-22 Joint Program Office (Naval Air Systems Command (NAVAIRSYSCOM), PMA-275) is developing new capabilities for the V-22 in block increments. Block 0 and Block 10 have been developed & fielded, and Block 20 development of Beyond Line of Sight (BLOS) and Co-Site are scheduled to complete 30 Jun 2017.

--Nacelle Improvements (Formerly Improved Inlet Solution): NAVAIRSYSCOM awarded a cost plus fixed fee contract for IIS development and test in June 2014 with BA05 funds. After FY14, BA07 funds continue this effort. The FY2018 plan is to add incremental funding for IIS development to the existing contract. IRS and GCU will utilize some combination of sole source and competitive contracts. These improvements will be integrated, tested, and fielded as a single modification to minimize cost and impact on fleet operations.

--Enhanced Self-Deployment Capabilities: The Army Technology Applications Program Office at Ft Eustis awarded a FFP contract in June 2016 for LRU-1 Ethernet design (IBR). The FY2018 plan is to add incremental funding for LRU-1 Ethernet (IBR) design to the existing contract.

Development activities for the V-22 program to date have been primarily performed by the prime contractor, Bell-Boeing, on a sole-source basis. Bell-Boeing is a strategic partnership between Bell Helicopter and Boeing Integrated Defense Systems. Efforts are underway to increase competition where feasible, depending primarily on the level of platform integration required.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

| | | |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0401318F / CV-22 | Project (Number/Name) 676033 / CV-22 RDT&E POST PRODUCTION |
|--|---|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| CV-22 Osprey Block 20 Development | SS/CPFF | Bell Boeing : Amarillo, TX | 8.047 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 8.047 | 163.825 |
| CV-22 Osprey Enhanced Self-deployment Capability | Various | Various : Various | 16.186 | 14.516 | Apr 2016 | 11.000 | Jun 2017 | 3.460 | Mar 2018 | 0.000 | | 3.460 | 60.160 | 105.322 | 0.000 |
| V-22 Osprey Nacelle Improvements (Formerly (IIS)) | Various | Various : TBD | 7.618 | 8.277 | Mar 2016 | 14.520 | Nov 2016 | 16.971 | Dec 2017 | 0.000 | | 16.971 | 24.466 | 71.852 | 69.990 |
| Subtotal | | | 31.851 | 22.793 | | 25.520 | | 20.431 | | 0.000 | | 20.431 | 84.626 | 185.221 | 233.815 |

Remarks
 Block 20 Development Target Value of Contract differs from total cost because most of the Block 20 development cost was funded in PE 0401318F, BA05. In addition, the SOF peculiar development efforts were funded by USSOCOM MFP-11 funding.

Nacelle Improvements (formerly IIS) Development Target Value of Contract differs from total cost because this is a joint development funded by Navy and Air Force. Navy funding for IIS is shown in RDT&E,N PE 0604262N budget exhibit.

Prior Years funding (\$322.656M) was executed in PE 0401318F, BA05.

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| CV-22 Osprey Engineering Technical Support | Various | Various : Various | 1.717 | 1.047 | Dec 2015 | 1.835 | Mar 2017 | 1.000 | Mar 2018 | 0.000 | | 1.000 | 9.721 | 15.320 | 0.000 |
| Subtotal | | | 1.717 | 1.047 | | 1.835 | | 1.000 | | 0.000 | | 1.000 | 9.721 | 15.320 | 0.000 |

Remarks
 Prior Years Funding \$40.454M was executed in PE 0401318F (BA05).

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0401318F / CV-22 | Project (Number/Name) 676033 / CV-22 RDT&E POST PRODUCTION |
|--|---|--|

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| CV-22 Osprey Test & Evaluation Technical Support | Various | Various : Various | 3.913 | 2.781 | Mar 2016 | 1.115 | Jan 2017 | 0.900 | Dec 2016 | 0.000 | | 0.900 | 7.323 | 16.032 | 0.000 |
| Subtotal | | | 3.913 | 2.781 | | 1.115 | | 0.900 | | 0.000 | | 0.900 | 7.323 | 16.032 | 0.000 |

Remarks
Prior Years Funding \$46.764M was executed in PE 0401318F (BA05).

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| CV-22 Osprey PMA/Travel | Allot | AFLCMC/WIV : Patuxent River, MD | 0.217 | 0.200 | Nov 2015 | 0.232 | Nov 2016 | 0.188 | Nov 2017 | 0.000 | | 0.188 | 1.896 | 2.733 | - |
| Subtotal | | | 0.217 | 0.200 | | 0.232 | | 0.188 | | 0.000 | | 0.188 | 1.896 | 2.733 | - |

Remarks
Prior Years Funding \$3.361M was executed in PE 0401318F (BA05).

| | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| Project Cost Totals | 37.698 | 26.821 | 28.702 | 22.519 | 0.000 | 22.519 | 103.566 | 219.306 | - |

Remarks

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| | | |
|--|---|---|
| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0401318F / CV-22 | Project (Number/Name) 676033 / CV-22 RDT&E POST PRODUCTION |

Schedule Details

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Enhanced Self Deployment | 1 | 2016 | 4 | 2022 |
| -- Risk Reduction Analysis (Multiple current and future development initiatives) | 1 | 2016 | 4 | 2022 |
| -- ATW development and testing | 1 | 2016 | 2 | 2017 |
| -- ATW (LSPR) development and testing | 3 | 2018 | 4 | 2021 |
| -- IBR design and development | 3 | 2016 | 1 | 2020 |
| ----LRU-1 Ethernet Design Phase 1 (ending with PDR) | 3 | 2016 | 4 | 2017 |
| ----LRU-1 Ethernet Design Phase 2 (ending with CDR) | 3 | 2017 | 1 | 2019 |
| ----LRU-1 Ethernet Integration and Testing Phase III (ending with PRR) | 4 | 2018 | 1 | 2020 |
| ----ENTR V4 Dock Design | 1 | 2017 | 2 | 2019 |
| Nacelle Improvements (Formerly Improved Inlet Solution (IIS)) | 1 | 2016 | 2 | 2021 |
| -- IIS Development and Test | 1 | 2016 | 4 | 2019 |
| -- Common Nacelle Design | 2 | 2018 | 2 | 2021 |
| -- Generator Control Unit (GCU) Requirements Analysis | 2 | 2016 | 4 | 2017 |
| -- Generator Control Unit (GCU) Development and Test | 1 | 2018 | 4 | 2020 |
| -- Infrared Suppressor (IRS) Redesign Analysis of Alternatives | 1 | 2016 | 4 | 2017 |
| -- Infrared Suppressor (IRS) Redesign EMD | 1 | 2018 | 4 | 2020 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401840F / <i>AMC Command and Control System</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 0.000 | 0.000 | 3.510 | 0.000 | 3.510 | 1.701 | 0.000 | 0.000 | 0.000 | 0.000 | 5.211 |
| 674879: <i>Camps</i> | - | 0.000 | 0.000 | 3.510 | 0.000 | 3.510 | 1.701 | 0.000 | 0.000 | 0.000 | 0.000 | 5.211 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | - | - |

Note

This program, BA 07 PE 0401840F, project 674879, CAMPS Increment 1 Development, is a new start.

A. Mission Description and Budget Item Justification

A. Mission Description and Budget Item Justification

Consolidated Air Mobility Planning System (CAMPS) Increment 1.

The CAMPS Increment I program is the primary critical joint requirements management system for Special Assignment Air Mission (SAAM), Air Refueling (AR), and Intra-theater air movement requests. It is also the primary Air Mobility Command Command and Control (AMC C2) planning and scheduling tool enabling AMC air mobility resources to support peacetime, contingency, humanitarian, and wartime operations. In the Air Refueling Management System (ARMS), CAMPS provides the ability to request, manage and validate requests for air refueling. Force-level CAMPS users include the USTRANSCOM Fusion Center, 618th Air Operations Center (AOC) Tanker Airlift Control Center (TACC), and other AOC Air Mobility Divisions (AMDs). Several web-based applications also support movement and air refueling requests for globally distributed Joint, Service, and Wing/Unit level users.

The 618th AOC (TACC) is a global air operations center responsible for planning and executing airlift and air refueling missions in support of the Joint Deployment and Distribution Enterprise (JDDE). Although primarily used by the 618th AOC (TACC), CAMPS also supports validation, planning, and scheduling activities found at AMD and USTRANSCOM. CAMPS airlift and air refueling requirement management applications are available for all globally distributed Joint, Service, and Wing/Unit level users that need to request airlift or air refueling.

The current CAMPS AR capability does not have access to all data sources necessary to maintain visibility of and support for all potential re-planning requirements and therefore can have 'blind spots' which hinder its ability to provide robust support for planning and re-planning across the entire "initial through final" planning phase. This CAMPS Increment I (modernization) effort will build on the existing technology transitioned from RDT&E initiatives.

FY18 begins funding the Air Refueling capability development and testing to provide planners an integrated human-in-the-loop and machine-based cooperative system which provides the ability to rapidly generate and evaluate multiple potential solution candidates to satisfy AR requirements. This will increase the effectiveness and efficiency with which Air Refueling assets are employed and support increased operational agility through more, rapid, effective and efficient re-planning while minimizing the impact on currently planned mission sets. The AR metrics component will enable on-going improvement of the AR system and be developed after extensive analysis and iterations with the constituent user sets and command authorities.

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401840F / <i>AMC Command and Control System</i> |
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This program is in Budget Activity 7, Operational System Development, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production, and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 0.000 | 0.000 | 3.510 | 0.000 | 3.510 |
| Total Adjustments | 0.000 | 0.000 | 3.510 | 0.000 | 3.510 |
| • 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 | 3.510 | 0.000 | 3.510 |

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Title: CAMPS Increment 1 Dvelopment | - | - | 3.510 |
| Description: Begin development of Consolidated Air Mobility Planning System (CAMPS) Increment one, Air Refueling planning capability | | | |
| FY 2018 Plans: Begin development of Consolidated Air Mobility Planning System (CAMPS) Increment one, Air Refueling planning capability. | | | |
| Accomplishments/Planned Programs Subtotals | - | - | 3.510 |

| D. Other Program Funding Summary (\$ in Millions) | | | | | | Cost To | | | | | |
|---|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-----------------|-------------------|
| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Complete | Total Cost |
| • OPAF: BA03: Line Item #834070: <i>AMC Command and Control System</i> | 13.062 | 9.814 | 10.083 | 0.000 | 10.083 | 10.265 | 10.447 | 10.634 | 10.827 | Continuing | Continuing |

Remarks

E. Acquisition Strategy

This effort will be developed, demonstrated, and documented in a way that supports rapid and low cost acquisition and sustainment.

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0401840F / <i>AMC Command and Control System</i> |
|--|---|

CAMPS Increment 1 is being executed under USTRANSCOM Acquisition Authority, and shall be acquired using the DODI 5000.02 Model 3 approach for Incrementally Deployed Software Intensive Program.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0408011F / Special Tactics / Combat Control |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|-------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 7.665 | 7.164 | 8.090 | 0.000 | 8.090 | 8.119 | 8.271 | 8.415 | 8.588 | Continuing | Continuing |
| 675138: ST System Development | - | 7.665 | 7.164 | 8.090 | 0.000 | 8.090 | 8.119 | 8.271 | 8.415 | 8.588 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The Special Tactics (ST) System Development project focuses on modernization development for the Battlefield Air Operations (BAO) Kit. The project is a program within the overarching Battlefield Airmen Modernization (BA-Mod) Program. BAO Kit will develop, test, train and modernize the existing and future System of Systems (SoS) that provide a state-of-the-art Command, Control, Communications, Computer, Intelligence, Surveillance and Reconnaissance (C4ISR) capability. It also provides a suite of systems for all Air Force Specialty Codes supporting the ST community within the Air Force Special Operations Command's (AFSOC's) Battlefield Airmen. Efforts in the ST System Development project focus on reducing the risk of fratricide and substantially reducing size and weight of the equipment carried through three core capabilities: Human Machine Interface (HMI), Line of Sight (LOS) targeting, and Machine to Machine (M2M) C4ISR System and all other ST capability needs.

This program will develop and enhance technologies for Battlefield Airmen ST operators to recognize, identify, range, nominate, and designate targets during both day and night operations. BAO Kit will also significantly reduce the time required to find, track, fix targets, and engage the enemy by providing highly accurate target grid coordinates in three dimensions, generating target imagery both pre and post-strike, and transmitting target data to Command and Control centers. All BAO Kit systems are light, compact, and portable for use by dismounted Battlefield Airmen. FY18 BAO Kit funding will provide significant improvements in operational capability, situational awareness, and precision lethality in the battle space and while continuing to build and enhance the BAO Kit system of systems. This may be conducted through industry technology demonstrations, prototypes, and associated engineering support to posture the BAO Kit for technology insertion. These efforts will deliver enhanced capability for the for the dismounted soldier in terms of dramatic weight reduction and increase mission effectiveness across the conflict spectrum. BAO also supports AFSOC TAC C2 programs to develop and enhance communication systems and equipment essential for ST combat controllers, pararescue, combat weather operators, and tactical air controller parties within AFSOC to perform their mission. The ST operators use this equipment to gather and transmit assault zone suitability and weather data and to perform tactical airfield/assault landing/drop zone operations.

The Special Tactics (ST) System Development activities also include studies and analysis to support both current and future program planning and execution.

This is in Budget Activity 7, Operational System Development because this budget activity includes development effort to upgrade systems that have been fielded or have received approval for full rate production funding in the current or subsequent fiscal years

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0408011F / <i>Special Tactics / Combat Control</i> |
|--|---|

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 7.929 | 7.164 | 8.067 | 0.000 | 8.067 |
| Current President's Budget | 7.665 | 7.164 | 8.090 | 0.000 | 8.090 |
| Total Adjustments | -0.264 | 0.000 | 0.023 | 0.000 | 0.023 |
| • 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 | -0.264 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 0.023 | 0.000 | 0.023 |

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
|---|----------------|----------------|----------------|

| | | | |
|---|-------|-------|-------|
| Title: Human Machine Interface (HMI) | 1.823 | 0.918 | 1.891 |
|---|-------|-------|-------|

Description: HMI is a system of systems that provides integrated operator interface between all the machine components by using unified visual and auditory displays and controls, such as head-mounted displays, tactical earplug connectivity with man pack or handheld communications, integrated tactical computing solution, and power generation and management systems.

- FY 2016 Accomplishments:**
- Developed and implemented Mobile User Objective System (MUOS) compatibility waveform features, which allows the DoD to operate without the dependency of civilian SATCOM services. Upgraded 571 PRC-117G radios for MUOS compliance.
 - Continued development of the handheld Link-16 receiver/transmitter to enable the legacy waveform to be utilized by operators in the field. HH link-16 (PRC-161) development produced 15 prototype radios for test integration.
 - Continued development effort for the Secure Personal Area Network (PAN): The PAN reduces Size, Weight, and Power (SWAP) by eliminating ancillary cables. The PAN requirement is to have secure wireless communication connections between the BAO Kit and items such as radios. Continued to track current SBIR program.
 - Developed GPS technology. This effort was with the current radio vendor to develop and implement a radio software enhancement that pushes the internal GPS signal to the BAO Kit computer. Worked with Harris to develop GPS National Marine Electronics Association (NMEA) Echo location stream. The Echo stream allows the user to pull GPS signal from a radio into an end user device (EUD).
 - Explored wireless technology: exploration of future wireless Bluetooth/Blacktooth encrypted data communication for the Special Tactics community.

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| | 1.823 | 0.918 | 1.891 |
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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0408011F / <i>Special Tactics / Combat Control</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>- Upgraded communications development: HMI efforts reduced the SWAP required to be carried by the Special Tactics Community.</p> <p>FY 2017 Plans:</p> <p>- Will focus on Handheld Link-16 receiver/transmitter for the dismounted operator and interaction with next generation aircraft. Capability supports digitally aided combat air support operations. Plans for development and operational tests for certification. Continue to work on acquisition plan, to include a Source Selection Survey /Request For Information (SSS/RFI) for future procurement.</p> <p>- Will explore and define requirements for implementation of the Iridium waveform granting DoD dedicated airtime.</p> <p>- Will upgrade communications development: HMI efforts reduce the Size, Weight and Power (SWAP) required to be carried by the Special Tactics Community. Specifically includes wireless technology. BAO Program office has a draft System Requirement Document (SRD) for future dismounted tactical communication procurement to include multi-channel hand-held, multi-channel manpack, and next generation High Frequency (HF) radios. Work on acquisition plan, to include a SSS/RFI for future procurement.</p> <p>- Will Pursue MUOS licenses for Test & Integration.</p> <p>FY 2018 Plans:</p> <p>- Will continue to focus on Handheld Link-16 receiver/transmitter for the dismounted operator and interaction with next generation aircraft. Capability will support digitally aided combat air support operations. Plan to develop and operate tests for full spectrum certification (Joint Interoperable Test Command (JITC), Air Force System Interoperability Test (AFSIT), and Authority to Operate (ATO)).</p> <p>-Will continue to explore and define requirements for implementation of the Iridium waveform granting DoD dedicated airtime.</p> <p>- Will continue communications development: will upgrade HMI efforts which reduced the Size, Weight, and Power (SWAP) required to be carried by the Special Tactics Community. Specifically includes wireless technology.</p> <p>- Will require maturation of available technology for future dismounted communication contract in order to meet the requirements of the user.</p> | | | | |
| <p>Title: Line of Sight</p> <p>Description: Line of Sight (LOS) targeting enables the ST Battlefield Airmen to find, fix, track, target and, engage the enemy at close range during day or night operations by providing highly accurate target coordinates in three dimensions. LOS generates vital imagery both pre and post-strike at a fraction of the weight and is more efficient than legacy equipment carried by the operator. Non Line of sight (XLOS) targeting device exploration and development will help capture future capabilities to the Special Tactics community. XLOS devices allow for a remote expendable reporting environmental sensor that enhances AFSOC Special Operation Weather Team's (SOWT) ability to provide timely, accurate, and critical deep battle space weather reconnaissance and intelligence.</p> | | 1.221 | 0.250 | 0.273 |

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|--|---|

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|---|----------------|----------------|----------------|
| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|

| | | | |
|---|--|--|--|
| <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Explored and developed Non Line of sight (XLOS) targeting device. Devices capture future capabilities for the Special Tactics community. - Started development, test, and evaluation of Microweather sensor (MWS) and Advanced MWS. <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Continue to explore and develop future Non Line of sight (XLOS) targeting device capabilities for Special Tactics community. - Continue to explore additional development of the Microweather Sensor (MWS). Look to upgrade design with acoustic sensor and Chemical Biological Radiological Nuclear Explosive (CBRNE) detectors. <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will continue to explore and develop future Non Line of sight (XLOS) targeting device capabilities for Special Tactics community. - Will continue to explore additional development of the Microweather Sensor (MWS). Look to further upgrade acoustic sensor and Chemical Biological Radiological Nuclear Explosive (CBRNE) detectors. | | | |
|---|--|--|--|

| | | | |
|---|-------|-------|-------|
| Title: Machine-To-Machine (M2M) Software Development | 4.621 | 5.996 | 5.926 |
|---|-------|-------|-------|

Description: A suite of map-centric software applications that enables M2M transfer of precision targeting, information management, C4ISR (Command, Control Communications, Computers, Intelligence, Surveillance, and Reconnaissance), and Situational Awareness (SA) information. Provides the ST Battlefield Airmen the ability to find, fix, track, target and engage the enemy which greatly reduces the kill chain and drastically decreases the possibility of fratricide by enhancing the operator's situational awareness on the battlefield.

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| <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> -Developed and tested material prototypes of M2M interfaces for C4ISR; investigated alternate operating systems and application development. - Continued development of 5th Generation fighter integration, explored Net Enabled Weapons (NEW) employment, and explored wireless and Bluetooth technologies to reduce the Size, Weight and Power of the system reducing operator load. - Continued exploitation of two-way Video Data Link capability, increasing interoperability, incorporation of theatre level intelligence systems. <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Develop and test material prototypes to include market survey of M2M graphical user interfaces (GUI) for C4ISR. - Investigate alternate operating systems (OS), such as Android OS, and application development as required by the user to support urgent combat mission needs and requirements; will continue 5th Generation fighter integration and exploration of Net Enabled Weapons (NEW) employment. | | | |
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|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|---------|---------|---------|
| <ul style="list-style-type: none"> - Explore and develop wireless technology to reduce the SWAP of the system reducing operator load. - Exploit two-way encrypted Video Data Link and Network capability, which will increase interoperability, by incorporating theater level intelligence systems by providing SA to the war fighter. <p><i>FY 2018 Plans:</i></p> <ul style="list-style-type: none"> - Will continue to improve development and test material prototypes to include market survey of M2M graphical user interfaces (GUI) for C4ISR. - Will begin to explore requirements to include future INC III capability gap; which includes but is not limited to, Air Field Seizure, personnel recovery, and special operations weapons teams. - Will perform DoD Mandatory Windows 10 upgrades, for Digital Air Strike Suite (DASS) system. - Will continue to support requirements for DASS & Small Bomb Diameter (SBD) II net enabled weapon. | | | |
| Accomplishments/Planned Programs Subtotals | 7.665 | 7.164 | 8.090 |

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • OPAF: BA03: Line item #837100: <i>Tactical C-E Equipment</i> | 31.107 | 49.333 | 15.524 | 0.000 | 15.524 | 15.580 | 16.072 | 16.361 | 16.657 | Continuing | Continuing |

Remarks

E. Acquisition Strategy
BAO Kit is executing an incremental development of Communications and Machine to Machine (M2M) Software. Development will include system engineering, design, integration and fielding support for M2M and Indefinite Delivery Indefinite Quantity (Communications) upgrades. Wright Patterson AFB, OH manages the contract effort.

F. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0702207F / <i>Depot Maintenance (Non-IF)</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 1.514 | 1.518 | 1.528 | 0.000 | 1.528 | 1.499 | 1.527 | 1.553 | 1.585 | Continuing | Continuing |
| 673326: <i>Precision Measurement & Calibration</i> | - | 1.514 | 1.518 | 1.528 | 0.000 | 1.528 | 1.499 | 1.527 | 1.553 | 1.585 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

This program develops, tests, and evaluates national and Air Force measurement standards (hardware) and calibration equipment in support of all Air Force programs and activities, including Precision Measurement Equipment Laboratories (PMELs) worldwide. Metrology research and development provides technology to support systems in all phases of development and acquisition, as well as Air Force R&D laboratories, test ranges, ground test facilities, and operational weapons systems support. Rapidly changing technology requires continuing research and development of measurement standards and calibration equipment to ensure modern weapon systems meet Air Force readiness objectives. This program addresses all metrology disciplines and includes the technology areas of laser, infrared, microwave, millimeter wave, optical, physical, mechanical, electrical, electronic, and ionizing radiation measurements. Metrology is a technical discipline devoted to the science of measurements and to the study and improvement of measurement technology. Measurements are the foundation of military system development, quality assurance, hardware conformance testing and system readiness tests. The integrity of these tests is assured through calibration and traceability assurance schemes. The capability to measure and calibrate must parallel the emergence of new technology, new ranges, and new capabilities of military systems. Lack of new measurement capability impedes or blocks the successful exploitation of new technologies, especially in the movement from development laboratory to production to deployment. R&D efforts are essential within the DoD to pace these requirements, otherwise, these same new systems will suffer time delays, excessive cost, and increased risk due to unreliable test results in all phases of development, production, deployment and operation.

Program is managed by Air Force Materiel Command, Agile Combat Support Directorate, Air Force Metrology Division (WNM).

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0702207F / <i>Depot Maintenance (Non-IF)</i> |
|--|---|

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 1.525 | 1.518 | 1.523 | 0.000 | 1.523 |
| Current President's Budget | 1.514 | 1.518 | 1.528 | 0.000 | 1.528 |
| Total Adjustments | -0.011 | 0.000 | 0.005 | 0.000 | 0.005 |
| • 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 | -0.011 | 0.000 | 0.005 | 0.000 | 0.005 |

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| Title: Weapons Systems Measurement Standards | 0.565 | 0.558 | 0.568 | 0.000 | 0.568 |
| Description: Continue development of national measurement standards to support Air Force infrared / laser / electro-optical weapon systems and support equipment. | | | | | |
| FY 2016 Accomplishments: Project development continues on infrared/laser/electro-optical weapon system support. | | | | | |
| FY 2017 Plans: Will continue project development on infrared/laser/electro-optical weapon system support. | | | | | |
| FY 2018 Base Plans: Project development continues on infrared/laser/electro-optical weapons system support. | | | | | |
| FY 2018 OCO Plans: N/A | | | | | |
| Title: Electrical Measurements | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Description: Continue development of standards for electrical measurements to support high accuracy electronic test equipment. | | | | | |
| FY 2016 Accomplishments: | | | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0702207F / <i>Depot Maintenance (Non-IF)</i> | | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | | | | |
| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
| N/A FY 2017 Plans: N/A FY 2018 Base Plans: N/A FY 2018 OCO Plans: N/A | | | | | |
| Title: Radar Support/Communications Description: Continue development of standards for radar support, RF communication systems, and radar cross section range measurements. FY 2016 Accomplishments: Development of radar support standards, RF communication systems and radar cross section range will continue through development process. FY 2017 Plans: Development of radar support standards, RF communication systems and radar cross section range will continue through development process. FY 2018 Base Plans: Development of radar support standards, RF communication systems and radar cross section range will continue through development process. | 0.300 | 0.300 | 0.300 | - | 0.300 |
| Title: Calibration Description: Continue the development of improved calibration standards to support physical, mechanical, and electro-mechanical support equipment. FY 2016 Accomplishments: Calibration standards which support physical, mechanical and electro-mechanical support equipment will continue to be developed to meet ever changing technology. FY 2017 Plans: | 0.549 | 0.560 | 0.560 | 0.000 | 0.560 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0702207F / <i>Depot Maintenance (Non-IF)</i> |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|---------|---------|--------------|-------------|---------------|
| Calibration standards which support physical, mechanical and electro-mechanical support equipment will continue to be developed to meet ever changing technology. FY 2018 Base Plans: Calibration standards which support physical, mechanical and electro-mechanical support equipment will continue to be developed to meet ever changing technology. FY 2018 OCO Plans: N/A | | | | | |
| Title: Analytical Metrology Description: Continue development of standards, models, and procedures to support analytical metrology applications. FY 2016 Accomplishments: Projects will continue in development phase to meet changing technology. FY 2017 Plans: Projects will continue in development phase to meet changing technology. FY 2018 Base Plans: Continue development of standards, models, and procedures to support analytical metrology applications. | 0.100 | 0.100 | 0.100 | - | 0.100 |
| Accomplishments/Planned Programs Subtotals | 1.514 | 1.518 | 1.528 | 0.000 | 1.528 |

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

Remarks

E. Acquisition Strategy
Primarily accomplished through intergovernmental transfer between the Department of Defense and other Federal Departments.

F. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0708055F / <i>Maintenance, Repair & Overhaul System</i> |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | 0.000 | 0.000 | 0.000 | 31.677 | 0.000 | 31.677 | 45.117 | 40.762 | 40.551 | 16.133 | 70.587 | 244.827 |
| 675207: <i>Maintenance Repair and Overhaul</i> | 0.000 | 0.000 | 0.000 | 31.677 | 0.000 | 31.677 | 45.117 | 40.762 | 40.551 | 16.133 | 70.587 | 244.827 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | - | - |

Program MDAP/MAIS Code: 523

Note

In FY 2018 PE 0708610F, Project 675207, MROi efforts were transferred to PE 0708055F, Maintenance, Repair & Overhaul System, Project 675207, Maintenance Repair and Overhaul, in order to improve transparency of this ACAT I acquisition program.

Prior Years Funding \$46.445M was executed in PE 0708610F.

A. Mission Description and Budget Item Justification

MROi creates an integrated capability that plans, schedules, and executes organic depot maintenance support functions critical to agile planning, optimized workload assignment, resource allocation and throughput, thereby increasing depot maintenance support to the warfighter.

FY18 funding will support the development and integration leading to planned Full Deployment Decision capabilities. The MROi implementer will begin to configure the Oracle suite; configure associated Commercial-Off-The-Shelf (COTS) support software; and develop Reports, Interfaces, Conversions and Extensions (RICE) software.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | | | Date: May 2017 | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0708055F / <i>Maintenance, Repair & Overhaul System</i> | | | |
| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 0.000 | 0.000 | 31.677 | 0.000 | 31.677 |
| Total Adjustments | 0.000 | 0.000 | 31.677 | 0.000 | 31.677 |
| • 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 | 31.677 | 0.000 | 31.677 |
| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
| Title: Maintenance, Repair and Overhaul Initiative (MROi) | 0.000 | 0.000 | 31.677 | 0.000 | 31.677 |
| Description: The MROi transformation effort will create an integrated capability for planning, scheduling, executing organic depot maintenance to support agile planning, optimizing workload assignment and resource allocation. | | | | | |
| FY 2016 Accomplishments: - FY 2016 funding was executed in PE 0708610F, Logistics Information Technology (LOGIT), Project 675207, Logistics IT System Modernization. | | | | | |
| FY 2017 Plans: - FY 2017 funding is executed in PE 0708610F, Logistics Information Technology (LOGIT), Project 675207, Logistics IT System Modernization. | | | | | |
| FY 2018 Base Plans: - FY18 funding will support the development and integration leading to planned FDD capabilities. The MROi implementer will begin to configure the Oracle suite; configure associated COTS support software; and develop Reports, Interfaces, Conversions and Extensions (RICE) software. | | | | | |
| FY 2018 OCO Plans: N/A | | | | | |
| Accomplishments/Planned Programs Subtotals | 0.000 | 0.000 | 31.677 | 0.000 | 31.677 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0708055F / <i>Maintenance, Repair & Overhaul System</i> |
|--|--|

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • OPAF: BA03:Line Item | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 5.974 | 10.071 | 0.221 | 0.000 | 0.000 | 16.266 |
| #834430: <i>Global Combat Support System-Air Force (GCSS-AF)</i> | | | | | | | | | | | |

Remarks

E. Acquisition Strategy

MROi will use an incremental build-release acquisition strategy to deliver capability. The program is using a competitive, best value strategy to select a system implementer utilizing the existing NETCENTS-2 Small Business Application Services contract. Hosting infrastructure will be provided through agreements with DISA.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708055F / Maintenance, Repair & Overhaul System | Project (Number/Name) 675207 / Maintenance Repair and Overhaul |
|--|---|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Maintenance, Repair and Overhaul Initiative: Configuration System Implementer | C/Variou | NETCENTS-2 : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 10.310 | Jul 2018 | 0.000 | | 10.310 | 213.150 | 223.460 | - |
| Maintenance, Repair and Overhaul Initiative: Legacy Systems Interface Development | Various | Various : TBD | 0.000 | 0.000 | | 0.000 | | 0.905 | Dec 2017 | 0.000 | | 0.905 | 0.000 | 0.905 | - |
| Maintenance, Repair and Overhaul Initiative: Software Development | Various | Various : TBD | 0.000 | 0.000 | | 0.000 | | 2.453 | Dec 2017 | 0.000 | | 2.453 | 0.000 | 2.453 | - |
| Maintenance, Repair and Overhaul Initiative: Hosting Environment Support | MIPR | DISA : Gunter Annex, AL | 0.000 | 0.000 | | 0.000 | | 5.719 | Feb 2018 | 0.000 | | 5.719 | 0.000 | 5.719 | - |
| Subtotal | | | 0.000 | 0.000 | | 0.000 | | 19.387 | | 0.000 | | 19.387 | 213.150 | 232.537 | - |

Remarks
As the acquisition strategy is developed and cost estimates mature, the amount in Cost To Complete will be allocated to the appropriate categories.

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Maintenance, Repair and Overhaul Initiative: ISP Support | C/CPFF | Copper River : Gunter Annex, AL | 0.000 | 0.000 | | 0.000 | | 0.964 | Dec 2017 | 0.000 | | 0.964 | 0.000 | 0.964 | - |
| Maintenance, Repair and Overhaul Initiative: FFRDC Support | SS/FFP | MITRE : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 1.466 | Nov 2017 | 0.000 | | 1.466 | 0.000 | 1.466 | - |
| Maintenance, Repair and Overhaul Initiative: Oracle Support | C/FFP | Oracle : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 1.371 | Dec 2017 | 0.000 | | 1.371 | 0.000 | 1.371 | - |
| Subtotal | | | 0.000 | 0.000 | | 0.000 | | 3.801 | | 0.000 | | 3.801 | 0.000 | 3.801 | - |

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708055F / Maintenance, Repair & Overhaul System | Project (Number/Name) 675207 / Maintenance Repair and Overhaul |
|--|---|--|

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Maintenance, Repair and Overhaul Initiative: Joint Interoperability Test Command (JITC) Support | MIPR | DISA : Gunter Annex, AL | 0.000 | 0.000 | | 0.000 | | 0.248 | Apr 2018 | 0.000 | | 0.248 | 0.000 | 0.248 | - |
| Maintenance, Repair and Overhaul Initiative: Test Support | MIPR | GSA : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 0.425 | Feb 2018 | 0.000 | | 0.425 | 0.000 | 0.425 | - |
| Maintenance, Repair and Overhaul Initiative: Test Support Hosting Environment | MIPR | DISA : Gunter Annex, AL | 0.000 | 0.000 | | 0.000 | | 2.860 | Oct 2017 | 0.000 | | 2.860 | 0.000 | 2.860 | - |
| Subtotal | | | 0.000 | 0.000 | | 0.000 | | 3.533 | | 0.000 | | 3.533 | 0.000 | 3.533 | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Maintenance, Repair and Overhaul Initiative: ETASS Support | C/CPFF | OASIS : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 1.432 | Dec 2017 | 0.000 | | 1.432 | 0.000 | 1.432 | - |
| Maintenance, Repair and Overhaul Initiative: PASS Support | C/Various | BTAS : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 1.776 | Dec 2017 | 0.000 | | 1.776 | 0.000 | 1.776 | - |
| Maintenance, Repair and Overhaul Initiative: Cost Analysis Support | C/CPFF | TBD : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 0.480 | Dec 2017 | 0.000 | | 0.480 | 0.000 | 0.480 | - |
| Maintenance, Repair and Overhaul Initiative: Functional Management Office Support | C/CPFF | Integration Branch : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 0.418 | Jan 2018 | 0.000 | | 0.418 | 0.000 | 0.418 | - |
| Maintenance, Repair and Overhaul Initiative: PMA (Travel/GPC) | Various | Various : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 0.850 | Jan 2018 | 0.000 | | 0.850 | 0.000 | 0.850 | - |

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708055F / <i>Maintenance, Repair & Overhaul System</i> | Project (Number/Name) 675207 / <i>Maintenance Repair and Overhaul</i> |
|--|--|---|

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | 0.000 | 0.000 | | 0.000 | | 4.956 | | 0.000 | | 4.956 | 0.000 | 4.956 | - |
| Project Cost Totals | | | 0.000 | 0.000 | | 0.000 | | 31.677 | | 0.000 | | 31.677 | 213.150 | 244.827 | - |

Remarks
Prior Years Funding \$46.445M was executed in PE 0708610F.

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708055F / <i>Maintenance, Repair & Overhaul System</i> | Project (Number/Name) 675207 / <i>Maintenance Repair and Overhaul</i> |

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|--------------------------------------|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| Contract Award (Nov 2017) | | | | | | | | | ■ | | | | | | | | | | | | | | | | | | | |
| Release 1 Development and Deployment | | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | | | | | |
| Release 1 FD (Jan 2020) | | | | | | | | | | | | | | | | | ■ | | | | | | | | | | | |
| IOC (Jul 2020) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Release 2 Development and Deployment | | | | | | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | | | | | |
| Release 2 FD (Dec 2020) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Release 3 Development and Deployment | | | | | | | | | | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | | | |
| Release 3 FD (May 2021) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Release 4 Development and Deployment | | | | | | | | | | | | | | | | | | | | | | | | | ■ | ■ | ■ | ■ |
| Release 4 FD (Aug 2022) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708055F / <i>Maintenance, Repair & Overhaul System</i> | Project (Number/Name) 675207 / <i>Maintenance Repair and Overhaul</i> |

Schedule Details

| Events | Start | | End | |
|--------------------------------------|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Contract Award (Nov 2017) | 1 | 2018 | 1 | 2018 |
| Release 1 Development and Deployment | 1 | 2018 | 4 | 2020 |
| Release 1 FD (Jan 2020) | 2 | 2020 | 2 | 2020 |
| IOC (Jul 2020) | 4 | 2020 | 4 | 2020 |
| Release 2 Development and Deployment | 1 | 2019 | 4 | 2022 |
| Release 2 FD (Dec 2020) | 1 | 2021 | 1 | 2021 |
| Release 3 Development and Deployment | 2 | 2020 | 4 | 2022 |
| Release 3 FD (May 2021) | 3 | 2021 | 3 | 2021 |
| Release 4 Development and Deployment | 2 | 2021 | 4 | 2022 |
| Release 4 FD (Aug 2022) | 4 | 2022 | 4 | 2022 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | 0.000 | 52.482 | 61.676 | 33.344 | 0.000 | 33.344 | 26.408 | 17.193 | 36.671 | 57.773 | Continuing | Continuing |
| 675207: <i>Logistics IT System Modernization</i> | 0.000 | 52.482 | 61.676 | 33.344 | 0.000 | 33.344 | 26.408 | 17.193 | 36.671 | 57.773 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note

This program, BA 07 PE 0708610F, project 675207, Purchase Request Process System (PRPS) FIAR, is a new start.
 This program, BA 07 PE 0708610F, project 675207, Integrated Maintenance Data System - Central Database Software Upgrade Program Version 3.0 (IMDS CDB SUP v3,.0), is a new start.
 This program, BA 07 PE 0708610F, project 675207, Transformation Capability Initiative - Supply Chain Management (SCM) - Field Maintenance Initiative, is a new start.
 This program, BA 07 PE 0708610F, project 675207, Emerging Financial Improvement and Audit Readiness (FIAR Requirements), is a new start.
 This program, BA 07 PE 0708610F, project 675207, Logistics Strike Teams, is a new start.

Footnote:
 In FY 2018, PE 0708610F, Logistics Information Technology (LOGIT) Air Force, Project 675207, Logistics IT System Modernization, efforts were transferred to PE 0708055F, Maintenance Repair, and Overhaul (MRO), Project 675207, Logistics IT System Modernization, in order to bring greater visibility to the effort since it exceeded yearly funding thresholds and was therefore declared an ACAT I program.

A. Mission Description and Budget Item Justification

The AF requires an integrated logistics capability that provides timely, accurate and reliable information to decision makers at all levels of command and across the full range of military operations.

FIAR and Software Upgrades:

The remediation and modification of core logistics systems is necessary for the AF to meet statutory Financial Improvement Audit Readiness (FIAR) and align with the Joint Chiefs of Staff J-4 Concept for Logistics and the AF Logistics Board's approved Enterprise Logistics Strategy (ELS). The AF must sustain and modernize these systems through FIAR Remediation, to address the most immediate gaps in meeting FIAR by the statutory deadline, and Software Upgrades, to reduce high operating costs, implement statutory compliance requirements and improve near term system performance; and system consolidation efforts.

Systems contained in these business areas include, but are not limited to, the Combat Ammunitions System (CAS), Integrated Logistics System-Supply (ILS-S), Purchase Request Process System (PRPS), AF Equipment Management System (AFEMS), Enhanced Technical Information Management System (ETIMS), Enhanced Maintenance Operations Center (EMOC), Integrated Maintenance Data System (IMDS), Reliability and Maintainability Information System (REMIS), Stock Control System (SCS), Aircraft Structural Integrity Management Information System (ASIMIS), and Weapon System Management Information System (WSMIS).

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | |
| <p>Transformation:</p> <p>The AF must transform its logistics business processes and transition away from using numerous stovepipe systems and process flows that execute the same tasks. Eliminating process redundancies across the logistics enterprise will enable the AF to execute more efficient, cost-effective and integrated logistics in the long term. The objective of transformation is to conduct Business Process Re-engineering (BPR) to identify and eliminate overlaps in our current processes and where appropriate, implement the use of new IT systems.</p> <p>The AF Service Development and Delivery Process (SDDP) is being applied as part of this BPR effort to apply discipline and focus to the task of process reengineering and requirements development in order to reduce risk and successfully transform logistics IT systems. In the SDDP, the requirements definition, architecture and design for an IT capability is a government-owned process. The SDDP ensures the AF end user and Sponsor consider all possible doctrine, organization, training, material, leadership, personnel and facility solutions to the end user's need/problem before a materiel solution is sought. The SDDP is a six-step process, each step with its own specific product outcomes that serve as the basis for downstream activities in the SDDP and facilitating enterprise-level analysis to maximize reuse of existing capabilities. Maximizing reuse will eliminate duplicate implementation actions across the AF and assure individual user problems or needs are not solved at the cost of overall enterprise benefits. The outcome of using the SDDP is a well-described requirement which may include a materiel solution, in which case the SDDP details the acquisition and implementation activities to support delivery of the capability. Alternatively, success may be demonstrated by the resolution of the user's problem without a materiel solution.</p> <p>The AF logistics enterprise is comprised of multiple overarching functional areas, to include maintenance, repair and overhaul, end-to-end supply chain support, base supply inventories, and predictive analysis and forecasting. The AF will standardize its business processes within each major logistics functional area through Transformation CI. Transformation Capability Initiatives (CIs) include, but are not limited to: Maintenance, Repair and Overhaul (MROi), Supply Chain Management (SCM), and Product Lifecycle Management (PLM).</p> <p>-Maintenance, Repair and Overhaul (MRO) will create an integrated capability that plans, schedules, and executes organic depot maintenance support functions critical to agile planning, optimized workload assignment, resource allocation and throughput, thereby increasing depot maintenance support to the warfighter.</p> <p>-Supply Chain Management (SCM) includes Supply, Item Master, and Government Furnished Materiel (GFM) initiatives.</p> <p>--SCM Supply encompasses centralized planning and management of items and equipment such as: repairable, consumables, Nuclear Weapons-Related Materiel (NWRM) and cryptographic items and comprises business operations and inventory for the AF Base Supply community.</p> <p>--SCM Item Master provides the capability to manage comprehensive, accurate, reliable item master data (e.g., accurate identification and authorization of owners and users of items).</p> | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> |
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--SCM GFM Accountability will provide AF accountability for contractor managed government material and reporting of logistics and financial data. AF will be able to track end-to-end logistics and financial transactions, provide Total Asset Visibility (TAV) and report equipment and material inventory values.

-PLM enables AF engineering/logistics communities to define, track, protect and manage product data for AF weapon systems and equipment. The AF requires the ability to control configuration of the product throughout the life of the asset. Standardized configuration control will ensure validity, accuracy, reliability, currency, and security of the product information which will increase weapon system readiness by decreasing costs to manage, protect, store and deliver product information.

-Budget Activity 7 (BA 7) - This program is in BA 7, Operational System Development, because this budget activity includes developmental efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 67.915 | 61.676 | 56.533 | 0.000 | 56.533 |
| Current President's Budget | 52.482 | 61.676 | 33.344 | 0.000 | 33.344 |
| Total Adjustments | -15.433 | 0.000 | -23.189 | 0.000 | -23.189 |
| • 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 | -13.269 | 0.000 | | | |
| • SBIR/STTR Transfer | -2.164 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | -23.189 | 0.000 | -23.189 |

Change Summary Explanation

Decrease in FY2018 reflects transfer of \$37.681M to support Maintenance, Repair and Overhaul Initiative (MRO).

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Title: Combat Ammunition System (CAS) Software Upgrade | 9.150 | 3.032 | 0.000 |
| Description: - Modify CAS software to an object oriented/modular design, provide a more sustainable and scalable baseline, and improve operational performance. Modify CAS software to support FIAR. | | | |
| FY 2016 Accomplishments: | | | |
| - Continued work to modify CAS software to an object oriented/modular design. | | | |
| - Continued to modify CAS to provide an enhanced sustainable and scalable baseline and improve operational performance. | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>- Continued to modify CAS software to support FIAR.</p> <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Continue work to modify CAS software to an object oriented/modular design. - Continue to modify CAS to provide an enhanced sustainable and scalable baseline and improve operational performance. - Continue to modify CAS software to support FIAR requirements for the Base Period. <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Effort Complete | | | | |
| <p>Title: Integrated Logistics Systems-Supply (ILS-S) FIAR</p> <p>Description: - ILS-S Program Office to satisfy multiple FIAR requirements activities to establish, document and test/assess system audit readiness. Continue all audit readiness activities to support future FIAR (FISCAM/Blue Book) requirements. These requirements must be accomplished and fully executed to not only ensure program success, but also mandated FIAR compliance.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Completed <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - No Funding in 2017. <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - No Funding in 2018. | | 1.874 | 0.000 | 0.000 |
| <p>Title: Integrated Logistics Systems-Supply (ILS-S) Software Modification - Re-Platform</p> <p>Description: - SW Modification Development: The ILS-S Software Modification - Re-Platform effort is to migrate the Standard Base Supply System (SBSS) source code and data from the current UNISYS mainframe Common Business-Oriented Language (COBOL) based SBSS environment to a mid-tier Java environment. This SW development effort also has a second component to it that is critical and essential to the full capability of Re-Platform. The Legacy Adapter portion of the Enterprise Solution Supply (ES-S) front end requires modification to communicate with the newly modified SBSS system. These modifications are integral for the Re-Platform effort to be successful.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Continued software upgrade modification and related efforts. <p>FY 2017 Plans:</p> | | 11.364 | 11.385 | 0.000 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| - Continue Software Upgrade Modification and Development efforts. | | | | |
| FY 2018 Plans: - No funding in 2018. | | | | |
| Title: Purchase Request Process System (PRPS) FIAR | | 0.000 | 0.000 | 0.300 |
| Description: - PRPS FIAR to perform multiple FIAR Congressional requirements activities to establish, document and test/assess system audit readiness. Continue and accomplish all audit readiness activities to support future FIAR (FISCAM/Blue Book) requirements. These requirements must be accomplished and fully executed to not only ensure program success, but also mandated FIAR compliance. | | | | |
| FY 2016 Accomplishments: - No Funding in FY2016. | | | | |
| FY 2017 Plans: - No Funding in FY2017. | | | | |
| FY 2018 Plans: - Initiate modification of PRPS software to support emerging requirements. | | | | |
| Title: Air Force Equipment Management System (AFEMS) FIAR | | 2.545 | 7.663 | 8.881 |
| Description: - AFEMS system to satisfy multiple FIAR requirements activities to establish, document and test/assess system audit readiness. Continue all audit readiness activities to support future FIAR (FISCAM/Blue Book) requirements. These requirements must be accomplished and fully executed to not only ensure program success, but also mandated FIAR compliance. | | | | |
| Additionally, these AFEMS FIAR requirements will be fielded with multiple SW releases, as identified on the R-4, RDT&E Schedule Profile and R-4A,RDT&E Schedule Details. | | | | |
| FY 2016 Accomplishments: - Continued modification of AFEMS software to support additional FIAR requirements. | | | | |
| FY 2017 Plans: - Continue modification of AFEMS software to support additional FIAR requirements. | | | | |
| FY 2018 Plans: - Will continue modification of AFEMS software to support additional FIAR requirements. | | | | |
| Title: Enhanced Technical Information Management System (ETIMS) Software Upgrade | | 4.917 | 5.275 | 6.300 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>Description: - Modify ETIMS software to integrate additional enhancements satisfying requirements contained in the Functional Requirements Document. ETIMS requires modernization to incorporate enhancements into the AF Enterprise Technical Order (TO) Management System.</p> <p>FY 2016 Accomplishments: - Continued initiating enhancement activities for the ETIMS SUP. - Continued modifying software to implement functional requirements and principle objectives that are documented in the TO Management Functional Requirements Document (FRD), which aligns with the TO Management Capability Development Document (CDD) authorizing the acquisition of the ETIMS to provide the TO Management System capability.</p> <p>FY 2017 Plans: - Continue enhancement activities for the ETIMS SUP. - Modify software to implement functional requirements and principle objectives that are documented in the TO Management FRD, which aligns with the TO Management Capability Development Document (CDD) authorizing the acquisition of the ETIMS to provide the TO Management System capability.</p> <p>FY 2018 Plans: - Will continue enhancement activities for the ETIMS SUP. - Will modify software to implement functional requirements and principle objectives that are documented in the TO Management FRD, which aligns with the TO Management Capability Development Document (CDD) authorizing the acquisition of the ETIMS to provide the TO Management System capability.</p> | | | | |
| <p>Title: Enhanced Maintenance Operations Center (EMOC) Software Upgrade</p> <p>Description: - Modify EMOC software to support one-way interface from G081, which is an Air Mobility Command maintenance data system designator for the Core Automated Maintenance System for Mobility. This provides the ability to update and view an Expeditionary base's aircraft in one EMOC display comprised of selected aircraft from multiple Integrated Maintenance Data System (IMDS) Enterprise Location Codes.</p> <p>FY 2016 Accomplishments: - Completed.</p> <p>FY 2017 Plans: - No Funding in FY2017.</p> <p>FY 2018 Plans:</p> | | 0.529 | 0.000 | 0.000 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| - No Funding in FY2018. | | | | |
| <p>Title: Integrated Maintenance Data System - Central Database Software Upgrade Program Version 3.0 (IMDS CDB SUP v3,.0)</p> <p>Description: - Modify IMDS CDB SUP v3.0 and associated requirements to comply with statutory/regulatory technical improvements (Internet Protocol Version 6, Item Unique Identification, etc), and enable an infrastructure migration to significantly reduce annual operating costs of critical maintenance documentation system.</p> <p>Additionally, these requirements will be fielded with multiple software releases, as identified in Exhibit R-4, RDT&E Schedule Profile and R-4A, RDT&E Schedule Details, for IMDS CDB SUP v3.0.</p> <p>FY 2016 Accomplishments: - No Funding in FY2016.</p> <p>FY 2017 Plans: - No Funding in FY2017.</p> <p>FY 2018 Plans: - Will develop Acquisition documentation, Risk Management Plan and initiate Clinger-Cohen Act certification activities. - Will initiate IMDS CDB software upgrade.</p> | | 0.000 | 0.000 | 0.500 |
| <p>Title: Integrated Maintenance Data System - Central Database (IMDS CDB) Maintenance Scheduling Application Tool (MSAT) Software Upgrade</p> <p>Description: - Modify IMDS Central Database (CDB) software to enable the subsumption of the Maintenance Scheduling Application Tool (MSAT) functionality into IMDS CDB, reducing the number of core logistics systems required to document field base level maintenance.</p> <p>FY 2016 Accomplishments: - Continued IMDS CDB MSAT Software Upgrade. - Continued completing Clinger-Cohen Act certification. - Continued design and development.</p> <p>FY 2017 Plans: - Continue IMDS CDB MSAT Software Upgrade. - Establish a mid-tier within the Common Computing Environment to host MSAT functionality within IMDS CDB.</p> <p>FY 2018 Plans:</p> | | 1.388 | 1.522 | 1.901 |

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| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| - IMDS CDB MSAT Software Upgrade - FD. | | | | |
| <p>Title: Reliability and Maintainability Information System (REMIS) Software Upgrade</p> <p>Description: - Complete existing ACAT III program (Software Upgrade and move into DISA or other common computing environment). Includes Upgrade (JAVA EE), and transition to DISA and common computing environment.</p> <p>FY 2016 Accomplishments: - Completed REMIS software upgrade (JAVA EE) portion of ACAT III program and started transition into DISA CCE capacity services environment actions.</p> <p>FY 2017 Plans: - Continue planned move into DISA or other common computing environment. PMO support contractors and complete setting up CCE capacity services environment actions.</p> <p>FY 2018 Plans: - Continue existing ACAT III program (move into DISA or other common computing environment). PMO support contractors and complete outstanding CCE environment actions.</p> | | 3.038 | 4.029 | 3.500 |
| <p>Title: Reliability and Maintainability Information System (REMIS) Enhancements</p> <p>Description: - Modify REMIS to meet existing and future compliance requirements. Support Logistics Application Rationalization. Modifications may include system changes to subsume functionality of other systems in support of terminating duplicate capability and systems, as well as enhancements to meet compliance requirements such as FIAR mandates, Item Unique Identification (IUID), Defense Logistics Marking Standards (DLMS), and enhancements for information technology modernization.</p> <p>FY 2016 Accomplishments: - No Funding in FY2016.</p> <p>FY 2017 Plans: - No funding in FY2017.</p> <p>FY 2018 Plans: - Initiate FIAR audit mandates, subsumption activities, or enhancements.</p> | | 0.000 | 0.000 | 0.500 |
| <p>Title: Stock Control System Financial Improvement and Audit Readiness (SCS FIAR)</p> <p>Description: - SCS FIAR PMO to perform multiple FIAR Congressional requirements activities to establish, document and test/ assess system audit readiness. Continue and sustain all audit readiness activities to support future FIAR (FISCAM/Blue Book)</p> | | 2.342 | 4.635 | 2.332 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>requirements. These requirements must be accomplished and fully executed to not only ensure program success, but also mandated FIAR compliance. Additionally, these requirements will be fielded with multiple SW releases, as identified in Exhibit R-4, RDT&E Schedule Profile and R-4A, RDT&E Schedule Details, for SCS FIAR.</p> <p>FY 2016 Accomplishments: - Continued modification of SCS FIAR software to achieve FIAR and CFO Act compliance.</p> <p>FY 2017 Plans: - Continue modification of SCS FIAR software to achieve FIAR and CFO Act compliance. Change was due to increase in FY16 funds and corresponding decrease in FY17 funds</p> <p>FY 2018 Plans: - Will complete modification of SCS FIAR software to achieve FIAR and CFO Act compliance - FDD/FD.</p> | | | | |
| <p>Title: Transformation Capability Initiative - Supply Chain Management (SCM) - Item Master</p> <p>Description: - Provides the capability to manage comprehensive, accurate and reliable item data. SCM will initiate SDDP activities and will focus on preliminary system design to address Item Master Management and Item Support Processes.</p> <p>- Note: This is not a new start. In the FY15 PB submission, all SCM efforts were under a single initiative, which included SCM Supply, SCM Item Master, and SCM GFM. In the FY16 PB, the AF divided SCM into three sub-initiatives to provide additional visibility into the specific mission process areas.</p> <p>FY 2016 Accomplishments: - Initiated SCM Item Master Risk Reduction Effort (RRE). RRE concerns study of reuse of code from existing USMC munitions system for Item Master Initiative.</p> <p>FY 2017 Plans: - Continuation of CTMA Item Master Class V effort to validate capabilities, potential hosting scenarios, and joint program office feasibility.</p> <p>FY 2018 Plans: - Continuation of CTMA Item Master Class V effort to validate capabilities, potential hosting scenarios, and joint program office feasibility.</p> | | 2.700 | 2.700 | 1.900 |
| <p>Title: Transformation Capability Initiative - Supply Chain Management (SCM) - Field Maintenance Initiative</p> <p>Description: - SCM Field Maintenance will improve the AF field maintenance capabilities across Mission Generation Network (MGN) and Repair Network (RN) (e.g. propulsion, avionics, C2 enabler systems, cyber systems, communications-electronics</p> | | 0.000 | 0.000 | 0.500 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>& simulation, Precision Measurement Equipment Laboratory (PMEL), etc.) including the planning, scheduling, execution and oversight of functional deficiencies incurred over the past 10 years due to lack of prioritized funding and failure of the previous enterprise-wide modernization approach.</p> <p>FY 2016 Accomplishments: - No Funding in FY2016.</p> <p>FY 2017 Plans: - No Funding in FY2017.</p> <p>FY 2018 Plans: - Will stand up Program Management Office (during 3rd QTR) in order to properly manage and provide complete management oversight of the SCM Field Maintenance Initiative.</p> | | | | |
| <p>Title: Transformation Capability Initiative - Supply Chain Management (SCM) - Government Furnished Materiel (GFM) - Accountability</p> <p>Description: - SCM GFM Accountability will provide AF accountability for contractor managed government material and reporting of logistics and financial data. AF will be able to track end-to-end logistics and financial transactions, provide TAV and report equipment and material inventory values.</p> <p>FY 2016 Accomplishments: - Initiated SCM Accountability software change request (USAF)requirements with Defense Property Accountability System (DPAS) Program Office.</p> <p>FY 2017 Plans: - Continue to monitor funded activity which will design, develop and field a solution involving reissue of existing code solution.</p> <p>FY 2018 Plans: - No Funding in FY 2018. Assessment completed - Program funded by DLA in FY 2018 and out.</p> | | 0.741 | 3.405 | 0.000 |
| <p>Title: Transformation Capability Initiative - Maintenance, Repair and Overhaul (MRO)</p> <p>Description: - The MRO transformation effort will create an integrated capability for planning, scheduling, executing organic depot maintenance to support agile planning, optimizing workload assignment and resource allocation.</p> <p>FY 2016 Accomplishments:</p> | | 9.826 | 9.320 | 0.000 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>- Supported formulation, review, approval and execution of acquisition activities for a targeted contract award for System Integrator (SI).</p> <p>FY 2017 Plans:</p> <p>- Continuing the formulation, review, approval and execution of acquisition activities for a targeted contract award for a System Integrator (SI) - Continuing work on hosting environment.</p> <p>FY 2018 Plans:</p> <p>- MRO will transfer to PE 0708055F in FY2018.</p> | | | | |
| <p>Title: Transformation Capability Initiative - Product Lifecycle Management (PLM)</p> <p>Description: - PLM will enable AF engineering/logistics communities to define, track, protect and manage product data for AF weapon systems and equipment. It will also enable collaboration by connecting field users with center engineers, original equipment manufacturers with equipment specialists and internal/external stakeholders, and modernize the means used to manage PLM information from cradle to grave.</p> <p>FY 2016 Accomplishments:</p> <p>- Initiated PLM prototyping "Build Zero" effort, a risk reduction activity to provide an initial AF enterprise PLM solution to sufficiently configure and control Product Lifecycle Information (PLI) that enables depot and field engineering technical assistance request capability.</p> <p>- Performed program planning and definition, while developing the post-Build Zero Acquisition Strategy, Enterprise Infrastructure, Program Charter, Program Schedule, and Program Office Estimate.</p> <p>FY 2017 Plans:</p> <p>- Continue PLM prototyping "Build Zero" effort and CTMA project.</p> <p>- Continue to perform program planning and definition, while developing the post-build zero Acquisition Strategy, Enterprise Infrastructure, Program Charter, Program Schedule, and Program Office Estimate, IT compliance, and Milestone documentation.</p> <p>FY 2018 Plans:</p> <p>- Will closeout PLM prototyping "Build Zero" effort and CTMA project.</p> <p>- Will continue to perform program planning and definition, while developing the post-build zero Acquisition Strategy, enterprise Infrastructure, Program Charter, Program Schedule, Program Office Estimate, IT compliance, Milestone documentation, and draft RFP documentation.</p> | | 2.068 | 8.710 | 3.406 |
| <p>Title: Emerging Financial Improvement and Audit Readiness (FIAR Requirements)</p> <p>Description: - Modify operational Logistics software systems to incorporate emerging FIAR requirements. These requirements are the result of on-going analysis of the Defense Finance and Accounting Services (DFAS) Bluebook which publishes changes</p> | | 0.000 | 0.000 | 2.124 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| <p>approximately two times each year. The results are identified and documented systems deficiencies that can only be satisfied via a material solution.</p> <p>FY 2016 Accomplishments: - No funding in FY 2016</p> <p>FY 2017 Plans: - No funding in FY 2017</p> <p>FY 2018 Plans: Initiate FIAR remediation efforts of those program with deficiencies documented as a result of on-going analyses of the latest DFAS Bluebook review.</p> | | | |
| <p>Title: Logistics Strike Teams</p> <p>Description: - Rapidly transform the Logistics IT landscape and improve operational command and control by consolidating and collapsing 359 systems; enhancing logistics data analytics and forecasting with more accurate and timely data; and reducing costs by migrating applications to modern hosting environments with shared services, all why applying Agile methodologies to reduce risk and complexity, enable technology insertion and synthesize Logistics information.</p> <p>FY 2016 Accomplishments: - No funding FY 2016</p> <p>FY 2017 Plans: - No funding in FY 2017</p> <p>FY 2018 Plans: - Initiate and accomplish efforts to collapse 359 systems and enhance logistics analytics by applying more accurate methodologies that will 1) improve command and control, 2) enhance logistics data analytics and forecasting, and 3) eliminate redundancy and duplication.</p> | 0.000 | 0.000 | 1.200 |
| Accomplishments/Planned Programs Subtotals | 52.482 | 61.676 | 33.344 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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|--|---|

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • OPAF:BA03:Line Item # 834430: <i>Global Combat Support System-Air Force (GCSS-AF)</i> | 14.219 | 0.924 | 1.964 | 0.000 | 1.964 | 0.481 | 0.491 | 4.992 | 8.057 | Continuing | Continuing |

Remarks

E. Acquisition Strategy

Air Force Program Executive Office - Business Enterprise Systems (AFPEO-BES) is evaluating systems under the DoDI 5000.02 to approve milestone decisions for each core logistics system remediation/modification project.

These projects will use Firm Fixed Price contracts to the maximum extent possible as the programs establish new contracts or task orders. To improve the efficiency of the contracting process and reduce contract cycle time, the core logistics system program offices plan to use the existing NETCENTS-2 contract vehicle utilizing Best Value acquisition methodology where possible.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i> |
|--|---|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Combat Ammunition System Software Upgrade Program Version 3.0 (CAS SUP v3.0) | C/CPFF | SI Sys Tech : Gunter Annex, AL | 0.000 | 7.092 | Apr 2016 | 2.259 | Dec 2016 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Integrated Logistics Systems-Supply Financial Improvement Audit Readiness (ILS-S FIAR) | C/CPFF | Array : Gunter Annex, AL | 0.000 | 0.905 | Apr 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Integrated Logistics Systems - Supply Software Modification-Re-Platform (ILS-S SM-RP) | C/CPFF | Array : Gunter Annex, AL | 0.000 | 3.254 | Dec 2016 | 2.017 | Apr 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| ILS-S Software Modification - Re-Platform - Legacy Adapter | C/FFP | Array : Gunter Annex, AL | 0.000 | 0.806 | Dec 2016 | 0.151 | May 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| ILS-S Software Modification - Re-Platform - Hardware | C/FFP | DISA : Gunter Annex, AL | 0.000 | 2.730 | Jan 2017 | 5.001 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| ILS-S Software Modification - Re-Platform - COTS Software | C/FFP | ORACLE : Gunter Annex, AL | 0.000 | 1.437 | Mar 2016 | 0.487 | Aug 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| PRPS - FIAR | C/Various | NETCENTS 2 : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 0.200 | Feb 2018 | 0.000 | | 0.200 | Continuing | Continuing | - |
| Air Force Equipment Management System Financial Improvement and Audit Readiness (AFEMS FIAR) | SS/ Various | MacAuley Brown : WPAFB, OH | 0.000 | 1.515 | Aug 2016 | 5.488 | Feb 2017 | 6.487 | Nov 2017 | 0.000 | | 6.487 | Continuing | Continuing | - |
| Enhanced Technical Information Management System (ETIMS) Release v01.03 (ETIMS Release v01.03) | C/CPFF | DMI : Varoious | 0.000 | 4.906 | Dec 2016 | 4.407 | May 2017 | 5.259 | Mar 2018 | 0.000 | | 5.259 | Continuing | Continuing | - |
| Enhanced Maintenance Operations Center | C/CPFF | Indrasoft : Gunter, AL | 0.000 | 0.423 | Jan 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i> |
|--|---|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Software Upgrade Program Version 4.2 (EMOC SUP v4.2) | | | | | | | | | | | | | | | |
| Integrated Maintenance Data System - Central Database (IMDS CDB) Software Upgrade - Developer | C/CPFF | NETCENTS-2 : Gunter Annex, AL | 0.000 | 0.000 | | 0.000 | | 0.500 | Dec 2017 | 0.000 | | 0.500 | Continuing | Continuing | - |
| IMDS CDB Maintenance Scheduling Application Tool Software Upgrade Program Version 2.1 (IMDS CDB MSAT SUP v2.1) | C/FFP | NETCENTS-2 : Gunter Annex, AL | 0.000 | 0.989 | Sep 2016 | 0.575 | Jul 2017 | 1.436 | Nov 2017 | 0.000 | | 1.436 | Continuing | Continuing | - |
| Reliability and Maintainability Information System Software Upgrade Program Version 11.3.2 (REMIS SUP v11.3.2) | SS/FFP | NGIT : WPAFB, OH | 0.000 | 1.509 | Jan 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Reliability and Maintainability Information System (REMIS) Enhancements - Developer | SS/FFP | NGIT : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Stock Control System Financial Improvement Audit Readiness (SCS FIAR) | C/Variou | NETCENTS-2 : WPAFB, OH | 0.000 | 1.506 | Feb 2016 | 4.029 | Dec 2016 | 1.764 | Dec 2017 | 0.000 | | 1.764 | Continuing | Continuing | - |
| Stock Control System (SCS) Software Upgrade - Developer | C/TBD | NETCENTS-2 : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.000 | - |
| Transformation Capability Initiative - Maintenance, Repair and | C/Variou | NETCENTS-2 : WPAFB, OH | 0.000 | 0.000 | | 1.545 | Nov 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i> |
|--|---|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Overhaul (MRO) Design/Development | | | | | | | | | | | | | | | |
| Transformation Capability Initiative - SCM GFM Accountability Software Developer | SS/ Various | OUSDAT&L AA Property & Equip : Washington, DC | 0.000 | 0.741 | Jul 2016 | 3.405 | Jan 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Transformation capability Initiative - Product Lifecycle Management (PLM) Software Developer | SS/CPFF | Various : Warner Robins, GA | 0.000 | 1.000 | Aug 2016 | 1.015 | May 2017 | 1.751 | May 2018 | 0.000 | | 1.751 | 0.000 | 3.766 | - |
| Transformation Capability Initiative - Product Lifecycle management (PLM) Software Configuration | Various | NCMS : Hill AFB, UT | 0.000 | 0.792 | Aug 2016 | 0.509 | May 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Aircraft Structural Integrity Management Information System Modernization (ASIMIS Modernization) | SS/CPFF | GCSS-AF : Tinker AFB, OK | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Emerging Financial Improvement and Audit Readiness (FIAR) Requirements | C/Various | TBD : Gunter Annex, AL | 0.000 | 0.000 | | 0.000 | | 2.124 | Jun 2018 | 0.000 | | 2.124 | 0.000 | 2.124 | - |
| Logistics Strike Teams | C/Various | TBD : Gunter Annex, AL | 0.000 | 0.000 | | 0.000 | | 1.200 | Jun 2018 | 0.000 | | 1.200 | 0.000 | 1.200 | - |
| Transformation Capability Initiative (SCM) - FieldMaintenance Initiative | C/Various | TBD : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 0.500 | Jul 2018 | 0.000 | | 0.500 | 0.000 | 0.500 | - |
| Subtotal | | | 0.000 | 29.605 | | 30.888 | | 21.221 | | 0.000 | | 21.221 | - | - | - |

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i> |
|--|---|---|

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| CAS SUP SME Support | C/FFP | DATUM : Gunter Annex, AL | 0.000 | 0.983 | Jan 2016 | 0.278 | Dec 2016 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| CAS SUP - ISP SUPPORT | C/FFP | COPPER RIVER : GUNTER ANNEX, AL | 0.000 | 0.566 | Sep 2017 | 0.154 | Sep 2018 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| ILS-S FIAR - SME Support | C/FFP | CENTECH : Gunter Annex, AL | 0.000 | 0.902 | Feb 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| ILS-S Software Modification - Re-Platform - SME Support | C/FFP | DSD : Gunter Annex, AL | 0.000 | 2.767 | Apr 2016 | 3.459 | Apr 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| ILS-S Technical Support - Re-Platform | C/CPAF | IAM SUPPORT : Gunter Annex, AL | 0.000 | 0.000 | | 0.085 | Mar 2017 | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.085 | - |
| Enhanced Technical information Management System (ETIMS) Software Upgrade - Support | Various | Various : Various | 0.000 | 0.000 | | 0.708 | Apr 2017 | 0.517 | Jan 2018 | 0.000 | | 0.517 | Continuing | Continuing | - |
| IMDS CDB-Hosting Environment Support | MIPR | DISA : Gunter Annex, AL | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| IMDS CDB MSAT - Hosting Environment Support | MIPR | DISA : Gunter Annex, AL | 0.000 | 0.369 | Oct 2016 | 0.497 | Jun 2017 | 0.144 | Sep 2018 | 0.000 | | 0.144 | Continuing | Continuing | - |
| Air Force Equipment Management System (AFEMS) FIAR - ISP Support | C/FFP | Copper River : WPAFB, OH | 0.000 | 0.062 | Feb 2016 | 0.120 | Dec 2016 | 0.120 | Dec 2017 | 0.000 | | 0.120 | 0.000 | 0.302 | - |
| Air Force Equipment Management System (AFEMS) FIAR- SME Support | C/FFP | Excellus / CACI : WPAFB, OH | 0.000 | 0.550 | Apr 2016 | 0.936 | Dec 2016 | 0.936 | Dec 2017 | 0.000 | | 0.936 | Continuing | Continuing | - |
| REMIS SUP - SME Support | C/FFP | NETCENTS-2 : WPAFB, OH | 0.000 | 0.237 | Apr 2017 | 0.418 | Aug 2017 | 0.884 | Aug 2018 | 0.000 | | 0.884 | Continuing | Continuing | - |
| REMIS SUP - DISA Support | C/CPAF | DISA : Gunter Annex, AL | 0.000 | 0.471 | May 2017 | 0.541 | Jun 2017 | 0.000 | | 0.000 | | 0.000 | 0.000 | 1.012 | - |

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i> |
|--|---|---|

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| REMIS SUP - IA Support | C/CPFF | SNIM : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| REMIS SUP - NGIS | SS/CPFF | NGIS : WPAFB, OH | 0.000 | 0.002 | May 2017 | 2.138 | Sep 2017 | 1.570 | Nov 2017 | 0.000 | | 1.570 | 0.000 | 3.710 | - |
| REMIS SUP - ISP Support | C/CPFF | Copper River : Gunter Annex, AL | 0.000 | 0.370 | Feb 2017 | 0.100 | Aug 2017 | 0.325 | Nov 2017 | 0.000 | | 0.325 | Continuing | Continuing | - |
| REMIS Enhancements - SME Support | C/FFP | Various : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.000 | - |
| REMIS Enhancements - IA Support | C/FFP | NETCENTS 2 : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.000 | - |
| REMIS Enhancements - ISP Support | C/CPAF | SNIM : Gunter Annex, AL | 0.000 | 0.000 | | 0.000 | | 0.500 | Nov 2017 | 0.000 | | 0.500 | 0.000 | 0.500 | - |
| SCS FIAR - ISP Support | C/FFP | Copper River : WPAFB, OH | 0.000 | 0.000 | | 0.052 | Feb 2017 | 0.053 | Feb 2018 | 0.000 | | 0.053 | Continuing | Continuing | - |
| SCS FIAR - SME Support | C/FFP | NETCENTS-2 : WPAFB, OH | 0.000 | 0.697 | Apr 2016 | 0.261 | Apr 2017 | 0.300 | Apr 2018 | 0.000 | | 0.300 | Continuing | Continuing | - |
| SCS FIAR - Datacom Support | C/CPAF | NETCENTS 2 : WPAFB, OH | 0.000 | 0.054 | Mar 2016 | 0.023 | Mar 2017 | 0.022 | Mar 2018 | 0.000 | | 0.022 | 0.000 | 0.099 | - |
| SCS FIAR - CFO SME Support | C/CPAF | ETASS : WPAFB, OH | 0.000 | 0.062 | Sep 2016 | 0.068 | Sep 2017 | 0.068 | Sep 2018 | 0.000 | | 0.068 | 0.000 | 0.198 | - |
| MRO - ISP Support | C/CPFF | Copper River : Gunter Annex, AL | 0.000 | 0.258 | Mar 2016 | 0.096 | Sep 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| MRO - Legacy System Software | C/CPFF | Various : WPAFB, OH | 0.000 | 1.599 | Apr 2016 | 0.341 | Apr 2017 | 0.000 | | 0.000 | | 0.000 | 0.000 | 1.940 | - |
| MRO - Hosting Environment Support | MIPR | DISA : Gunter Annex, AL | 0.000 | 1.792 | Sep 2016 | 2.203 | Jun 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| MRO - Mitre | SS/CPFF | Mitre : WPAFB, OH | 0.000 | 2.136 | Jan 2016 | 1.250 | Apr 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| MRO - Mitre Integration Branch | SS/CPAF | Mitre : Int Br, OH | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| MRO - Oracle | C/Various | Oracle : WPAFB, OH | 0.000 | 1.225 | Mar 2016 | 1.534 | Dec 2016 | 0.000 | | 0.000 | | 0.000 | 0.000 | 2.759 | - |
| PRPS - Support | C/Various | TBD : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 0.075 | Nov 2017 | 0.000 | | 0.075 | 0.000 | 0.075 | - |
| Subtotal | | | 0.000 | 15.102 | | 15.262 | | 5.514 | | 0.000 | | 5.514 | - | - | - |

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i> |
|--|---|---|

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| CAS Software Upgrade CIE | MIPR | GSA : Gunter Annex, AL | 0.000 | 0.059 | Dec 2015 | 0.097 | Dec 2016 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| EMOC Software Upgrade - Test Support | MIPR | GSA : Gunter Annex, AL | 0.000 | 0.034 | Jul 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Enhanced Technical Information Management System (ETIMS) Software Upgrade - Test and Evaluation | TBD | GCSS AF : Gunter, AL | 0.000 | 0.000 | | 0.115 | Aug 2017 | 0.474 | Feb 2018 | 0.000 | | 0.474 | Continuing | Continuing | - |
| IMDS CDB MSAT Software Upgrade - Test Support | MIPR | GSA : Gunter Annex, AL | 0.000 | 0.000 | | 0.036 | Apr 2017 | 0.040 | Apr 2018 | 0.000 | | 0.040 | Continuing | Continuing | - |
| Air Force Equipment Management System (AFEMS) FIAR - JITC | MIPR | GSA : WPAFB, OH | 0.000 | 0.026 | Apr 2016 | 0.113 | Dec 2016 | 0.113 | Dec 2017 | 0.000 | | 0.113 | Continuing | Continuing | - |
| Air Force Equipment Management System (AFEMS) FIAR - LDTO Support | C/CPAF | GSA : WPAFB, OH | 0.000 | 0.038 | Apr 2016 | 0.446 | Jun 2017 | 0.446 | Jun 2018 | 0.000 | | 0.446 | 0.000 | 0.930 | - |
| SCS FIAR - Test Support | MIPR | GSA : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| MRO DISA JITC Support | MIPR | DISA : Gunter Annex, AL | 0.000 | 0.123 | Apr 2016 | 0.103 | Apr 2017 | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.226 | - |
| MRO - Test Support | MIPR | GSA : WPAFB, OH | 0.000 | 0.256 | Mar 2016 | 0.256 | Mar 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| ILS-S Software Modification - Re Platform - Support | C/FFP | JITC : Gunter Annex, AL | 0.000 | 0.107 | Jan 2017 | 0.107 | Oct 2017 | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.214 | - |
| REMIS SUP | C/Various | GSA : WPAFB, OH | 0.000 | 0.000 | | 0.055 | Apr 2017 | 0.057 | Apr 2018 | 0.000 | | 0.057 | 0.000 | 0.112 | - |
| Subtotal | | | 0.000 | 0.643 | | 1.328 | | 1.130 | | 0.000 | | 1.130 | - | - | - |

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date: May 2017**

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i> |
|--|---|---|

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| CAS Software Upgrade PMA | C/Various | BTAS/Jacobs/FIAR : Gunter Annex, AL | 0.000 | 0.450 | Nov 2015 | 0.244 | Dec 2016 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| ILS-S FIAR - Cost Support | C/CPFF | Tecolote : Gunter Annex, AL | 0.000 | 0.010 | Apr 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| ILS-S FIAR - Advisory and Assistance Services | C/Various | Oasis/BTAS : Gunter Annex, AL | 0.000 | 0.010 | Apr 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| ILS-S FIAR - ETASS | C/CPFF | Wealth Mgmt Partners : Gunter AFB, AL | 0.000 | 0.047 | Apr 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| ILS-S Software Modification - Re-Platform - Cost Support | C/FFP | Cost Support : Gunter Annex, AL | 0.000 | 0.083 | Sep 2016 | 0.032 | Mar 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| ILS-S Software Modification - Re-Platform - ETASS | C/FFP | BTAS : Gunter Annex, AL | 0.000 | 0.180 | Aug 2016 | 0.046 | Mar 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| ILS-S Software Modification Re-Platform-JITC | C/FFP | MIPR : Gunter Annex, AL | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.000 | - |
| EMOC Software Upgrade - PMA | C/CPFF | Jacobs Tech : Gunter Annex, AL | 0.000 | 0.045 | Mar 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| EMOC Software Upgrade - Cost Support | C/CPFF | Tecolote : Gunter Annex, AL | 0.000 | 0.027 | Nov 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Enhanced Technical information management System (ETIMS) Software Upgrade | Various | Various : Various | 0.000 | 0.011 | Dec 2016 | 0.045 | Sep 2017 | 0.050 | Sep 2018 | 0.000 | | 0.050 | Continuing | Continuing | - |
| IMDS CDB Software Upgrade - PMA | C/FFP | BTAS : Gunter Annex, AL | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| IMDS CDB Software Upgrade - Cost Support | C/CPFF | Tecolote : Gunter Annex, AL | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| IMDS CDB MSAT - PMA | C/Various | BTAS/Oasis : Gunter Annex, AL | 0.000 | 0.009 | Jan 2016 | 0.404 | Jul 2017 | 0.241 | Jul 2018 | 0.000 | | 0.241 | 0.000 | 0.654 | - |

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date: May 2017**

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i> |
|--|---|---|

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| IMDS CDB MSAT - Cost | C/CPFF | BTAS : Gunter Annex, AL | 0.000 | 0.021 | Dec 2015 | 0.010 | Mar 2017 | 0.040 | Mar 2018 | 0.000 | | 0.040 | Continuing | Continuing | - |
| Air Force Equipment Management (AFEMS) FIAR - PMA | C/CPAF | Various : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Air Force Equipment Management (AFEMS) FIAR - Wealth Management | C/CPAF | Wealth Mgt Partners LLC : Gunter, AL | 0.000 | 0.195 | Sep 2016 | 0.180 | Sep 2017 | 0.180 | Sep 2018 | 0.000 | | 0.180 | 0.000 | 0.555 | - |
| Air Force Equipment Management (AFEMS) FIAR PASS | C/CPAF | BTAS : WPAFB, OH | 0.000 | 0.159 | Aug 2016 | 0.113 | Aug 2017 | 0.113 | Aug 2018 | 0.000 | | 0.113 | 0.000 | 0.385 | - |
| Air Force Equipment Management (AFEMS) FIAR ETASS | C/CPAF | OASIS : WPAFB, OH | 0.000 | 0.000 | | 0.267 | Sep 2017 | 0.267 | Sep 2018 | 0.000 | | 0.267 | 0.000 | 0.534 | - |
| REMIS Software Upgrade - Advisory and Assistance Services | C/Various | BTAS : WPAFB, OH | 0.000 | 0.449 | May 2016 | 0.777 | May 2017 | 0.805 | May 2018 | 0.000 | | 0.805 | Continuing | Continuing | - |
| SCS FIAR - Advisory and Assistance Services | C/Various | BTAS/Jacobs : WPAFB, OH | 0.000 | 0.023 | Aug 2016 | 0.033 | Aug 2017 | 0.033 | Aug 2018 | 0.000 | | 0.033 | Continuing | Continuing | - |
| SCS SUP - Advisory and Assistance Services | C/Various | ETASS : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.000 | - |
| MRO - ETASS Support | C/CPFF | OASIS : WPAFB, OH | 0.000 | 1.328 | Jan 2016 | 0.710 | Apr 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| MRO - ETASS Support Int Branch | C/CPAF | /Oasis : WPAFB, OH | 0.000 | 0.000 | | 0.100 | Apr 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| MRO - PASS Support | C/Various | BTAS : WPAFB, OH | 0.000 | 0.421 | Jan 2016 | 0.316 | Aug 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| MRO - Cost Analyst Support | C/CPFF | Tecolote : WPAFB, OH | 0.000 | 0.688 | Jan 2016 | 0.272 | Apr 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| MRO - PMA | C/Various | Various : WPAFB, OH | 0.000 | 0.000 | | 0.594 | Mar 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Transformation Capability Initiative - Product | C/Various | Various : WPAFB, OH | 0.000 | 0.276 | Feb 2016 | 7.186 | Jan 2017 | 1.655 | Jan 2018 | 0.000 | | 1.655 | Continuing | Continuing | - |

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i> |
|--|---|---|

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | | |
| Lifecycle Management (PLM) PMA Support | | | | | | | | | | | | | | | | |
| Transformation Capability Initiative - Supply Chain Management (SCM) - Item Master - PMO Support | C/Variou | Various : WPAFB, OH | 0.000 | 2.700 | Apr 2016 | 2.700 | Apr 2017 | 1.900 | Jan 2018 | 0.000 | | 1.900 | Continuing | Continuing | - | |
| Transformation Capability Initiative - SCM Equipment PACFO (Supply) | C/Variou | Various : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - | |
| Transformation Capability Initiative - SCM Supply | C/Variou | Various : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.000 | - | |
| Transformation Capability Initiative - Field Maintenance | C/Variou | Various : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.000 | - | |
| ASIMIS Software Upgrade - PMO Support | C/Variou | Various : Tinker AFB, OK | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.000 | - | |
| Weapons System Management Information System (WSMIS) Software Upgrade 2 | C/Variou | Various : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - | |
| SCS FIAR - CFO SME Support | C/CPAF | WMP, LLC : WPAFB, OH | 0.000 | 0.000 | | 0.169 | Sep 2017 | 0.170 | Sep 2018 | 0.000 | | 0.170 | Continuing | Continuing | - | |
| Emerging Financial Improvement and Audit Readiness (FIAR) Requirements | C/CPAF | Various : Gunter Annex, AL | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.000 | - | |
| Logistics Strike Team | C/CPAF | Various : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.000 | - | |
| PRPS- Advisory Services | C/CPAF | Various : WPAFB, OH | 0.000 | 0.000 | | 0.000 | | 0.025 | Nov 2017 | 0.000 | | 0.025 | 0.000 | 0.025 | - | |
| Subtotal | | | 0.000 | 7.132 | | 14.198 | | 5.479 | | 0.000 | | 5.479 | - | - | - | |

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|---|----------------|---------|--|--|--|-----------------|----------------|---|---------------------|---------------|--------------------------------|
| Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force | | | | | | | | Date: May 2017 | | | |
| Appropriation/Budget Activity 3600 / 7 | | | | R-1 Program Element (Number/Name) PE 0708610F / Logistics Information Technology (LOGIT) | | | | Project (Number/Name) 675207 / Logistics IT System Modernization | | | |
| | Prior Years | FY 2016 | | FY 2017 | | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
| Project Cost Totals | 0.000 | 52.482 | | 61.676 | | 33.344 | 0.000 | 33.344 | - | - | - |

Remarks

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force **Date:** May 2017

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|--|---|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i> |
|--|---|---|

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|--|------------|---|---|---|------------------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| ETIMS Software Upgrade Enhancements Risk Reduction Phase | ████████ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ETIMS Software Upgrade Enhancements Phase I MS B (Aug 2016) | | | | | ██ | | | | | | | | | | | | | | | | | | | | | | | |
| ETIMS Software Upgrade Enhancements Phase I Contract Award | | | | | ██ | | | | | | | | | | | | | | | | | | | | | | | |
| ETIMS Software Upgrade Enhancements Development and Deployment | | | | | ████████████████ | | | | | | | | | | | | | | | | | | | | | | | |
| ETIMS Software Upgrade Enhancements FDD | | | | | | | | | | | | | ██ | | | | | | | | | | | | | | | |
| ETIMS Software Upgrade Enhancements FOC | | | | | | | | | | | | | ██ | | | | | | | | | | | | | | | |
| EMOC Software Upgrade Development and Deployment | ██████████ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EMOC Software Upgrade FDD (Oct 2016) | | | | | ██ | | | | | | | | | | | | | | | | | | | | | | | |
| EMOC Software Upgrade FD (Oct 2016) | | | | | ██ | | | | | | | | | | | | | | | | | | | | | | | |
| IMDS CDB Software Upgrade MDD (Sep 2018) | | | | | | | | | | | | | ██ | | | | | | | | | | | | | | | |
| IMDS CDB MSAT Software Upgrade Risk Reduction | ██████████ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| IMDS CDB MSAT Software Upgrade MS B (Aug 2016) | | | | | ██ | | | | | | | | | | | | | | | | | | | | | | | |
| IMDS CDB MSAT Software Upgrade Contract Award (Sep 2016) | | | | | ██ | | | | | | | | | | | | | | | | | | | | | | | |
| IMDS CDB MSAT Software Upgrade Development and Deployment | | | | | ████████████████ | | | | | | | | | | | | | | | | | | | | | | | |
| IMDS CDB MSAT Software Upgrade LDD/IOC (Jun 2018) | | | | | | | | | ██ | | | | | | | | | | | | | | | | | | | |
| IMDS CDB MSAT Software Upgrade FDD (Sep 2018) | | | | | | | | | | | | | ██ | | | | | | | | | | | | | | | |

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force **Date:** May 2017

| | | |
|--|---|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i> |
|--|---|---|

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| IMDS CDB MSAT Software Upgrade FD (Sep 2018) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PRPS MDD (Sep 2018) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| REMIS Software Upgrade Development & Deployment | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| REMIS Software Upgrade LDD/IOC (Feb 2017) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| REMIS Software Upgrade FDD/FD (Jul 2017) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| REMIS Enhancements | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SCS FIAR - (2) Development and Deployment | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SCS FIAR - (2) LDD/IOC (Nov 2015) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SCS FIAR - (3) Development and Deployment | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SCS FIAR - (3) LDD (Jul 2016) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SCS FIAR - (4) Development and Deployment | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SCS FIAR - (4) LDD (Aug 2016) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SCS FIAR - (5) Development and Deployment | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SCS FIAR - (5) LDD (Sep 2016) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SCS FIAR - (6) Development and Deployment | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SCS FIAR - (6) LDD (Sep 2016) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SCS FIAR - (7) Development and Deployment | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SCS FIAR - (7) LDD (Nov 2017) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SCS FIAR - (8) Development and Deployment | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SCS FIAR - (8) LDD (Jul 2018) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SCS FIAR - (9) Development and Deployment | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SCS FIAR - (9) FDD/FD (Sep 2018) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i> |
|--|---|---|

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| Transformation Capability Initiative - SCM - Field Maintenance Initiative - Materiel Solutions Analysis | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transformation Capability Initiative - SCM - Field Maintenance Initiative - MS B (Sep 2019) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transformation Capability Initiative - SCM - Field Maintenance Initiative - Development and Deployment | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transformation Capability Initiative - SCM - Field Maintenance Initiative - IOC | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transformation Capability Initiative - SCM - Item Master - Pre MDD Risk Reduction | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transformation Capability Initiative - SCM- Item Master - MDD (Mar 2017) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transformation Capability Initiative - SCM - Item Master - Materiel Solutions Analysis | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transformation Capability Initiative - SCM - Item Master - MS B (Jan 2018) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transformation Capability Initiative - SCM - Item Master - Development and Deployment | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transformation Capability Initiative - SCM- Item Master - FDD (Jun 2018) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transformation Capability Initiative - SCM - Item Master - FD | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transformation Capability Initiative - SCM - GFM - Accountability - MDD (Jan 2016) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Transformation Capability Initiative - SCM - GFM - Accountability Development and Deployment | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i> |
|--|---|---|

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| Transformation Capability Initiative - SCM - GFM - Accountability IOC (Sep 2017) | | | | | | | ■ | | | | | | | | | | | | | | | | | | | | | |
| Transformation Capability Initiative - SCM - GFM - Accountability FDD (Sep 2017) | | | | | | | | ■ | | | | | | | | | | | | | | | | | | | | |
| Transformation Capability Initiative - SCM - GFM - Accountability FD (Sep 2017) | | | | | | | | ■ | | | | | | | | | | | | | | | | | | | | |
| Transformation Capability Initiative - MRO - Risk Reduction | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Transformation Capability Initiative - MRO - MS B (Sep 2017) | | | | | | | | ■ | | | | | | | | | | | | | | | | | | | | |
| Transformation Capability Initiative - PLM - MDD (Dec 2018) | | | | | | | | | | | ■ | | | | | | | | | | | | | | | | | |
| Transformation Capability Initiative - PLM - Risk Reduction | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Transformation Capability Initiative - PLM - MS B (Apr 2019) | | | | | | | | | | | | | | | ■ | ■ | | | | | | | | | | | | |
| Transformation Capability Initiative - PLM - Milestone Contract Award (May 2019) | | | | | | | | | | | | | | | ■ | ■ | | | | | | | | | | | | |
| Transformation Capability Initiative - PLM - Development and Deployment | | | | | | | | | | | | | | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Transformation Capability Initiative - PLM - LDD May 2020) | | | | | | | | | | | | | | | | | | | ■ | ■ | | | | | | | | |
| Transformation Capability Initiative - PLM - IOC (Aug 2020) | | | | | | | | | | | | | | | | | | | | ■ | ■ | | | | | | | |
| Transformation Capability Initiative - PLM - FDD (Sep 2020) | | | | | | | | | | | | | | | | | | | | ■ | ■ | | | | | | | |
| Transformation Capability Initiative - PLM - FD (Sep 2022) | | | | | | | | | | | | | | | | | | | | | | | | | | | | ■ |

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i> |
|--|---|---|

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| Emerging Financial Improvement and Audit Readiness Requirements - (Mar 2018) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Emerging Financial Improvement and Audit Readiness Requirements - MS B (May 2018) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Emerging Financial Improvement and Audit Readiness - Contract Award (Jun 2018) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Emerging Financial Improvement and Audit Readiness - Deployment and Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Emerging Financial Improvement and Audit Readiness - MS C - Full Deployment Decision (Jul 2019) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Emerging Financial Improvement and Audit Readiness - FD (Jul 2019) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Logistics Strike Teams - MDD (Mar 2018) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Logistics Strike Teams - MS B (May 2018) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Logistics Strike Teams - Contract Award (Jun 2018) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Logistics Strike Teams - Deployment and Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Logistics Strike Teams - MS C - Full Deployment Decision (Jul 2019) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Logistics Strike Teams - FD (Jul 2019) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i> |

Schedule Details

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| CAS SUP v3.0 - Development and Deployment | 1 | 2016 | 1 | 2018 |
| CAS SUP v3.0 LDD #1 (Nov 18) | 1 | 2018 | 1 | 2018 |
| CAS SUP v3.0 - IOC/Limited Deployment Decision (Nov 18) | 1 | 2018 | 1 | 2018 |
| ILS-S FIAR R3 LDD/IOC (Oct 2016) | 1 | 2016 | 1 | 2016 |
| ILS-S FIAR R5 Development and Deployment | 1 | 2016 | 4 | 2016 |
| ILS-S FIAR R5 FDD/FD (Aug 2016) | 4 | 2016 | 4 | 2016 |
| ILS-S SM-RP - Development and Deployment | 1 | 2016 | 2 | 2018 |
| ILS-S SM-RP MS C Full Deployment Decision (FDD) Authority to Proceed (ATP) | 3 | 2017 | 3 | 2017 |
| ILS-S SM-RP - LDD/IOC (May 2017) | 3 | 2017 | 3 | 2017 |
| ILS-S SM-RP - FDD/FD (Feb 2018) | 2 | 2018 | 2 | 2018 |
| AFEMS FIAR - (1) Development and Deployment | 1 | 2016 | 2 | 2016 |
| AFEMS FIAR - (2) LDD (Feb 2016) | 2 | 2016 | 2 | 2016 |
| AFEMS FIAR - (2) Development and Deployment | 3 | 2016 | 4 | 2017 |
| AFEMS FIAR - (3) LDD (SEP 2016) | 4 | 2016 | 4 | 2016 |
| AFEMS FIAR - MS B (Apr 2017) | 3 | 2017 | 3 | 2017 |
| AFEMS FIAR - Contract Award (Apr 2017) | 3 | 2017 | 3 | 2017 |
| AFEMS FIAR - (1) LDD (Feb 2018) | 2 | 2018 | 2 | 2018 |
| AFEMS FIAR - (3) Development and Deployment | 3 | 2017 | 3 | 2018 |
| AFEMS FIAR - (3) FDD/FD (Sep 2018) | 4 | 2018 | 4 | 2018 |
| ETIMS Software Upgrade Enhancements MDD | 3 | 2016 | 3 | 2016 |
| ETIMS Software Upgrade Enhancements Risk Reduction Phase | 2 | 2016 | 4 | 2016 |
| ETIMS Software Upgrade Enhancements Phase I MS B (Aug 2016) | 4 | 2016 | 4 | 2016 |

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force **Date:** May 2017

| | | |
|--|---|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i> |
|--|---|---|

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| ETIMS Software Upgrade Enhancements Phase I Contract Award | 1 | 2017 | 1 | 2017 |
| ETIMS Software Upgrade Enhancements Development and Deployment | 1 | 2017 | 2 | 2019 |
| ETIMS Software Upgrade Enhancements FDD | 2 | 2019 | 2 | 2019 |
| ETIMS Software Upgrade Enhancements FOC | 2 | 2019 | 2 | 2019 |
| EMOC Software Upgrade Development and Deployment | 1 | 2016 | 1 | 2017 |
| EMOC Software Upgrade FDD (Oct 2016) | 1 | 2017 | 1 | 2017 |
| EMOC Software Upgrade FD (Oct 2016) | 1 | 2017 | 1 | 2017 |
| IMDS CDB Software Upgrade MDD (Sep 2018) | 4 | 2018 | 4 | 2018 |
| IMDS CDB MSAT Software Upgrade Risk Reduction | 1 | 2016 | 4 | 2016 |
| IMDS CDB MSAT Software Upgrade MS B (Aug 2016) | 4 | 2016 | 4 | 2016 |
| IMDS CDB MSAT Software Upgrade Contract Award (Sep 2016) | 4 | 2016 | 4 | 2016 |
| IMDS CDB MSAT Software Upgrade Development and Deployment | 4 | 2016 | 4 | 2018 |
| IMDS CDB MSAT Software Upgrade LDD/IOC (Jun 2018) | 3 | 2018 | 3 | 2018 |
| IMDS CDB MSAT Software Upgrade FDD (Sep 2018) | 4 | 2018 | 4 | 2018 |
| IMDS CDB MSAT Software Upgrade FD (Sep 2018) | 4 | 2018 | 4 | 2018 |
| PRPS MDD (Sep 2018) | 4 | 2018 | 4 | 2018 |
| REMIS Software Upgrade Development & Deployment | 1 | 2016 | 4 | 2017 |
| REMIS Software Upgrade LDD/IOC (Feb 2017) | 2 | 2017 | 2 | 2017 |
| REMIS Software Upgrade FDD/FD (Jul 2017) | 4 | 2017 | 4 | 2017 |
| REMIS Enhancements | 1 | 2018 | 4 | 2018 |
| SCS FIAR - (2) Development and Deployment | 1 | 2016 | 1 | 2016 |
| SCS FIAR - (2) LDD/IOC (Nov 2015) | 1 | 2016 | 1 | 2016 |
| SCS FIAR - (3) Development and Deployment | 1 | 2016 | 2 | 2016 |
| SCS FIAR - (3) LDD (Jul 2016) | 3 | 2016 | 3 | 2016 |
| SCS FIAR - (4) Development and Deployment | 1 | 2016 | 3 | 2016 |

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force **Date:** May 2017

| | | |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i> |
|--|---|---|

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| SCS FIAR - (4) LDD (Aug 2016) | 4 | 2016 | 4 | 2016 |
| SCS FIAR - (5) Development and Deployment | 1 | 2016 | 4 | 2016 |
| SCS FIAR - (5) LDD (Sep 2016) | 4 | 2016 | 4 | 2016 |
| SCS FIAR - (6) Development and Deployment | 1 | 2016 | 4 | 2016 |
| SCS FIAR - (6) LDD (Sep 2016) | 4 | 2016 | 4 | 2016 |
| SCS FIAR - (7) Development and Deployment | 2 | 2017 | 1 | 2018 |
| SCS FIAR - (7) LDD (Nov 2017) | 2 | 2017 | 1 | 2018 |
| SCS FIAR - (8) Development and Deployment | 2 | 2016 | 3 | 2018 |
| SCS FIAR - (8) LDD (Jul 2018) | 3 | 2018 | 3 | 2018 |
| SCS FIAR - (9) Development and Deployment | 2 | 2017 | 4 | 2018 |
| SCS FIAR - (9) FDD/FD (Sep 2018) | 4 | 2018 | 4 | 2018 |
| Transformation Capability Initiative - SCM - Field Maintenance Initiative - Materiel Solutions Analysis | 2 | 2018 | 4 | 2019 |
| Transformation Capability Initiative - SCM - Field Maintenance Initiative - MS B (Sep 2019) | 4 | 2019 | 4 | 2019 |
| Transformation Capability Initiative - SCM - Field Maintenance Initiative - Development and Deployment | 4 | 2019 | 4 | 2021 |
| Transformation Capability Initiative - SCM - Field Maintenance Initiative - IOC | 3 | 2020 | 4 | 2021 |
| Transformation Capability Initiative - SCM - Item Master - Pre MDD Risk Reduction | 3 | 2016 | 2 | 2017 |
| Transformation Capability Initiative - SCM- Item Master - MDD (Mar 2017) | 2 | 2017 | 2 | 2017 |
| Transformation Capability Initiative - SCM - Item Master - Materiel Solutions Analysis | 3 | 2016 | 1 | 2018 |
| Transformation Capability Initiative - SCM - Item Master - MS B (Jan 2018) | 2 | 2018 | 2 | 2018 |
| Transformation Capability Initiative - SCM - Item Master - Development and Deployment | 2 | 2018 | 3 | 2018 |
| Transformation Capability Initiative - SCM- Item Master - FDD (Jun 2018) | 3 | 2018 | 3 | 2018 |
| Transformation Capability Initiative - SCM - Item Master - FD | 3 | 2018 | 2 | 2019 |
| Transformation Capability Initiative - SCM - GFM - Accountability - MDD (Jan 2016) | 2 | 2016 | 2 | 2016 |

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i> |
|--|---|---|

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Transformation Capability Initiative - SCM - GFM - Accountability Development and Deployment | 3 | 2016 | 4 | 2017 |
| Transformation Capability Initiative - SCM - GFM - Accountability IOC (Sep 2017) | 3 | 2017 | 3 | 2017 |
| Transformation Capability Initiative - SCM - GFM - Accountability FDD (Sep 2017) | 4 | 2017 | 4 | 2017 |
| Transformation Capability Initiative - SCM- GFM - Accountability FD (Sep 2017) | 4 | 2017 | 4 | 2017 |
| Transformation Capability Initiative - MRO - Risk Reduction | 1 | 2016 | 4 | 2017 |
| Transformation Capability Initiative - MRO - MS B (Sep 2017) | 4 | 2017 | 4 | 2017 |
| Transformation Capability Initiative - PLM - MDD (Dec 2018) | 1 | 2018 | 1 | 2018 |
| Transformation Capability Initiative - PLM - Risk Reduction | 4 | 2016 | 3 | 2019 |
| Transformation Capability Initiative - PLM - MS B (Apr 2019) | 3 | 2019 | 3 | 2019 |
| Transformation Capability Initiative - PLM - Milestone Contract Award (May 2019) | 3 | 2019 | 3 | 2019 |
| Transformation Capability Initiative - PLM - Development and Deployment | 3 | 2019 | 4 | 2022 |
| Transformation Capability Initiative - PLM - LDD May 2020) | 3 | 2020 | 3 | 2020 |
| Transformation Capability Initiative - PLM - IOC (Aug 2020) | 4 | 2020 | 4 | 2020 |
| Transformation Capability Initiative - PLM - FDD (Sep 2020) | 4 | 2020 | 4 | 2020 |
| Transformation Capability Initiative - PLM - FD (Sep 2022) | 4 | 2022 | 4 | 2022 |
| Emerging Financial Improvement and Audit Readiness Requirements - (Mar 2018) | 2 | 2018 | 2 | 2018 |
| Emerging Financial Improvement and Audit Readiness Requirements - MS B (May 2018) | 3 | 2018 | 3 | 2018 |
| Emerging Financial Improvement and Audit Readiness - Contract Award (Jun 2018) | 3 | 2018 | 3 | 2018 |
| Emerging Financial Improvement and Audit Readiness - Deployment and Development | 4 | 2018 | 3 | 2019 |
| Emerging Financial Improvement and Audit Readiness - MS C - Full Deployment Decision (Jul 2019) | 4 | 2019 | 4 | 2019 |
| Emerging Financial Improvement and Audit Readiness - FD (Jul 2019) | 4 | 2019 | 4 | 2019 |
| Logistics Strike Teams - MDD (Mar 2018) | 2 | 2018 | 2 | 2018 |
| Logistics Strike Teams - MS B (May 2018) | 3 | 2018 | 3 | 2018 |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | | Date: May 2017 | |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0708610F / <i>Logistics Information Technology (LOGIT)</i> | Project (Number/Name) 675207 / <i>Logistics IT System Modernization</i> | | |

| Events | Start | | End | |
|---|----------------|-------------|----------------|-------------|
| | Quarter | Year | Quarter | Year |
| Logistics Strike Teams - Contract Award (Jun 2018) | 3 | 2018 | 3 | 2018 |
| Logistics Strike Teams - Deployment and Development | 4 | 2018 | 3 | 2019 |
| Logistics Strike Teams - MS C - Full Deployment Decision (Jul 2019) | 4 | 2019 | 4 | 2019 |
| Logistics Strike Teams - FD (Jul 2019) | 4 | 2019 | 4 | 2019 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0708611F / <i>Support Systems Development</i> |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 13.987 | 9.128 | 9.362 | 0.000 | 9.362 | 9.531 | 9.742 | 9.949 | 10.153 | Continuing | Continuing |
| 675042: <i>Log Application Logistics Integration (LALI)</i> | - | 13.987 | 9.128 | 9.362 | 0.000 | 9.362 | 9.531 | 9.742 | 9.949 | 10.153 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

Logistics, Installations and Mission Support - Enterprise View (LIMS-EV) implements Business Intelligence (BI) and Decision Support (DS) solutions and includes transitioning to a common Information Technology (IT) hosting environment and development of mobile infrastructure. The AF must transform its logistics business processes and transition away from using numerous stovepipe systems and process flows that execute the same analysis and decision support tasks. Eliminating process redundancies across the logistics enterprise will enable the AF to execute more efficient, cost-effective and integrated logistics in the long term. Leveraging emerging technology to enhance existing capabilities and developing a mobile solution satisfies current and future needs of the enterprise. LIMS-EV funding supports BI and DS development capability used by senior leaders and war fighters to access integrated information from multiple authoritative logistics and operational source systems. LIMS-EV funding will extend current BI capabilities to provide configurable alerting, predictive/what-if analysis, mobile applications and further integration of functionality per high priority requirements as defined/approved by the Enterprise Logistics Information Technology (ELIT) authority including support equipment, vehicle, supply, commodities and components (engines, landing gears, fuel, etc.), weapons systems availability and Total Asset Visibility (TAV), and financial, Civil Engineering and Security Forces analytics. Enhances LIMS-EV functionality per migration from the retiring Global Combat Support System-Air Force (GCSS-AF) infrastructure to a an approved Joint Information Environment/Common Computing Environment.

BA7- This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 12.107 | 9.128 | 9.334 | 0.000 | 9.334 |
| Current President's Budget | 13.987 | 9.128 | 9.362 | 0.000 | 9.362 |
| Total Adjustments | 1.880 | 0.000 | 0.028 | 0.000 | 0.028 |
| • 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 | 2.331 | 0.000 | | | |
| • SBIR/STTR Transfer | -0.451 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 0.028 | 0.000 | 0.028 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0708611F / <i>Support Systems Development</i> | | |
| Change Summary Explanation FY2016 Below Threshold Reprogramming increase of 2.331M was for LIMS-EV Support Equipment View development work in support of AFNWC NMM. | | | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| Title: LIMS-EV Vehicle View (VV) 5.2 Description: Update business analytics and reporting with new authoritative data source: Defense Property Accountability System (DPAS) FY 2016 Accomplishments: -Continued to migrate the legacy data sources from the Online Vehicle Information Management System (OLVIMS) to DPAS; authorized data source for business intelligence analytics and reporting - Modified/migrated the applications, reports and capabilities to using data sourced from DPAS and exposed the DPAS data in Business Objects - Developed new analysis and reporting Transaction Request Tool to support fleet managers with asset updates, loads, and moves, as well as resale request actions FY 2017 Plans: N/A FY 2018 Plans: N/A | | 3.759 | 0.000 | 0.000 |
| Title: LIMS-EV Equipment View (EV) 4.6 Description: Implement critical metrics for analysis and reporting to support the new Redistribution and Mass Additive functionality FY 2016 Accomplishments: - Implemented additional metrics for reporting with drill-down and drill-across analysis – provides analytics of Redistribution and Mass Additive functionality; metrics include: -- Reporting: Command Equipment Management Office (CEMO), 404 Supply Chain Management Squadron (SCMS), and Fill Rate Metrics; enhanced Redistribution and Mass Additive metrics/reports -- Business Intelligence: apply data from Mal-Positioned Assets, Repair Execution, Retention Additives & Disposals and Replacement Additives actions as well as user-entered input to calculate / present the defined metrics FY 2017 Plans: | | 2.186 | 0.000 | 0.000 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0708611F / <i>Support Systems Development</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| N/A | | | | |
| FY 2018 Plans: N/A | | | | |
| Title: LIMS-EV Repair Network View (RNV) 4.0 | | 1.918 | 0.000 | 0.000 |
| Description: Enhance business intelligence, analysis, reporting and predictive simulation in new Repair Network Integration (RNI) Leadership Metrics | | | | |
| FY 2016 Accomplishments: - Developed leadership business analytics and reporting with Repair Network Integration (RNI) metrics; enables business intelligence simulation capability in Capability and Capacity (CAP2) Information Technology (IT) Tool. Aligned analytics with authoritative source data: -- Support equipment prices for each equipment asset pulled from Air Force Equipment Management System (AFEMS) -- Quality Deficiency Report (QDR) data pulled from each node from Joint Deficiency Reporting System (JDERS) -- Depot level production from IMPRESA (MROi) or Job Order Production Master System (JOPMS) G004L -- Contract data reporting National Stock Numbers (NSNs) repaired at contractors' facilities from Contracting Information Database System (CIDS/J018) or Commercial Asset Visibility Air Force (CAV AF) | | | | |
| FY 2017 Plans: N/A | | | | |
| FY 2018 Plans: N/A | | | | |
| Title: LIMS-EV Weapons System Enterprise Review (WSER) | | 0.000 | 1.500 | 0.000 |
| Description: Implement business analytics and reporting for the AF Chief of Staff WSER briefing | | | | |
| FY 2016 Accomplishments: N/A | | | | |
| FY 2017 Plans: - Implemented business analytics and reporting of key weapon systems data: Performance Execution (availability, engines, and aircraft delivery quality); Modernization Overall (cost, schedule, performance, and funding); Product Support (Logistics Health Assessment (LHA) and Leading Health Indicator (LHI) (engines)); Predictive Health (safety, service life, mission effectiveness, and weapon system sustainment (WSS) risk); and Operating Cost. | | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0708611F / <i>Support Systems Development</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| - Automated, enabled common access to, analysis of, and reporting of AF Chief of Staff Weapons System Enterprise Review metrics FY 2018 Plans: N/A | | | | |
| Title: LIMS-EV Engine Health Management and Data Repository Center (EHM-DRC) Description: Implement business analysis, decision support and reporting of Engine Health Management into LIMS-EV FY 2016 Accomplishments: N/A FY 2017 Plans: - Realigned Engine Health Management Data Repository Center (EHM-DRC) data to LIMS-EV - Implemented business analytics and reporting of engines data within LIMS-EV; enhance EHM-DRS analysis and decision support reporting via expanded engine health data FY 2018 Plans: - Enhance analysis: enable additional analysis via integration of additional data and filtering options; provide simulation to forecast health impacts - Enhance reporting: provide additional reporting with drill-down and drill-across functionality | | 0.000 | 2.500 | 1.500 |
| Title: LIMS-EV Repair Network View (RNV) 5.0 Description: Enhance Repair Network View (RNV) with additional business analytics functionality FY 2016 Accomplishments: N/A FY 2017 Plans: - Enhanced RNV analytics: modified existing reference tables, created additional repair nodes, realigned data extract and mapped analysis and reporting to new reference tables FY 2018 Plans: N/A | | 0.000 | 2.000 | 0.000 |
| Title: LIMS-EV Supply Chain Management (SCM) 7.0 Description: Enhance analysis and reporting in Supply Chain Management (SCM) View | | 0.000 | 2.000 | 0.000 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0708611F / <i>Support Systems Development</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>FY 2016 Accomplishments: N/A</p> <p>FY 2017 Plans: - Enhanced reporting: Included ability to distinguish USAF backorders and provide national stock number (NSN) entry conversion to accommodate hand-typed NSN for accurate reporting; create PDN Analysis Report - Enhanced analytics: Augmented analysis query fields: added Production Number (PDN) search in Edit box; enabled ability to add incremental/auto fill PDN (4-digit national item identifier number (NIIN) query) drop down in Default Analysis</p> <p>FY 2018 Plans: N/A</p> | | | | |
| <p>Title: LIMS-EV Support Equipment Enterprise View</p> <p>Description: Augment LIMS-EV with additional Support Equipment business intelligence and new analytics and reporting</p> <p>FY 2016 Accomplishments: - Added new authoritative source data to identify specific location and mission status of support equipment (SE) - Enhanced Support Equipment business intelligence: Implemented new analysis and reporting of SE mission support status; provide ability to track status and location of SE assets by Equipment identifier (ID); enable forecasting and simulation with calculations for predicting asset service cliffs - Enhanced Support Equipment reporting: added new metrics of support equipment mission support status; location; and overall mission impact</p> <p>FY 2017 Plans: N/A</p> <p>FY 2018 Plans: - Enhance Support Equipment business intelligence: Implement additional analysis and reporting of SE mission support status via additional data and filtering options; provide additional forecasting and simulation with calculations for predicting asset service cliffs - Enhance reporting: update SE mission status metrics with drill-across functionality to existing LIMS-EV business analytics views</p> | | 2.267 | 0.000 | 2.362 |
| <p>Title: LIMS-EV Cost of Logistics 2.0</p> <p>Description: Enhance analysis and reporting in Cost of Logistics capability</p> <p>FY 2016 Accomplishments:</p> | | 0.000 | 1.128 | 1.500 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0708611F / <i>Support Systems Development</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| N/A | | | | |
| <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Enhanced analysis: enabled variance analysis - Enhanced reporting: provided variance reporting and integrated report export functionality <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Enhance analysis: improve drill-down and drill-across analysis with additional filters - Enhance reporting: provide additional reporting of new analysis functionality | | | | |
| <p>Title: LIMS-EV Vehicle View (VV) 6.0 & 7.0</p> <p>Description: Enhance LIMS-EV 'Mobile' functionality, analysis, reporting, and forecasting simulation in Vehicle View capability</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Release 6.0 -- Enhanced 'mobile' functionality: enhanced three businesses analytics widgets to enable view/display/input/update via DoD/AF-approved mobile devices: Leadership View; Fleet Posture View; Sustainment View - Enhanced analysis and reporting: integrated AF Vehicle Consolidated Analysis and Reporting System (CARS) to enabled vehicle allocations/ procurements analysis; implemented searchable vehicle e-Book capability; implemented a decision support analyzer tool to import vehicle Preventive Maintenance and Inspection data; provided vehicle Objective Based Posturing Tool (VOBPT) simulation capability; created a cost per equivalent view and a transaction request tool; enhanced fleet performance analytical reporting, priority-buy reporting, and authorization validation functionality - Enhanced analytics reference tables: added Minimum Essential Level Recall Assistance Tool (MELRAT) & vehicle equivalents listing reference tables <p>FY 2017 Plans: N/A</p> <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Release 7.0 -- Enhances BI analytics and reporting: enables new and centralizes analysis and reporting via integration of 55 MAJCOM processes; enhances analysis functionality: adds Item Manager analysis and reporting functions; enhances forecasting via additional Depot Maintenance planning model; provides new reporting functionality - Implements CSAF directed action to centralize management of the AF's vehicle fleet at Air Force Elements (AFELM) VSCOS | | 3.857 | 0.000 | 2.000 |
| <p>Title: LIMS-EV Enterprise Propulsion BI Tool (eP-BITS)</p> <p>Description: Develop Enterprise Propulsion Business Intelligence analysis and reporting in LIMS-EV</p> <p>FY 2016 Accomplishments:</p> | | 0.000 | 0.000 | 2.000 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0708611F / <i>Support Systems Development</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| N/A | | | | |
| FY 2017 Plans: N/A | | | | |
| FY 2018 Plans: - Develop business analytics and reporting supporting engine management for existing and new engines; enable simulation to forecast engine and component removals; provide ability to identify business process gaps; enable analysis to replace manual products generated by the actuary's office - Enable engine management reporting: provide metrics and analysis for existing or new engines | | | | |
| Accomplishments/Planned Programs Subtotals | | 13.987 | 9.128 | 9.362 |
| D. Other Program Funding Summary (\$ in Millions) | | | | |
| N/A | | | | |
| Remarks | | | | |
| E. Acquisition Strategy | | | | |
| LIMS-EV will utilize services provided by GCSS-AF Integration Framework. GCSS-AF Data Services Program Management Office (PMO), as LIMS-EV Program Manager, is responsible to competitively acquire additional LIMS-EV capabilities using a variety of fixed price, labor hour, time and material, and cost plus contracts. | | | | |
| LIMS-EV capabilities utilize services provided by GCSS-AF Integration Framework. GCSS-AF Data Services PMO, as LIMS-EV Program Manager, manages LIMS-EV development projects following standard software development release process. | | | | |
| LIMS-EV development projects will be awarded as task orders using GCSS AF 2 contract with GCSS AF Data Services Program Management Office, Wright-Patterson Air Force Base, Ohio. | | | | |
| F. Performance Metrics | | | | |
| Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission. | | | | |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0804743F / <i>Other Flight Training</i> |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 1.770 | 1.653 | 2.074 | 0.000 | 2.074 | 2.037 | 2.073 | 2.109 | 2.153 | Continuing | Continuing |
| 675304: <i>Aviation Resource Management System (ARMS)</i> | - | 1.770 | 1.653 | 2.074 | 0.000 | 2.074 | 2.037 | 2.073 | 2.109 | 2.153 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The Aviation Resource Management System (ARMS) is the authoritative data source for recording and managing aircrew training information, aircrew/parachutist management, flying hour tracking, flight pay management, and flying gate tracking for 60,000 Air Force members. The Air Force uses this information to enhance safety-of-flight operations and to determine eligibility to perform aviation related events. ARMS interfaces with the Military Personnel Data System (MilPDS) and multiple operations and flight scheduling systems such as Patriot Excalibur (PEX), Graduate Training Integration Management System (GTIMS), Center Operations On-Line (COOL), Global Decision Support System (GDSS), and Automated Aircrew Management System (AAMS) and is used to determine whom to select for flying operations, assignment actions, and promotion of aircrew members.

New development work is required to provide additional flying operations information which will aid in better portraying Air Force readiness and to feed this data into Defense Readiness Reporting System Strategic (DRRS-S). These enhanced capabilities, to be developed incrementally, include the following: electronic flight record, flying hour management/execution, simulator and RPA management/utilization, full career logbook, training look-back, aircrew member man-month allocation, enhanced resource and jump module management, and additional interfaces.

Development activities started in FY16 for Increment I (Inc I), Build 1, Flight and Flying Hour modules which continued in FY17 and is followed by development of Simulator Utilization Data and Training modules in FY18.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0804743F I Other Flight Training |
|--|---|

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 1.836 | 1.653 | 2.068 | 0.000 | 2.068 |
| Current President's Budget | 1.770 | 1.653 | 2.074 | 0.000 | 2.074 |
| Total Adjustments | -0.066 | 0.000 | 0.006 | 0.000 | 0.006 |
| • 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 | -0.066 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 0.006 | 0.000 | 0.006 |

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Title: Aviation Resource Management System (ARMS) | 1.770 | 1.653 | 2.074 |
| Description: Hardware/software development to update ARMS, adding functionality and system interfaces. | | | |
| FY 2016 Accomplishments: | | | |
| - Awarded Advisory and Assistance Services Contract | | | |
| - MDD Approval Received - Nov-2015 | | | |
| - Released RFP for ARMS 7.0 Development Contract | | | |
| - MS B Approval Received – 7-Jun-2016 | | | |
| - Financial Improvement & Audit Readiness (FIAR) Contract Awarded | | | |
| - Awarded ARMS 7.0 Development Contract, Began Development of Inc I Build 1 (Flight and Flying Hours) | | | |
| FY 2017 Plans: | | | |
| - Complete Development of Inc I Build 1 (Flight and Flying Hours) | | | |
| - Begin Testing & Fielding Preparations for Inc I Build 1 (Flight and Flying Hours) | | | |
| - Begin Development Inc I Build 2 (Training & Simulator Utilization) | | | |
| - Start Interface Requirements Activities | | | |
| - Solidify FIAR Requirements | | | |
| - Release Draft/Final RFP(s) for ARMS 7.0 Development Contract Inc II | | | |
| FY 2018 Plans: | | | |
| - Field Inc I, Build 1 (Flight and Flying Hours) | | | |
| - Begin Testing and Fielding Preparations for Inc I, Build 2 (Training & Simulator Utilization) | | | |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0804743F / <i>Other Flight Training</i> |
|--|--|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| - Finalize Interface Requirements - Award ARMS 7.0 Development Contract, Began Development of Inc II Build 1 - Begin Early Development Activities for Inc II Build 1 - Field Inc I, Build 2 (Training & Simulator Utilization) | | | |
| Accomplishments/Planned Programs Subtotals | 1.770 | 1.653 | 2.074 |

| D. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|---|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| • O&M: BA03: PE 0804743F: <i>Other Flight Training</i> | 1.303 | 2.115 | 2.220 | 0.000 | 2.220 | 2.240 | 2.282 | 2.324 | 2.372 | Continuing | Continuing |

Remarks

E. Acquisition Strategy

ARMS will incrementally develop enhancements to the existing system. The acquisition will be accomplished with Firm Fixed Price (FFP) contracts awarded under Section 8(a) as small business set aside.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0808716F I Other Personnel Activities |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 0.117 | 0.057 | 0.107 | 0.000 | 0.107 | 0.109 | 0.111 | 0.113 | 0.115 | 0.000 | 0.729 |
| 675141: DEOMI Faculty Research | - | 0.117 | 0.057 | 0.107 | 0.000 | 0.107 | 0.109 | 0.111 | 0.113 | 0.115 | 0.000 | 0.729 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The Defense Equal Opportunity Management Institute (DEOMI) provides grants to the civilian academic community to conduct research on military and civilian equal opportunity issues using standard social science methodology and engineering analysis. The research methodology and analysis includes developing a literature review proposing hypotheses and methods of research. The grantee will then gather appropriate data, draw conclusions and present discussions, recommendations and reports based on their funding.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.121 | 0.057 | 0.107 | 0.000 | 0.107 |
| Current President's Budget | 0.117 | 0.057 | 0.107 | 0.000 | 0.107 |
| Total Adjustments | -0.004 | 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 | 0.000 | 0.000 | | | |
| • Other Adjustments | -0.004 | 0.000 | 0.000 | 0.000 | 0.000 |

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

| | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> |
|---|----------------|----------------|----------------|
| Title: Equal Opportunity Issues | 0.117 | 0.057 | 0.107 |
| Description: Conduct research on military and civilian equal opportunity issues. | | | |
| FY 2016 Accomplishments: | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0808716F / <i>Other Personnel Activities</i> |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Continued conducting research on military and civilian equal opportunity issues. FY 2017 Plans: Continue conducting research on military and civilian equal opportunity issues. FY 2018 Plans: Continue conducting research on military and civilian equal opportunity issues. | | | |
| Accomplishments/Planned Programs Subtotals | 0.117 | 0.057 | 0.107 |

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

N/A

Remarks

E. Acquisition Strategy

Grants will be awarded competitively.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0901202F I Joint Personnel Recovery Agency |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 5.741 | 3.663 | 2.006 | 0.000 | 2.006 | 2.038 | 2.075 | 2.111 | 2.154 | Continuing | Continuing |
| 675196: Joint Technology Exploitation | - | 5.741 | 3.663 | 2.006 | 0.000 | 2.006 | 2.038 | 2.075 | 2.111 | 2.154 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The FY17 funding request was reduced by \$.269M to account for the availability of prior year execution balances.

Funding supports Personnel Recovery development efforts to upgrade Isolated Personnel reporting devices & locating systems in support of Combatant Commanders and Services. Joint Personnel Recovery Agency (JPRA) developmental efforts address Personnel Recovery capability shortfalls & gaps identified in the Personnel Recovery Initial Capabilities Document approved by Joint Requirements Oversight Council Memorandum 120-12 on 8 Aug 2012. Activities include funding for research and development, support equipment, contract services and all associated costs specifically identified to support the JPRA headquarters at Ft. Belvoir, VA and other JPRA operating locations.

In FY16, the Common Distress Reporting System (CDRS) began development. CDRS will integrate all personnel locating devices into the existing reporting device architecture & Combat Survivor Evader Locater base stations to provide one common operating picture for timely and efficient recovery operations of isolated personnel.

This program is in Budget Activity 7, Operational System Development because this budget activity includes efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 5.911 | 3.663 | 2.000 | 0.000 | 2.000 |
| Current President's Budget | 5.741 | 3.663 | 2.006 | 0.000 | 2.006 |
| Total Adjustments | -0.170 | 0.000 | 0.006 | 0.000 | 0.006 |
| • 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 | -0.170 | 0.000 | 0.006 | 0.000 | 0.006 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 0901202F <i>I Joint Personnel Recovery Agency</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>Title: Common Distress Reporting System</p> <p>Description: Develop/implement the Common Distress Reporting System</p> <p>FY 2016 Accomplishments: - Beginning of the Common Distress Reporting System (CDRS)development. CDRS integrated all personnel locating devices into the existing reporting device architecture & Combat Survivor Evader Locator base stations to provide one common operating picture for timely and efficient recovery operations of isolated personnel.</p> <p>FY 2017 Plans: - Continue the Common Distress Reporting System (CDRS)development. CDRS will integrate all personnel locating devices into the existing reporting device architecture & Combat Survivor Evader Locator base stations to provide one common operating picture for timely and efficient recovery operations of isolated personnel.</p> <p>FY 2018 Plans: - Continue the Common Distress Reporting System (CDRS)development. CDRS will integrate all personnel locating devices into the existing reporting device architecture & Combat Survivor Evader Locator base stations to provide one common operating picture for timely and efficient recovery operations of isolated personnel.</p> | | 3.930 | 1.948 | 1.003 |
| <p>Title: Optimal Search Study</p> <p>Description: Assess and evaluate technologies for personnel recovery geospatial data visualization, predictive and real-time planning capabilities</p> <p>FY 2016 Accomplishments: - Finalized the assessment and evaluation of real-time search planning capability and modeling and simulation to assess operational personnel recovery plans.</p> | | 0.165 | - | - |
| <p>Title: Collaborative Personnel Recovery planning systems & PR Capabilities Development</p> <p>Description: - Assess and evaluate technologies for personnel recovery real-time collaborative planning capabilities to include cyber support to personnel recovery, standardization and interoperability of joint personnel recovery mission management and planning systems, and standardization of human and machine-to-machine information exchanges, communications, and data transfer to facilitate mission planning for personnel recovery</p> <p>FY 2016 Accomplishments: - Continued to assess and evaluate technologies for personnel recovery real-time collaborative planning capabilities to include: cyber support to personnel recovery, standardization and interoperability of joint personnel recovery mission management and</p> | | 1.646 | 1.715 | 1.003 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0901202F / <i>Joint Personnel Recovery Agency</i> |
|--|--|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| planning systems, and standardization of human and machine-to-machine information exchanges, communications, and data transfer to facilitate mission planning for personnel recovery | | | |
| FY 2017 Plans: - Continue to assess and evaluate technologies for personnel recovery real-time collaborative planning capabilities to include cyber support to personnel recovery, standardization and interoperability of joint personnel recovery mission management and planning systems, and standardization of human and machine-to-machine information exchanges, communications, and data transfer to facilitate mission planning for personnel recovery | | | |
| FY 2018 Plans: - Continue to assess and evaluate technologies for personnel recovery real-time collaborative planning capabilities to include cyber support to personnel recovery, standardization and interoperability of joint personnel recovery mission management and planning systems, and standardization of human and machine-to-machine information exchanges, communications, and data transfer to facilitate mission planning for personnel recovery | | | |
| Accomplishments/Planned Programs Subtotals | 5.741 | 3.663 | 2.006 |

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

N/A

Remarks

E. Acquisition Strategy

Projects will leverage existing program contracts. In the rare instance where a contract does not already exist, contracts will be awarded through full and open competition.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 0901218F I Civilian Compensation Program |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 3.475 | 3.735 | 3.780 | 0.000 | 3.780 | 3.802 | 3.838 | 3.905 | 3.985 | Continuing | Continuing |
| 674139: Civilian Compensation Program | - | 3.475 | 3.735 | 3.780 | 0.000 | 3.780 | 3.802 | 3.838 | 3.905 | 3.985 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

This program element provides for payment of civilian compensation benefits for disability due to personal injury sustained while in the performance of duty or due to employment-related disease according to the Federal Employees Compensation Act (FECA) under Title 5 U.S.C., Chapter 81. The Department of Labor (DOL) administers this program and charges the Department of the Air Force for its employee costs; therefore, this is a MUST PAY bill for Air Force. The PE excludes manpower authorizations and costs. This Program Element (PE) is in Budget Activity 7 in support of payment of civilian compensation benefits for disability due to personal injury sustained while in the performance of duty or due to employment-related disease according to the Federal Employees Compensation Act (FECA) under Title 5 U.S.C., Chapter 81.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 3.604 | 3.735 | 3.769 | 0.000 | 3.769 |
| Current President's Budget | 3.475 | 3.735 | 3.780 | 0.000 | 3.780 |
| Total Adjustments | -0.129 | 0.000 | 0.011 | 0.000 | 0.011 |
| • 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 | -0.129 | 0.000 | | | |
| • SBIR/STTR Transfer | 0.000 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 0.011 | 0.000 | 0.011 |

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

| | FY 2016 | FY 2017 | FY 2018 |
|--|---------|---------|---------|
| Title: Civilian Compensation | 3.475 | 3.735 | 3.780 |
| Description: Program compensates employees assigned to RDT&E facilities for work-related injury or disease. | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0901218F / <i>Civilian Compensation Program</i> |
|--|--|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| <p><i>FY 2016 Accomplishments:</i> Continue a program to compensate employees assigned to RDT&E facilities for work-related injury or disease.</p> <p><i>FY 2017 Plans:</i> Continue a program to compensate employees assigned to RDT&E facilities for work-related injury or disease.</p> <p><i>FY 2018 Plans:</i> Continue a program to compensate employees assigned to RDT&E facilities for work-related injury or disease.</p> | | | |
| Accomplishments/Planned Programs Subtotals | 3.475 | 3.735 | 3.780 |

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

N/A

Remarks

E. Acquisition Strategy

Not Applicable.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date: May 2017**

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0901220F / <i>Personnel Administration</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 4.416 | 5.157 | 7.472 | 0.000 | 7.472 | 6.406 | 6.525 | 6.639 | 6.774 | Continuing | Continuing |
| 673318: <i>Product Data Systems Modernization (PDSM)</i> | - | 0.000 | 0.000 | 1.003 | 0.000 | 1.003 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 675194: <i>Force Development Transformation</i> | - | 4.416 | 5.157 | 6.469 | 0.000 | 6.469 | 6.406 | 6.525 | 6.639 | 6.774 | Continuing | Continuing |

Note

This program, BA 07 PE 0901220F, project 673318, CAMIS, is a new start.

A. Mission Description and Budget Item Justification

Personnel Services Delivery (PSD), under the Personnel Administration program, funds operational developments necessary to acquire, field, and modify business processes to transform the delivery of Human Resources (HR) capabilities through the structured redesign of the Total Force Personnel Community's people (Active Duty, Reserve, Guard, and Civilians), processes, and technologies.

The United States Air Force Academy's (USAFA) Cadet Administration and Information System (CAMIS) program is also funded under the Personnel Administration program. CAMIS is the USAFA's primary mission system and is used for most functions related to the Cadet Lifecycle including class scheduling, grading, summer programs, performance averages, and graduation/commission requirements tracking.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 4.598 | 5.157 | 6.450 | 0.000 | 6.450 |
| Current President's Budget | 4.416 | 5.157 | 7.472 | 0.000 | 7.472 |
| Total Adjustments | -0.182 | 0.000 | 1.022 | 0.000 | 1.022 |
| • 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 | -0.165 | 0.000 | | | |
| • Other Adjustments | -0.017 | 0.000 | 1.022 | 0.000 | 1.022 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

Appropriation/Budget Activity
3600: *Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development*

R-1 Program Element (Number/Name)
PE 0901220F / *Personnel Administration*

Change Summary Explanation

FY18 increase of \$1.003M for CAMIS effort.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0901220F / <i>Personnel Administration</i> | Project (Number/Name) 673318 / <i>Product Data Systems Modernization (PDSM)</i> |
|--|---|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 673318: <i>Product Data Systems Modernization (PDSM)</i> | - | 0.000 | 0.000 | 1.003 | 0.000 | 1.003 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note

This program, BA 07 PE 0901220F, project 673318, CAMIS, is a new start.

A. Mission Description and Budget Item Justification

The United States Air Force Academy (USAFA) is currently in the process of modernizing its Cadet Administration and Information System (CAMIS). CAMIS is the USAFA's primary mission system and is used for most functions related to the Cadet Lifecycle including class scheduling, grading, summer programs, performance averages, and graduation/commission requirements tracking. This effort also includes collapsing existing CAMIS IT systems to unique, non-standard processes that remain which include the Cadet Honor System, discipline and accountability, advanced admission, and a replacement for the Cadet Logistics and Supply System (CLASS). The largest component expected to require development includes re-designing the data warehouse to enable Commercial Off the Shelf (COTS) analytic software.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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

| | FY 2016 | FY 2017 | FY 2018 |
|--|---------|---------|---------|
| Title: CAMIS | - | - | 1.003 |
| Description: System development activities associated with modernizing the USAFA CAMIS primary mission system. This system supports most functions related to the Cadet life cycle. | | | |
| FY 2018 Plans: | | | |
| • Will develop and re-design data warehouse to enable analytic software | | | |
| • Will develop requirements to provide capability to replace portions of CAMIS not available in the planned COTS solution | | | |
| Accomplishments/Planned Programs Subtotals | - | - | 1.003 |

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

N/A

Remarks

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0901220F / <i>Personnel Administration</i> | Project (Number/Name) 673318 / <i>Product Data Systems Modernization (PDSM)</i> |

D. Acquisition Strategy

CAMIS will employ an incremental approach to modernize the current Student Information System (SIS). Increment 1 will address the majority of CAMIS functions common to institutions of higher education via a COTS solution. Increment 2 will include functional requirements not contained in the COTS product. The program is currently working through the requirements and planning phase. All other aspects of the Acquisition Strategy are still in development.

An Air Force Program Executive Officer (PEO) for CAMIS has not been assigned. The program has yet to accomplish the Air Force portfolio assignment process.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0901220F / <i>Personnel Administration</i> | | | | Project (Number/Name) 675194 / <i>Force Development Transformation</i> | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 675194: <i>Force Development Transformation</i> | - | 4.416 | 5.157 | 6.469 | 0.000 | 6.469 | 6.406 | 6.525 | 6.639 | 6.774 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

Personnel Services Delivery (PSD), under the Personnel Administration program, funds operational developments necessary to acquire, field, and modify business processes to transform the delivery of Human Resources (HR) capabilities through the structured redesign of the Total Force Personnel Community's people (Active Duty, Reserve, Guard, and Civilians), processes, and technologies. PSD Transformation fundamentally shifts the way personnel services are provided, transitioning from primarily face-to-face interactions with a personnelist to a tiered model with services delivered through online self-service, contact centers, and fewer in-person interactions. PSD supports the migration of legacy applications and other information technologies to a more sustainable and flexible services-based architecture. PSD also supports transition from the legacy Military Personnel Data System (MilPDS) to the Air Force Integrated Personnel and Pay System (AFIPPS) to improve financial auditability and track military personnel data. To this end, PSD executes the development of several legacy personnel systems through the deployment and transitioning of applications to Department of Defense (DoD) and commercial cloud services as part of the Data Center Optimization Initiative, as well as future HR application requirements which are beyond the scope of AFIPPS.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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

| | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Title: AF/A1 Service Oriented Architecture (SOA) Services | 1.469 | 0.105 | 0.120 |
| Description: Develop reusable business and data sharing SOA services on an established architecture. These services provide authoritative personnel data and business logic to myriad of enterprise processes and systems. | | | |
| FY 2016 Accomplishments: | | | |
| <ul style="list-style-type: none"> • Delivered SOA Increment 1 (926 military data elements) • Continued to develop reusable business and data sharing SOA services • Developed SOA Increment 2 additional data elements based on consumer requirements | | | |
| FY 2017 Plans: | | | |
| <ul style="list-style-type: none"> • Will field SOA Increment 2 • Continue to develop reusable business and data sharing SOA services • Develop SOA Increment 3 additional data elements based on consumer requirements | | | |
| FY 2018 Plans: | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0901220F / <i>Personnel Administration</i> | Project (Number/Name) 675194 / <i>Force Development Transformation</i> | | |
| B. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <ul style="list-style-type: none"> • Will deliver SOA Increment 3 (additional military data elements and update operations) • Continuing to develop reusable business and data sharing SOA services | | | | |
| <p>Title: Human Resource Applications</p> <p>Description: Develop AF Human Resource Applications to automate processes and create self-service capabilities to the warfighter. Continue to incrementally develop the electronic Board Operations System (eBOSS) capability that provides a collaborative viewing, scoring, vectoring, & feedback system for board administrators and members, enabling both Force Dev & Force Mgmt competencies for Active Duty, Air National Guard & Air Force Reserve Airmen (Military & Civilian).</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> • Migrated eBOSS Increment 3 (Force Development and Vectoring) to production • Developed the eBOSS MyVector interface capability • Quality tested and evaluated eBOSS MyVector interface capability • User Evaluation/Acceptance tested eBOSS MyVector interface capability • Deployed Adobe XFA Enterprise Solution (AXES) May 2016 <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> • Continue to develop and field the eBOSS Increment 3 and MyVector interface capability • Develop a Business Rules Management System (BRMS) that supports business analysis and rule definition • Align business goals of the customers (Air Force Personnel) with the software architecture • Develop a Rules Repository as a storage medium and a versioning system • Develop a Rules Engine that provides decision making support on rules from the repository • Develop a legacy data integration approach • Develop functionality that allows for systems to be Device Agnostic to support multiple form factors (tablet, mobile capability). <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> • Will continue to develop and deploy the modernization capabilities • Continue to develop a Business Rules Management System (BRMS) that supports business analysis and rule definition • Continue to align business goals of the customers (Air Force Personnel) with the software architecture • Continue to develop a Rules Repository as a storage medium and a versioning system • Continue to develop a Rules Engine that provides decision making support on rules from the repository • Continue to develop a legacy data integration approach • Continue to develop functionality that allows for systems to be Device Agnostic to support multiple form factors (tablet, mobile capability) | | 1.163 | 1.130 | 0.973 |
| Title: Human Resource Systems (HRS) Transition | | 1.695 | 3.413 | 4.897 |

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|--|---|--|----------------|----------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0901220F / <i>Personnel Administration</i> | Project (Number/Name) 675194 / <i>Force Development Transformation</i> | | |
| B. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>Description: Identify and document personnel legacy systems for modernization, transition and/or decommission with inclusion of capability into the ORACLE Enterprise Business Suite (EBS). Provide legacy systems transition and data translation to the Air Force Integrated Personnel and Pay System (AFIPPS) Enterprise Resource Planning (ERP) program. Transition personnel legacy systems to DoD and/or commercial cloud services as part of the Data Center Optimization Initiative effort. Transition the Test and Development Environment (T&DE) to an approved Cloud Service Provider.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> • Invested in simplifying the web-apps for AFIPPS transition • Migrated a number of web apps to supportable software platforms • Invested in T&DE migration • Separated T&DE capability from production networks per guidance from the Security Technical Implementation Guide • Identified opportunities to use inherent capabilities with COTS (Oracle EBS HR) to accomplish functionality provided by current customized Oracle code (MilPDS) <p>FY 2017 Plans: HRS Transition Analysis:</p> <ul style="list-style-type: none"> • Migrate apps to supportable software platforms (eg, .Net 4.0) • Develop data management strategy for MilPDS/AFIPPS transition • Initiate migration of T&DE capability to an approved Cloud Service Provider • Initiate migration of systems/applications to an approved Cloud Service Provider • Identify opportunities to leverage current technologies to reduce redundant capabilities • Identify opportunities to consolidate applications by life cycle requirements and functionality <p>FY 2018 Plans: HRS Transition Phase 1:</p> <ul style="list-style-type: none"> • Will complete migration of systems/applications to supportable software platforms • Will implement data management strategy for MilPDS/AFIPPS transition • Will complete migration of T&DE capability to an approved Cloud Service Provider • Will complete migration of apps to an approved Cloud Service Provider • Will continue consolidation of apps by life cycle requirements and functionality | | | | |
| Title: Test and Evaluation/Systems Engineering | | 0.089 | 0.509 | 0.479 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0901220F / <i>Personnel Administration</i> | Project (Number/Name) 675194 / <i>Force Development Transformation</i> |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| <p>Description: Continued support for all aspects of engineering including software and systems engineering, requirements analysis, configuration management, database administration, and test and evaluation throughout the lifecycle of all Human Resources applications and continued infrastructure development.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> Supported all aspects of engineering including software and systems engineering, requirements analysis, configuration management, and database administration Performed test and evaluation for eBOSS, SOA, and provide system engineering support for the HRS transition <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> Continue supporting all aspects of engineering including software and systems engineering, requirements analysis, configuration management, and database administration Perform test and evaluation for Human Resources applications, SOA, HRS transition, and any emergent customer needs <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> Will continue supporting all aspects of engineering including software and systems engineering, requirements analysis, configuration management, and database administration Will perform test and evaluation Human Resources applications, SOA, HRS transition, and any emergent customer needs and provide system engineering support for the HRS transition | | | |
| Accomplishments/Planned Programs Subtotals | 4.416 | 5.157 | 6.469 |

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

N/A

Remarks

D. Acquisition Strategy

PSD employs an evolutionary acquisition strategy to deliver incremental Information Technology, and Human Resources capabilities with development contracts that are awarded in a competitive environment. In 2015, the government conducted a Full and Open competition for Human Resources System Technical Support and awarded a contract to provide PSD with development and test/technical support.

Air Force Program Executive Officer (PEO) for Business and Enterprise Systems (AFPEO BES) is the PEO for PSD.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0901220F / <i>Personnel Administration</i> | Project (Number/Name) 675194 / <i>Force Development Transformation</i> |

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0901226F / <i>Air Force Studies and Analysis Agency</i> |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 1.064 | 1.523 | 1.563 | 0.000 | 1.563 | 1.429 | 1.454 | 1.479 | 1.510 | Continuing | Continuing |
| 676009: <i>M & S DEVELOPMENT</i> | - | 1.064 | 1.523 | 1.563 | 0.000 | 1.563 | 1.429 | 1.454 | 1.479 | 1.510 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

Provides for development and enhancement of modeling and simulation (M&S) tools for strategic planning, operational requirements, modernization and recapitalization of systems and programs, as well as the Planning, Programming, Budgeting and Execution (PPBE) processes for the AF Analytic Community and Secretary of the Air Force Standard Analysis Toolkit in support of AF Senior Leadership. As new technologies are introduced to the battlefield (Digital Electronic Jammers, maneuvering Surface-to-Surface Missiles, Directed Energy Weapons, etc.) along with evolving warfighting techniques and support operations, the range of capabilities that needs to be covered by analytic tools needs to expand as well. M&S creation and enhancement can require extensive research in how to properly implement the emerging weapons capabilities as well as demand development of software techniques to implement the changes. Additionally, emerging and continuing focus areas such as Space, Irregular Warfare, Information Operations, Cyber warfare and ISR demand specific tools of their own for new exploration and development. These focus areas require examination in isolation as well as cross-domain making the problem more complex and increasing the R&D challenges to field new decision support tools.

This program is in Budget Activity 7, Operational System Development as this budget activity includes development efforts to provide new and evolving systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

B. Program Change Summary (\$ in Millions)

| | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|-------------------------------------|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 1.103 | 1.523 | 1.559 | 0.000 | 1.559 |
| Current President's Budget | 1.064 | 1.523 | 1.563 | 0.000 | 1.563 |
| Total Adjustments | -0.039 | 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 | -0.039 | 0.000 | 0.004 | 0.000 | 0.004 |

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

| | FY 2016 | FY 2017 | FY 2018 |
|---|---------|---------|---------|
| Title: Modeling and Simulation Development | 1.064 | 1.523 | 1.563 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0901226F / <i>Air Force Studies and Analysis Agency</i> |
|--|--|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| <p>Description: Develop and Update Modeling & Simulation (M&S) tools.</p> <p>FY 2016 Accomplishments: Continued research and development of M&S Tools.</p> <p>FY 2017 Plans: Continued to research and development of M&S Tools.</p> <p>FY 2018 Plans: Research and development of M&S Tools.</p> | | | |
| Accomplishments/Planned Programs Subtotals | 1.064 | 1.523 | 1.563 |

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

Remarks
N/A.

E. Acquisition Strategy
Previous and planned future efforts have been/will be awarded under existing Task Order contracts. AF/A9 does not anticipate awarding a new contract for R&D work in the next year.

F. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | 496.071 | 95.053 | 10.581 | 91.211 | 0.000 | 91.211 | 100.486 | 70.192 | 57.493 | 54.757 | Continuing | Continuing |
| 672222: <i>Program Budget Enterprise Service (PBES)</i> | 0.000 | 1.933 | 1.991 | 7.751 | 0.000 | 7.751 | 15.462 | 14.367 | 4.001 | 0.042 | 0.000 | 45.547 |
| 675177: <i>Cost Estimating Modeling (CEM)</i> | 7.098 | 4.977 | 4.983 | 5.000 | 0.000 | 5.000 | 4.992 | 5.002 | 5.087 | 5.190 | Continuing | Continuing |
| 675178: <i>Defense Enterprise Accounting Management System Increment 2 (DEAMS Inc 2)*</i> | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 11.905 | 15.007 | 48.405 | 49.525 | Continuing | Continuing |
| 675179: <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i> | 488.973 | 88.143 | 3.607 | 78.460 | 0.000 | 78.460 | 68.127 | 35.816 | 0.000 | 0.000 | 0.000 | 763.126 |

Program MDAP/MAIS Code: N87

*This project's R-2a exhibit has been suppressed due to funding not beginning until after FY 2018

A. Mission Description and Budget Item Justification

This program element develops upgrades to existing financial management information systems. These upgrades are required to comply with auditability and transparency requirements as well as enable efficiencies in processing financial transactions. This program element also supports studies and analysis to improve future program planning and execution.

There are four projects within this program element: Program and Budget Enterprise Service (PBES), Cost Estimating Modeling (CEM), and Defense Enterprise Accounting and Management System (DEAMS) Increment 1 (Inc 1) and Increment 2 (Inc 2).

PBES is a software development effort that will utilize a Service Oriented Architecture (SOA) to deliver budgeting and programming capability for the Air Force. PBES will replace legacy systems such as the Automated Budget Interactive Data Environment System (ABIDES) and the Resource Allocation Programming Information Decision System (RAPIDS) and will support the budget formulation and force programming process.

CEM is a knowledge-based study effort to improve Air Force-wide cost estimating by analyzing cost data and recommending changes to estimating models, methods, and tools.

DEAMS is the Air Force's target core accounting and financial management solution and is a key component of the long-term business process improvements needed to sustain auditability and correct financial system weaknesses.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i> |
|--|---|

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

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 95.130 | 10.581 | 6.975 | 0.000 | 6.975 |
| Current President's Budget | 95.053 | 10.581 | 91.211 | 0.000 | 91.211 |
| Total Adjustments | -0.077 | 0.000 | 84.236 | 0.000 | 84.236 |
| • 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 | 3.227 | 0.000 | | | |
| • SBIR/STTR Transfer | -3.304 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 84.236 | 0.000 | 84.236 |

Change Summary Explanation

FY2016: \$3.227M increase for System Change Request support to address deficiencies. -\$3.304M decrease for Small Business Innovation Research (SBIR).

FY2018: \$78.460M increase for DEAMS as a result of the approved critical change decision. \$6.010M increase for PBES contract award, support equipment and program support.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i> | | | | Project (Number/Name) 672222 / <i>Program Budget Enterprise Service (PBES)</i> | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 672222: <i>Program Budget Enterprise Service (PBES)</i> | 0.000 | 1.933 | 1.991 | 7.751 | 0.000 | 7.751 | 15.462 | 14.367 | 4.001 | 0.042 | 0.000 | 45.547 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

PBES is a single solution software development effort that will utilize a Service Oriented Architecture (SOA) to deliver budgeting and programming capability for the United States Air Force. PBES will replace legacy systems such as the Automated Budget Interactive Data Environment System (ABIDES) and Resource Allocation Programming Information Decision System (RAPIDS) and will support the budget formulation and force programming process. Upon full deployment of PBES, the system will be compliant with the Standard Financial Information Structure (SFIS) and Standard Line of Accounting (SLOA) conventions, which will enable standardization of data across the Department of Defense (DoD).

Utilizing Business Process Re-engineering (BPR), the Air Force has designated PBES as the solution to deliver traceability of financial data in support of the programming and budgeting processes. Through the use of BPR, PBES will address excessive overhead, outdated business practices and other time-consuming support activities. PBES will make the budget formulation process more efficient by incorporating business best practices, organizing programming and budgeting personnel, as well as utilizing current technology. PBES will also eliminate checks and balances required of older technology, taking advantage of automated reconciliation services. In addition, the solution will allow the use of Authoritative Data Sources (ADS) for data exposure, resulting in more timely and accurate budget submissions to Office of the Secretary of Defense (OSD), Congress, and other internal and external customers.

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

| | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Title: PBES | 1.933 | 1.991 | 7.751 |
| Description: Software development effort providing modern and enhanced budgeting and programming capabilities to the USAF. Funding supports engineering and technical development and implementation activities. | | | |
| FY 2016 Accomplishments: | | | |
| <ul style="list-style-type: none"> - Consolidated 4-release approach into 1 to gain efficiencies and synergies - Continued pre-Milestone Development Decision (MDD) acquisition activities - Prepared for MDD - Delivered Bounded User Requirement (BUR) - Conducted functional capability demo & assessment of two Commercial Off The Shelf (COTS) providers - Identified Program Management Office (PMO) | | | |
| FY 2017 Plans: | | | |
| <ul style="list-style-type: none"> - Stood up PMO | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i> | Project (Number/Name) 672222 / <i>Program Budget Enterprise Service (PBES)</i> | | |
| B. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <ul style="list-style-type: none"> - Obtained MDD approval - Continue PBES acquisition planning, reporting, and execution activities - Continue risk reduction activities to support Acquisition Strategy decision making - Award and complete 6-month risk reduction effort - Continue to develop plans for design, develop, test, and training - Prepare for Industry Days with System Integrators - Develop Draft Request for Proposals - Prepare for Milestone A/B <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will continue PBES acquisition planning, reporting, and execution activities - Will continue risk reduction activities to support Acquisition Strategy decision making - Will continue to develop plans for design, develop, test, and training - Will continue draft and evaluation of RFP - Will prepare for 2nd Industry Day with potential system integrators - Will continue to prepare documentation to support Milestone A/B approval - Will award contract for System Integrator - Will award Software Contract | | | | |
| Accomplishments/Planned Programs Subtotals | | 1.933 | 1.991 | 7.751 |
| C. Other Program Funding Summary (\$ in Millions) | | | | |
| N/A | | | | |
| Remarks | | | | |
| D. Acquisition Strategy | | | | |
| The PBES PMO has been established. Pursuing a sole source Justification and Approval (J&A) for the COTS solution. The System Integrator will be pursued via open competition or via J&A. Risk Reduction activities are currently on-going to prove out functionality with COTS solution. Market research being conducted to verify what is currently being used by DoD and Federal agencies in the financial business space. | | | | |
| E. Performance Metrics | | | | |
| Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission. | | | | |

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i> | Project (Number/Name) 672222 / <i>Program Budget Enterprise Service (PBES)</i> |
|--|---|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| PBES R1 Risk Reduction | MIPR | Washington Head Quarter Service : Washington, DC | 0.000 | 0.000 | | 0.600 | Mar 2017 | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.600 | 1.000 |
| PBES AIS CI PMP | C/CPAF | AFLCMC : MAFB, AL | 0.000 | 0.000 | | 0.000 | | 0.100 | Sep 2018 | 0.000 | | 0.100 | 0.000 | 0.100 | - |
| PBES CI SEPM | C/CPAF | AFLCMC : MAFB, AL | 0.000 | 0.000 | | 0.000 | | 0.200 | Sep 2018 | 0.000 | | 0.200 | 0.000 | 0.200 | - |
| Subtotal | | | 0.000 | 0.000 | | 0.600 | | 0.300 | | 0.000 | | 0.300 | 0.000 | 0.900 | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| PBES DEV/TEST Hosting | MIPR | DISA : Fort Meade, MD | 0.000 | 0.000 | | 0.000 | | 1.400 | Jan 2018 | 0.000 | | 1.400 | 0.000 | 1.400 | - |
| PBES DEV/TEST LICENSES | MIPR | AFLCMC : MAFB, AL | 0.000 | 0.000 | | 0.000 | | 2.351 | Jan 2018 | 0.000 | | 2.351 | 0.000 | 2.351 | 0.115 |
| PBES System Engineering | MIPR | AFLCMC : MAFB, AL | 0.000 | 0.371 | Jan 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.371 | - |
| PBES Environment/on-boarding | MIPR | AFLCMC : MAFB, AL | 0.000 | 0.300 | Jan 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.300 | - |
| PBES Business/Data Analyst | MIPR | AFLCMC : MAFB, AL | 0.000 | 0.200 | Feb 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.200 | - |
| PBES Data Architect | MIPR | AFLCMC : MAFB, AL | 0.000 | 0.200 | Jan 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.200 | - |
| Subtotal | | | 0.000 | 1.071 | | 0.000 | | 3.751 | | 0.000 | | 3.751 | 0.000 | 4.822 | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i> | Project (Number/Name) 672222 / <i>Program Budget Enterprise Service (PBES)</i> |

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| Pre-MDD Acquisition Activities | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MDD (Jan 2017) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Initiate Program Office Operation | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Risk Reduction | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| RFP development and evaluation | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Milestone A/B (Mar 2018) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Contract award for Software (Dec 2017) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Contract award (system integrator) (Sep 2018) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PBES R1 Development & Deployment activities | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Full Deployment Decision | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Full Deployment | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i> | Project (Number/Name) 672222 / <i>Program Budget Enterprise Service (PBES)</i> |

Schedule Details

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Pre-MDD Acquisition Activities | 1 | 2016 | 1 | 2017 |
| MDD (Jan 2017) | 2 | 2017 | 2 | 2017 |
| Initiate Program Office Operation | 2 | 2017 | 2 | 2017 |
| Risk Reduction | 3 | 2017 | 1 | 2018 |
| RFP development and evaluation | 4 | 2017 | 3 | 2018 |
| Milestone A/B (Mar 2018) | 2 | 2018 | 2 | 2018 |
| Contract award for Software (Dec 2017) | 1 | 2018 | 1 | 2018 |
| Contract award (system integrator) (Sep 2018) | 4 | 2018 | 4 | 2018 |
| PBES R1 Development & Deployment activities | 4 | 2018 | 2 | 2021 |
| Full Deployment Decision | 3 | 2020 | 3 | 2020 |
| Full Deployment | 2 | 2021 | 2 | 2021 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i> | | | Project (Number/Name) 675177 / <i>Cost Estimating Modeling (CEM)</i> | | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 675177: <i>Cost Estimating Modeling (CEM)</i> | 7.098 | 4.977 | 4.983 | 5.000 | 0.000 | 5.000 | 4.992 | 5.002 | 5.087 | 5.190 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

Cost Estimating Modeling (CEM) provides and enhances Air Force-wide cost estimating capabilities by developing current cost data and estimating methods and tools, data process reengineering, data structure development, and gap filling initiatives. In collaboration with the OSD Cost Assessment Data Enterprise (CADE) project (DoD's unified initiative to collect, organize, store, and use data more efficiently), these products will improve the quality, timeliness, and effectiveness of the acquisition program cost estimates required by statute (e.g., 10 USC 2366, 2433, 2434) and regulation (e.g., DoDI 5000.02) in support of AF and DoD acquisition decisions, programming and execution decisions, and Congressional mandates.

CEM will ensure the Air Force continuously improves cost estimating capabilities for broad cross-cutting areas, as well as specific to each weapon system type (aircraft, UAVs, ballistic missiles, tactical missiles, munitions, electronics and aircraft modifications, ground stations and automated information systems, space and launch vehicles). Changing technologies, acquisition laws, regulations, and initiatives drive the need to revise cost estimating processes, methods, and tools. For example, current capability shortfalls reflect gaps in the ability to respond effectively to the laws and regulations such as the FY06 NDAA report (PL 109-163--Provisions relating to Major Defense Acquisition Programs (MDAPs)), Weapon System Acquisition Reform Act (WSARA) (provisions related to improving cost estimating quality, especially earlier in the program life-cycle and affordability analysis), Secretary of the Air Force (SECAF) Acquisition Excellence Plan (priorities to improve cost estimating capability and affordability analysis and improved cost estimating support to requirements process), and Office of the Secretary of Defense (OSD) policy (better buying power initiatives on enhanced trade-off analysis, affordability analysis, and will versus should cost analysis). The CADE and CEM partnership is the lead example for AT&L Better Data initiatives designed as a response to Congressional expressed desire for better outcomes in acquisition. The partnership provides data/analysis/ methods/tools and institutional knowledge at the analysts' fingertips versus the status quo inefficient, ad hoc approach.

This project will perform knowledge-based studies (KBS) to include analyzing historical data and changing technologies/programmatics to develop new estimating methods (e.g. statistical tools, cost estimating relationships (CERs)) across hundreds of product work breakdown structure (WBS) elements and functional cost elements within each weapon system type noted above. Examples of areas of cost studies and modeling efforts that cut across all weapon system types are cost risk analysis metrics; model/tool development; software cost data sets and metrics; contract or engineering change order studies, analysis, and models; other government cost databases, methods, and analysis tools (e.g., depot standup and government test); nuclear hardening technology change and impacts to cost; cybersecurity emerging issues and costs; time phasing method improvements; reliability and maintainability trends and impacts on cost; and overarching and commodity area price escalation analysis and estimating method development.

CEM will deliver valuable analytical tools in support of higher quality/credible estimates (as required by statute and regulation) allowing for more realistic cost conscious decisions on over \$100B of critical warfighter capability.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i> | Project (Number/Name) 675177 / <i>Cost Estimating Modeling (CEM)</i> |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| <p>Title: CEM</p> <p>Description: Perform knowledge-based studies (KBS)—Develop data collection requirements documents/tables and data collection process improvements, collect and analyze data to develop new estimating methods (e.g. statistical tools, cost estimating relationships (CERs)), and perform other gap filling studies for aircraft, UAVs, ballistic and tactical missiles, munitions, electronics and aircraft modifications, ground stations and automated information systems, space, launch vehicles, and cross-cutting areas.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Completed significant cost, technical and programmatic data collection process reengineering and Cost Assessment Data Enterprise (CADE) data structure and design requirements analysis to include: <ul style="list-style-type: none"> -- Designed processes and data collection tables and formats to collect technical data more consistently, proactively, efficiently and effectively -- Designed processes and data collection tables and formats to collect Operations and Support (O&S) data more consistently, proactively, efficiently and effectively -- Designed process and data collection formats to collect software data more consistently, proactively, efficiently and effectively, and only uniquely as appropriate for business systems development -- Designed a common data requirement plan to be used across services in each commodity area and subsystem area to ensure consistent, quality data reporting across the DoD on weapon system and automated information system contracts -- Continued studies on integration of quality authoritative data and methods/tools into CADE system -- Continued to collect historical program data to pilot/test data collection process changes and fill gaps identified in requirements analysis -- Initiated effort to study impacts to cost from technology and business trends, update/expand cost/technical data sets, and develop improved methods and benchmarks for radar cost estimating -- Conducted weekly reviews with technical/cost teams and quarterly progress reviews w/entire government cost community <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Revise/refine data collection requirements tables with data collection and lessons learned during new data collection process implementation - Develop benchmark metrics and other cost estimating methods/analytical tools with recent data collections - Continue to collect historical program data to fill gaps against defined data collection requirements from previous year efforts and integrate historical data collected into CADE system for central access to all DoD - Continue to work with CADE system on data design and structure requirements and visual analysis tool requirements | 4.977 | 4.983 | 5.000 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i> | Project (Number/Name) 675177 / <i>Cost Estimating Modeling (CEM)</i> |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| <ul style="list-style-type: none"> - Begin studies for data/method improvements in the areas such as missile production cost improvement curves, electronics/ avionics cost improvement curves, software agile development, cyber security, new manufacturing technologies, and software maintenance. - Conduct weekly reviews with technical/cost teams and quarterly progress reviews w/entire government cost community <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will continue to collect historical program data to fill gaps against defined data collection requirements from previous year efforts and integrate historical data collected into CADE system for central access to all DoD - Will develop normalized data sets, benchmark metrics, and cost estimating methods/analytical tools with recent data collections - Will continue studies started in FY17 and begin in areas such as common computing environments, airborne open mission systems, schedule estimating relationships, depot cost data/methods, ground systems data/methods, and satellite sizing methods - Will continue to work with OSD CADE team to implement data design and structure requirements and visual analysis tool requirements into CADE system - Will conduct weekly reviews with technical/cost teams and quarterly progress reviews with entire government cost community | | | |
| Accomplishments/Planned Programs Subtotals | 4.977 | 4.983 | 5.000 |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|--|
| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To Complete</u> <u>Total Cost</u> |
| • N/A: N/A | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - |

Remarks

N/A

D. Acquisition Strategy

Contracts are expected to be firm-fixed price and/or cost plus, and will be awarded through full and open competition and follow Federal Acquisition Regulations (FAR) guidelines. Headquarters Air Force will provide contract management oversight and direction. Contracted knowledge-based studies progress will be reviewed on a quarterly basis and adjusted as appropriate.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i> | Project (Number/Name) 675177 / <i>Cost Estimating Modeling (CEM)</i> |
|--|---|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| CEM: Aircraft / UAVs | Various | Various : Various | 1.860 | 1.145 | Feb 2016 | 1.115 | Feb 2017 | 2.882 | Feb 2018 | 0.000 | | 2.882 | Continuing | Continuing | - |
| CEM: Ballistic Missiles | C/CPFF | Various : Various | 0.460 | 0.350 | Feb 2016 | 0.350 | Feb 2017 | 0.124 | Feb 2018 | 0.000 | | 0.124 | Continuing | Continuing | - |
| CEM: Electronics, Aircraft Modifications | C/CPFF | Various : Various | 0.750 | 0.575 | Feb 2016 | 0.575 | Feb 2017 | 0.205 | Feb 2018 | 0.000 | | 0.205 | Continuing | Continuing | - |
| CEM: Ground Stations, Automated Information Systems | C/CPFF | Various : Various | 0.801 | 0.625 | Feb 2016 | 0.625 | Feb 2017 | 0.222 | Feb 2018 | 0.000 | | 0.222 | Continuing | Continuing | - |
| CEM: Cross-Cutting Databases | Various | Various : Various | 2.182 | 1.376 | Feb 2016 | 1.412 | Feb 2017 | 1.244 | Feb 2018 | 0.000 | | 1.244 | Continuing | Continuing | - |
| CEM: Space, Launch Vehicles | C/CPFF | Various : Various | 0.625 | 0.696 | Feb 2016 | 0.696 | Feb 2017 | 0.248 | Feb 2018 | 0.000 | | 0.248 | Continuing | Continuing | - |
| CEM: Tactical Missiles, Munitions | C/CPFF | Various : Various | 0.420 | 0.210 | Feb 2016 | 0.210 | Feb 2017 | 0.075 | Feb 2018 | 0.000 | | 0.075 | Continuing | Continuing | - |
| Subtotal | | | 7.098 | 4.977 | | 4.983 | | 5.000 | | 0.000 | | 5.000 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i> | Project (Number/Name) 675177 / <i>Cost Estimating Modeling (CEM)</i> |

| FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 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 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--|--|--|---|--|--|---|--|--|--|---|--|--|--|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Commodity Specific KBS Activities | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Populate Data Templates w/ Commodity Specific KBS findings (ongoing) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Develop CERs/Estimating Tools/Models | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Templates / CERs / Tools / Models Deliverables (Feb 2017) | | | | | ■ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Data / CERs / Tools / Models Deliverables (Sep 2017) | | | | | | | | ■ | | | | | | | | | | | | | | | | | | | | | | | | |
| Data / CERs / Tools / Models Deliverables (Feb 2018) | | | | | | | | | | | | ■ | | | | | | | | | | | | | | | | | | | | |
| Data / CERs / Tools / Models Deliverables (Sep 2018) | | | | | | | | | | | | | | | | ■ | | | | | | | | | | | | | | | | |
| Data / CERs / Tools / Models Deliverables (Feb 2019) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Data / CERs / Tools / Models Deliverables (Sep 2019) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Data / CERs / Tools / Models Deliverables (Feb 2020) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Data / CERs / Tools / Models Deliverables (Sep 2020) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Data / CERs / Tools / Models Deliverables (Feb 2021) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Data / CERs / Tools / Models Deliverables (Sep 2021) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Data / CERs / Tools / Models Deliverables (Feb 2022) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Quarterly KBS Progress Reviews | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i> | Project (Number/Name) 675177 / <i>Cost Estimating Modeling (CEM)</i> |

Schedule Details

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Commodity Specific KBS Activities | 1 | 2016 | 4 | 2022 |
| Populate Data Templates w/ Commodity Specific KBS findings (ongoing) | 1 | 2016 | 4 | 2022 |
| Develop CERs/Estimating Tools/Models | 1 | 2016 | 4 | 2022 |
| Templates / CERs / Tools / Models Deliverables (Feb 2017) | 2 | 2017 | 2 | 2017 |
| Data / CERs / Tools / Models Deliverables (Sep 2017) | 4 | 2017 | 4 | 2017 |
| Data / CERs / Tools / Models Deliverables (Feb 2018) | 2 | 2018 | 2 | 2018 |
| Data / CERs / Tools / Models Deliverables (Sep 2018) | 4 | 2018 | 4 | 2018 |
| Data / CERs / Tools / Models Deliverables (Feb 2019) | 2 | 2019 | 2 | 2019 |
| Data / CERs / Tools / Models Deliverables (Sep 2019) | 4 | 2019 | 4 | 2019 |
| Data / CERs / Tools / Models Deliverables (Feb 2020) | 2 | 2020 | 2 | 2020 |
| Data / CERs / Tools / Models Deliverables (Sep 2020) | 4 | 2020 | 4 | 2020 |
| Data / CERs / Tools / Models Deliverables (Feb 2021) | 2 | 2021 | 2 | 2021 |
| Data / CERs / Tools / Models Deliverables (Sep 2021) | 4 | 2021 | 4 | 2021 |
| Data / CERs / Tools / Models Deliverables (Feb 2022) | 2 | 2022 | 2 | 2022 |
| Quarterly KBS Progress Reviews | 1 | 2016 | 4 | 2022 |

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|--|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i> | | | | Project (Number/Name) 675179 / <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i> | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 675179: <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i> | 488.973 | 88.143 | 3.607 | 78.460 | 0.000 | 78.460 | 68.127 | 35.816 | 0.000 | 0.000 | 0.000 | 763.126 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

MDAP/MAIS Code: N87

Defense Enterprise Accounting and Management System (DEAMS) is a commercial-off-the-shelf (COTS), Oracle-based software implementation effort that will provide an auditable, modern accounting and finance system. DEAMS is a Joint United States Air Force (USAF) and United States Transportation Command (USTRANSCOM) Enterprise Resource Planning (ERP) Program that will replace many existing accounting and finance legacy systems and will provide core funds execution management functions consistent with financial management laws, regulations and policy, general ledger, funds management, payments, receivables, cost and revenues, and fiduciary reporting. DEAMS is compliant with the Clinger-Cohen Act, Business Enterprise Architecture (BEA), and integrates into Global Combat Support System-Air Force (GCSS-AF). When fully deployed, DEAMS will be key to Air Force compliance with the Financial Improvement and Audit Readiness (FIAR) requirement in the 2010 NDAA.

DEAMS Inc 1 is planned as:

- Release 1 - Air Mobility Command (AMC) without Transportation Working Capital Funds (TWCF)
- Release 2 - AMC with TWCF, Defense Finance and Accounting Service (DFAS) Rome
- Release 3 - Air Combat Command (ACC) and Air Force Global Strike Command (AFGSC)
- Release 4 - Air Force Reserve Command (AFRC), and Air National Guard (ANG) Geographically Separated Units (GSUs) to include DFAS Limestone, Air Force District of Washington (AFDW), Air Force Special Operations Command (AFSOC), U.S. Air Force Academy (USAFA), Pacific Air Forces (PACAF), and DFAS Japan
- Release 5 - U. S. Air Forces in Europe (USAFE), DFAS Europe, and Air Education and Training Command (AETC), Joint Base San Antonio
- Release 6 - Air Force Materiel Command (AFMC) (Test Bases)

DEAMS Inc 1 is transitioning to the Operation and Support (O&S) phase post Milestone C to support deployed locations.

DEAMS Inc 1 FY2018 funding includes initial planning, design, and development activities associated with the DEAMS Inc 2 effort.

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

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i> | Project (Number/Name) 675179 / <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i> |
|--|---|---|

DEAMS reported MAIS Critical Change in the 31 May 2016 Defense Acquisition Executive Summary (DAES). The program did not meet the original estimate schedule threshold for the Full Deployment Decision (FDD) in August 2015. DEAMS Inc 1 capability will continue to be deployed in FY2016 - FY2020 as approved by the Milestone Decision Authority.

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

| | FY 2016 | FY 2017 | FY 2018 |
|--|---------|---------|---------|
| <p>Title: Product Development</p> <p>Description: DEAMS Inc 1 capability development activities support multiple releases as described in the mission description. Development activities include design, build, test, data conversion, reporting, cutover from legacy systems and the resolution of deficiency reports and defects. Activities also include hardware support (system administration and database security) and storage service by Defense Information Systems Agency (DISA); continued development of interface to Global Combat Support System - Air Force (GCSS-AF); Enterprise Resource Planning (ERP) Common Computing Environment (CCE); Independent Verification and Validation (IV&V); Developmental Release Field Support (DRFS) to include process execution and data scripts; help desk support; Engineering Integration Services (EIS) for oversight of development tools and processes; deployment training and change management activities. Provides acquisition, contract, finance, and cost management planning and direct mission support activities.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Continued DEAMS Inc 1 Release 4-6 development activities in support of multiple deployments - Delivered Status of Funds (SOF) interim End of Year (EOY) reports - Delivered System Change Requests (SCRs) supporting key FM processes i.e. Defense Departmental Reporting System (DDRS), Civilian Pay (CIVPAY), and foreign currency <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Accomplish development activities for Release 5-6 in support of multiple deployments - Development/integration of DEAMS Oracle Reporting Solution to address IOT&E findings - Development/integration of DEAMS disbursing initiative - Continue to work on SCRs - Continue remaining development activities of remaining deployments - Initiate planning activities for DEAMS Inc 2 <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Continue development/integration of DEAMS Oracle Reporting Solution to address IOT&E findings - Continue development/integration of DEAMS disbursing initiative - Continue to work on SCRs - Continue remaining development activities in support of remaining deployments | 82.934 | 3.076 | 71.315 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i> | Project (Number/Name) 675179 / <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i> |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| <ul style="list-style-type: none"> - Continue direct mission support activities - Continue planning activities for DEAMS Inc 2 | | | |
| <p>Title: Test and Evaluation (T&E)</p> <p>Description: The T&E process will be a complete system operational test to determine DEAMS effectiveness, suitability, and mission capability. It begins with validation of requirements and end to end functional capabilities including compliance mandates. The T&E effort are conducted in developer sites, Air Force test sites, DISA production sites, and user locations. The DEAMS Test and Evaluation Master Plan (TEMP), Lead Developmental Test Organization (LDTO) Integrated Test Plan (ITP), System Integrators (SIs) Software Test Plans (STPs), and Operational Test Agency (OTA) operational test plans covers the details of Increment 1 T&E.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Continued and completed T&E activities for the following: <ul style="list-style-type: none"> -- System development services testing & government testing -- Software problem reports and defect resolution -- Releases 4-6 development <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Validate multiple releases (DEAMS Inc 1 Release 4-6 and hardware/software releases) - Develop & coordinate the DEAMS TEMP for final approval with Director, Operational Test and Evaluation (DOT&E) - Scheduled test events to add confidence to the revised Inc 1 schedule, after DEAMS critical change <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will continue to validate planned releases and coordinate the complete testing of the Oracle R12 technical software upgrade - Will prepare for follow-on Operational Test and Evaluation (FOT&E) | 2.225 | 0.400 | 2.705 |
| <p>Title: Management Services</p> <p>Description: Program Management Administration Costs</p> <p>FY 2016 Accomplishments: Program Management Administration Costs</p> <p>FY 2017 Plans: Program Management Administration Costs</p> <p>FY 2018 Plans:</p> | 2.984 | 0.131 | 4.440 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i> | Project (Number/Name) 675179 / <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i> |

| | | | |
|---|----------------|----------------|----------------|
| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
| Program Management Administration Costs | | | |
| Accomplishments/Planned Programs Subtotals | 88.143 | 3.607 | 78.460 |

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

| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| • OPAF: BA03: Line Item #834470: <i>DEAMS</i> | 4.755 | 0.000 | 1.514 | 0.000 | 1.514 | 0.808 | 1.919 | 0.000 | 3.131 | 0.00 | 16.616 |

Remarks

D. Acquisition Strategy

DEAMS Inc 1 will employ multiple contract actions as the various Development Activities and Releases are developed, tested, and deployed through FY 2020. Program office will provide management oversight of the system integrator and multiple subcontractors. Program reviews will occur throughout the lifecycle of the program. Programmatic adjustments will occur as appropriate or as directed by Air Force leadership or by the Milestone Decision Authority.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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|--|--|--|--|---|--|--|--|---|--|--|-----------------------|--|--|--|--|
| Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force | | | | | | | | | | | Date: May 2017 | | | | |
| Appropriation/Budget Activity 3600 / 7 | | | | R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i> | | | | Project (Number/Name) 675179 / <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i> | | | | | | | |

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| DEAMS DRFS (Post Production Support, Level 2/3 Help Desk Support), System Stabilization, Design, Blueprint, Code, Development tools/ processes, etc. | C/FFP | Accenture Federal Services LLC : Various | 150.618 | 33.330 | Nov 2015 | 0.000 | | 19.690 | Nov 2017 | 0.000 | | 19.690 | 0.000 | 203.638 | - |
| DEAMS : DRFS (Level 0 Help Desk Support) | C/FFP | The Greentree Group : Dayton, OH | 3.043 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 3.043 | - |
| DEAMS: ESB messaging, adapters, web services, security, digital signature service, etc. | MIPR | GCSS-AF : Gunter AFB, AL | 6.882 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 6.882 | - |
| DEAMS: Computing and storage support, system administration, security, storage, etc. | MIPR | DISA : Various | 28.098 | 0.045 | Oct 2015 | 0.000 | | 0.027 | Oct 2017 | 0.000 | | 0.027 | 0.055 | 28.225 | - |
| DEAMS: Direct Mission Support (Development/ Integration Environments) | Various | Various : Various | 94.727 | 16.272 | Oct 2015 | 3.076 | Oct 2016 | 11.909 | Oct 2017 | 0.000 | | 11.909 | 24.704 | 150.688 | - |
| DEAMS: Oracle R12 Support, ERP Support | C/FFP | SRISYS : West Chester, OH | 3.092 | 4.348 | Nov 2015 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 7.440 | - |
| DEAMS: SME Support, General Ledger Reports and Analysis, Business Process Analysis, Master Data Conversion and Training Development | C/T&M | Kearney and Company : Various | 89.905 | 13.648 | Mar 2016 | 0.000 | | 17.569 | Mar 2018 | 0.000 | | 17.569 | 19.715 | 140.837 | - |
| DEAMS: Change Management, Strategic Communications | C/FFP | SAIC : Dayton, OH | 2.545 | 1.880 | Dec 2015 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 4.425 | - |
| DEAMS: Information Assurance (IA) / Risk | C/CPFF | Jacobs Technology : Dayton, OH | 1.654 | 0.584 | Nov 2015 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 2.238 | - |

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| Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force | | | | | | | | | | | Date: May 2017 | | | | |
| Appropriation/Budget Activity 3600 / 7 | | | | R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i> | | | | Project (Number/Name) 675179 / <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i> | | | | | | | |

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 Framework (RMF) | | | | | | | | | | | | | | | |
| DEAMS: ERP System Integration | C/FFP | Credence Management Solutions LLC : Dayton, OH | 16.116 | 6.451 | Jun 2016 | 0.000 | | 5.340 | Jun 2018 | 0.000 | | 5.340 | 15.564 | 43.471 | - |
| DEAMS FFRDC ERP Engineering | C/Variou | The MITRE Corporation : Various | 10.669 | 1.383 | Oct 2015 | 0.000 | | 1.469 | Oct 2017 | 0.000 | | 1.469 | 2.797 | 16.318 | - |
| DEAMS: Independent Verification and Validation (IV&V) | C/FFP | JYG Innovations : Dayton, OH | 7.865 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 7.865 | - |
| DEAMS: ETASS (Engineering) | C/CPFF | Jacobs Technology : Dayton, OH | 30.590 | 4.993 | Nov 2015 | 0.000 | | 4.737 | Nov 2017 | 0.000 | | 4.737 | 6.784 | 47.104 | - |
| DEAMS: DTUS | C/FFP | DSD Laboratories, Inc : Sudbury, MA | 0.000 | 0.000 | | 0.000 | | 10.574 | Jan 2018 | 0.000 | | 10.574 | 31.360 | 41.934 | - |
| Subtotal | | | 445.804 | 82.934 | | 3.076 | | 71.315 | | 0.000 | | 71.315 | 100.979 | 704.108 | - |

Remarks
 DRFS: Developmental Release Field Support
 DISA: Defense Information Systems Agency
 ERP: Enterprise Resource Planning
 ESB: Enterprise Service Bus
 ETASS: Engineering and Technology Acquisition Support Services
 FFRDC: Federally Funded Research and Development Center
 GCSS-AF: Global Combat Support System - Air Force
 SME: Subject Matter Expert

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

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| Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force | | | | | | | | | | | Date: May 2017 | | | | |
| Appropriation/Budget Activity 3600 / 7 | | | | R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i> | | | | Project (Number/Name) 675179 / <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i> | | | | | | | |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| DEAMS: Test services from AFOTEC, JITC, LDTO and other miscellaneous test resources | MIPR | Various : Various | 13.659 | 2.225 | Oct 2015 | 0.400 | Oct 2016 | 2.705 | Oct 2017 | 0.000 | | 2.705 | 2.964 | 21.953 | - |
| Subtotal | | | 13.659 | 2.225 | | 0.400 | | 2.705 | | 0.000 | | 2.705 | 2.964 | 21.953 | - |

Remarks
 AFOTEC: Air Force Operational Test and Evaluation Center
 JITC: Joint Interoperability Test Command
 LDTO: Lead Developmental Test Organization

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| DEAMS: Program Management Office Support | C/CPFF | BTAS : Beaver creek, OH | 0.000 | 0.000 | | 0.131 | Oct 2016 | 0.676 | Oct 2017 | 0.000 | | 0.676 | 0.000 | 0.807 | - |
| DEAMS: Program Management Administration costs | Various | AFLCMC : Wright-Patterson AFB, OH | 10.001 | 0.989 | Oct 2015 | 0.000 | | 3.764 | Oct 2017 | 0.000 | | 3.764 | 0.000 | 14.754 | - |
| DEAMS: Economic/ Sustainment Analysis Support | C/CPAF | Peerless Technologies : Dayton, OH | 3.057 | 0.134 | Oct 2015 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 3.191 | - |
| DEAMS; Program Management Office Support | C/CPFF | Quantech Services : Lexington, MA | 16.452 | 1.861 | Oct 2015 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 18.313 | - |
| Subtotal | | | 29.510 | 2.984 | | 0.131 | | 4.440 | | 0.000 | | 4.440 | 0.000 | 37.065 | - |

Remarks
 A&AS: Advisory & Assistance Services

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 0901538F / <i>Financial Management Information Systems Development</i> | Project (Number/Name) 675179 / <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i> |

Schedule Details

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| DEAMS Inc 1, SCRs | 1 | 2017 | 4 | 2020 |
| DEAMS Inc 1, Reporting | 3 | 2017 | 4 | 2018 |
| DEAMS Inc 1, Disbursing | 1 | 2018 | 1 | 2019 |
| DEAMS Inc 1, Auditing | 3 | 2017 | 1 | 2018 |
| DEAMS Inc 1 Release 4 Development Activity | 1 | 2016 | 3 | 2016 |
| DEAMS Inc 1 Release 5 Development Activity | 1 | 2016 | 4 | 2016 |
| DEAMS Inc 1 Release 6 Development Activity | 1 | 2016 | 4 | 2017 |
| Deploy DEAMS Inc 1 Capability (Oct 2015, Jun 2016, Oct 2018, Dec 2020) | 1 | 2016 | 2 | 2020 |
| DEAMS Inc 1, Full Deployment Decision (FDD) | 2 | 2020 | 2 | 2020 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date: May 2017**

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 9.388 | 8.674 | 14.255 | 0.000 | 14.255 | 14.268 | 15.115 | 15.285 | 15.511 | Continuing | Continuing |
| 670373: <i>DCIP</i> | - | 0.497 | 0.491 | 0.492 | 0.000 | 0.492 | 0.491 | 0.492 | 0.500 | 0.510 | Continuing | Continuing |
| 672486: <i>JOINT NAVWAR CENTER (JNWC) SPACE ACTIVITIES</i> | - | 3.825 | 2.693 | 7.453 | 0.000 | 7.453 | 7.483 | 7.524 | 7.570 | 7.639 | Continuing | Continuing |
| 67A011: <i>Space Analysis and Application Development</i> | - | 5.066 | 5.490 | 6.310 | 0.000 | 6.310 | 6.294 | 7.099 | 7.215 | 7.362 | Continuing | Continuing |

A. Mission Description and Budget Item Justification

Funding in this exhibit was previously budgeted in PE 01051921F, Service Support to STRATCOM - Space Activities."

The Defense Critical Infrastructure Program (DCIP) is a Department of Defense (DoD) risk management program that seeks to ensure the availability of networked assets critical to DoD missions. An October 2014 memorandum of agreement between USSTRATCOM and Deputy Assistant Secretary of Defense for Defense Continuity and Mission Assurance transferred budget authority for SPACE SECTOR DCIP to USSTRATCOM to streamline the execution of funding. Critical infrastructure assets can include installations, facilities, antennas, vehicles, computing systems, and communications links. DCIP manages the identification, prioritization, assessment, and assurance of Defense Critical Infrastructure as a comprehensive program. The program includes the development of adaptive plans and procedures to mitigate risk.

Navigation Warfare (Navwar) is deliberate defensive and offensive action to assure positioning, navigation, and timing (PNT) information through coordinated employment of space, cyberspace, and electronic warfare (EW) operations. The JNWC develops and maintains the Department's premier collection of Navwar knowledge, and provides subject matter expertise support to warfighters, Department decision makers, the Federal Interagency (the Department of Homeland Security and other civil agencies concerned with the Critical National Infrastructure), and the Coalition. Navwar expertise is developed in part by execution of PNT Operational Field Assessments (POFAs), modeling and simulation, analysis, and exercise and training support. JNWC-conducted POFAs are a key element in evaluating US and Coalition Navwar capabilities and vulnerabilities and adversary capabilities and vulnerabilities, both crucial to executing PNT superiority mission sets in potentially denied / degraded PNT environments. JNWC provides Department wide PNT posture through the PNT Annual assessment. JNWC helps develop defensive and offensive PNT capabilities by focusing on two Joint Mission Essential Tasks:

1. Provide Operational Navwar Support – Enable Navwar operations and provide planning subject matter expertise to Combatant Commands, Services, interagency partners and the coalition; Advocate DoD-wide Navwar activities to fully integrate Navwar into military operations and the future force structure.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| | |
|--|---|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i> |
|--|---|

2. Create and Maintain Navwar Knowledge Operationalize PNT Superiority – Conduct PNT operational field assessments, studies and analyses, analyze and disseminate Navwar R intelligence, and maintain a Navwar armory

The Space Analysis and Application Development program integrates space based effects into Department’s ‘Model of Record’ for joint campaign analysis. Current modeling and simulation (M&S) models are inadequate to represent the contribution that U.S space capabilities make to the air, sea, and land fight and do not accurately portray current and future space threats. This line of effort integrates effects of space capabilities into the Synthetic Theater Operations Research Model (STORM) campaign level M&S tool. Enhanced space M&S will enable the DoD to make informed decisions regarding the direction of U.S. Space Doctrine, Tactics, Techniques, Procedures, and Resource Decisions. The DoD requires the ability to conduct campaign-level analysis to quantify the holistic operational impacts of adversary space actions on military campaigns and U.S. global operations.

USSTRATCOM Data Integration and Fusion Center (DIFC) is an innovative organization developing and experimenting innovative concepts designed to validate both material and non-material methodologies to overcome data isolation in order to enable kill chains in the Joint Battlespace. These data isolation challenges result from network isolation, incomplete communications architectures, data security, incompatible information formats, security release policy, etc., inhibiting effective and efficient consolidation of decision quality strategic, operational and tactical information. The DIFC develops machine to machine solutions capable of ingesting Title 10 data at multiple classification levels, to include Special Access Program data, and associating/correlating with National Technical Means at multiple classification levels to both enhance and amplify the Common Operational Picture. The DIFC works closely with DoD SAPCO and elements of the Director of National Intelligence, to include NSA, NRO and CIA, to both identify and address policy barriers, architectures and training opportunities necessary to enable seamless flow of data from all available sensors to warfighters during time of conflict, primarily leveraging currently fielded tactical data links. Though some recommended solutions validated during demonstration events may not transition to operations immediately, but nevertheless provide validated architecture solutions and approved security policies for use should conflict arise versus ad hoc attempts to solve data movement issues during conflict.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 8.090 | 8.674 | 9.414 | 0.000 | 9.414 |
| Current President's Budget | 9.388 | 8.674 | 14.255 | 0.000 | 14.255 |
| Total Adjustments | 1.298 | 0.000 | 4.841 | 0.000 | 4.841 |
| • 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 | 1.298 | 0.000 | 4.841 | 0.000 | 4.841 |

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force **Date:** May 2017

| | | |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i> | Project (Number/Name) 670373 / <i>DCIP</i> |
|--|---|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 670373: <i>DCIP</i> | - | 0.497 | 0.491 | 0.492 | 0.000 | 0.492 | 0.491 | 0.492 | 0.500 | 0.510 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note

An October 2014 memorandum of agreement between USSTRATCOM and Deputy Assistant Secretary of Defense for Defense Continuity and Mission Assurance transferred budget authority for DCIP funding to USSTRATCOM. FY16 cost = \$497K, FY17 cost = \$491K. THIS IS NOT A NEW START.

A. Mission Description and Budget Item Justification

The USSTRATCOM Space Sector Defense Critical Infrastructure Protection program (DCIP) is a risk management program that seeks to ensure the availability of networked assets critical to USSTRATCOM and other DoD missions. Critical infrastructure assets can include installations, facilities, antennas, vehicles, computing systems, and communications links. DCIP is directed by the Office of the Assistant Secretary of Defense (Homeland Defense & Americas' Security Affairs) [OASD (HD&ASA)]. Space Sector DCIP manages the identification, prioritization, assessment, and assurance of Critical Infrastructure as a comprehensive program that includes the development of adaptive plans and procedures to mitigate risk, restore capability in the event of loss or degradation, support incident management, and protect defense critical infrastructure.

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

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|---------|---------|--------------|-------------|---------------|
| <p>Title: Asset Dependency / Risk Characterization, Mitigation, and Prototyping</p> <p>Description: Supports 1) systems engineering analysis for the decomposition of mission systems and assets, and supporting networks and infrastructure that execute USSTRATCOM mission, 2) research, studies, and operational assessment of mission system capabilities, methodologies, and tactics to identify critical assets and dependency relationships, and 3) evaluation of mission risk through research, studies, analysis and assessment of threats and hazards paired with exploitable vulnerabilities.</p> <p>Supports analysis for the identification and development of risk mitigation and remediation options through research, studies, analysis and assessment of current and future tactics, techniques and procedures and materiel solutions, enabling USSTRATCOM mission assurance planning, coordination, integration, synchronization supporting the reduction of risk to CDRUSSTRATCOM acceptable levels.</p> <p>Supports three spiral development cycles annually consisting of concept and requirement development, tool engineering, algorithm development, prototyping, and testing to support rapid mission impact assessment, risk assessment, and risk management.</p> | 0.497 | 0.491 | 0.492 | 0.000 | 0.492 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i> | Project (Number/Name) 670373 / <i>DCIP</i> |

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

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|---------|---------|--------------|-------------|---------------|
| <p><i>FY 2016 Accomplishments:</i></p> <ul style="list-style-type: none"> - Analyzed of USSTRATCOM Space Sector critical infrastructure assets and dependencies for space and missile defense missions - Researched multiple vulnerability assessments reports and various threat and hazard assessment sources for critical infrastructure - Remediated analysis of identified vulnerabilities at specific critical infrastructure assets key to USSTRATCOM space and missile defense missions - Researched and identify risk mitigation options to ensure mission accomplishment - Developed concepts and requirements, design development, tool engineering, prototyping, and test & evaluation of a graphical mission impact tool. <p><i>FY 2017 Plans:</i></p> <ul style="list-style-type: none"> - Continued analysis, studies and research of Space Sector critical infrastructure assets and dependencies supporting all USSTRATCOM assigned missions - Future critical infrastructure vulnerability assessments and researching the various sources to perform threats and hazards assessments - Remediation analysis of identified vulnerabilities at critical infrastructure assets necessary for individual USSTRATCOM missions - Research and identify risk mitigation options to ensure mission accomplishment. - Spiral improvements to the graphical mission impact tool | | | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i> | Project (Number/Name) 670373 / DCIP |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| - Concept and requirement development, design development, tool engineering, prototyping, and test & evaluation of a tool combining risk assessment methodology with threat and hazard evaluations of critical infrastructure assets FY 2018 Base Plans: Supports analysis, studies and research of critical infrastructure assets and dependencies supporting all USSTRATCOM assigned missions, to include focusing efforts of future critical infrastructure vulnerability assessments and researching the various sources to perform threats and hazards assessments. FY 2018 OCO Plans: No OCO Requested | | | | | |
| Accomplishments/Planned Programs Subtotals | 0.497 | 0.491 | 0.492 | 0.000 | 0.492 |

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

N/A

Remarks

D. Acquisition Strategy

Projects funded through DCIP will be awarded using competitive contracts to the maximum extent possible.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i> | | | | Project (Number/Name) 672486 / <i>JOINT NAVWAR CENTER (JNWC) SPACE ACTIVITIES</i> | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 672486: <i>JOINT NAVWAR CENTER (JNWC) SPACE ACTIVITIES</i> | - | 3.825 | 2.693 | 7.453 | 0.000 | 7.453 | 7.483 | 7.524 | 7.570 | 7.639 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note

FY18 PDM plus up of \$4.8M per year thru the FYDP.

A. Mission Description and Budget Item Justification

Navigation Warfare (Navwar) is deliberate defensive and offensive action to assure positioning, navigation, and timing (PNT) information through coordinated employment of space, cyberspace, and electronic warfare (EW) operations. The JNWC develops and maintains the Department's premier collection of NAVWAR knowledge, and provides subject matter expertise support to the warfighters, Department decision makers, the Federal Interagency (the Department of Homeland Security and other civil agencies concerned with Critical National Infrastructure), and the Coalition. Navwar expertise is developed in part by execution of PNT Operational Field Assessments (POFAs), modeling and simulation, analysis, and exercise and training support. JNWC conducted POFAs are a key element in evaluating US and Coalition NAVWAR capabilities and vulnerabilities and adversary capabilities and vulnerabilities, both crucial to executing PNT superiority mission sets in potentially denied / degraded PNT environments. JNWC provides Department wide PNT posture through the PNT annual assessment. JNWC helps develop defensive and offensive PNT capabilities by focusing on two Joint Mission Essential Tasks:

1. Provide Operational Navwar Support – Enable Navwar operations and provide planning subject matter expertise to Combatant Commands, Services, interagency partners and the coalition; Advocate DoD-wide Navwar activities to fully integrate Navwar into military operations and the future force structure.
2. Create and Maintain Navwar Knowledge Operationalize PNT Superiority – Conduct PNT operational field assessments, studies and analyses, analyze and disseminate Navwar R intelligence, and maintain a Navwar armory.

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

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Title: PNT Operational Field Assessments | 3.825 | 2.693 | 7.453 | - | 7.453 |
| Description: The JNWC will investigate, operationally assess, and simulate potential threats and mitigation strategies for denial of blue force PNT capabilities as well as preventing the hostile use of PNT information. | | | | | |
| Major Performers - Best value to the government selected contractors, universities, government facilities, federally funded research and development centers, laboratories, or other organizations | | | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i> | Project (Number/Name) 672486 / <i>JOINT NAVWAR CENTER (JNWC) SPACE ACTIVITIES</i> |
|--|---|---|

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|---------|---------|--------------|-------------|---------------|
| <p><i>FY 2016 Accomplishments:</i></p> <ul style="list-style-type: none"> - Investigated, operationally assess, and simulate potential threats and mitigation strategies for potential denial of blue force PNT capabilities - Developed mitigation strategies for preventing the hostile use of Positioning, Navigation and Timing (PNT) information. <p><i>FY 2017 Plans:</i></p> <ul style="list-style-type: none"> - Operational assessments - Simulate potential threats and mitigation strategies for potential denial of blue force PNT capabilities - Continuing development to prevent the hostile use of Positioning, Navigation and Timing (PNT) information. <p><i>FY 2018 Base Plans:</i></p> <ul style="list-style-type: none"> - Operational assessments - Simulate potential threats and mitigation strategies for potential denial of blue force PNT capabilities - Continuing development to prevent the hostile use of Positioning, Navigation and Timing (PNT) information. | | | | | |
| Accomplishments/Planned Programs Subtotals | 3.825 | 2.693 | 7.453 | - | 7.453 |

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

Remarks

D. Acquisition Strategy
New contracts will be awarded using competitive procedures to the maximum extent possible.

E. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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|---|--------------------|----------------|----------------|---|--------------------|----------------------|----------------|--|----------------|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i> | | | | Project (Number/Name) 67A011 / <i>Space Analysis and Application Development</i> | | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 67A011: <i>Space Analysis and Application Development</i> | - | 5.066 | 5.490 | 6.310 | 0.000 | 6.310 | 6.294 | 7.099 | 7.215 | 7.362 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The Space Analysis and Application Development program Integrates space based effects into Department's 'Model of Record' for joint campaign analysis. Current modeling and simulation (M&S) models are inadequate to represent the contribution that U.S space capabilities make to the air, sea, and land fight and do not accurately portray current and future space threats. This line of effort integrates effects of space capabilities into the Synthetic Theater Operations Research Model (STORM) campaign level M&S tool. Enhanced space M&S will enable the DoD to make informed decisions regarding the direction of U.S. Space Doctrine, Tactics, Techniques, Procedures, and Resource Decisions.

The DoD requires the ability to conduct campaign-level analysis to quantify the holistic operational impacts of adversary space actions on military campaigns and U.S. global operations.

USSTRATCOM Data Integration and Fusion Center (DIFC) is an innovative organization developing and experimenting innovative concepts designed to validate both material and non-material methodologies to overcome data isolation in order to enable kill chains in the Joint Battlespace. Funds are necessary to update current government-owned software to ingest and disseminate new data sources from Title 10 and Title 50 sensors. The DIFC efforts at COCOM sponsored experimentation events will inform service acquisition decisions, capability gaps, intelligence gaps and tactics, techniques and procedures (TTP) development and implementation to mitigate effects on warfighter operations.

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

| | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Title: Space Campaign Modeling and Simulation, Development/Modification/Verification/Validation | 5.066 | 4.500 | 5.492 | 0.000 | 5.492 |
| Description: Developed, modifies, verifies, and validates new models for space mission areas and modifies existing models to portray new capabilities. | | | | | |
| FY 2016 Accomplishments: - Enhance STORM non-lethal effects modeling - Continue modifications to support upcoming AOAs and studies - Continue integration of Ionospheric scintillation forecast accuracy modifications into mission models and various communication analysis tools | | | | | |
| FY 2017 Plans: | | | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | Date: May 2017 | |
| Appropriation/Budget Activity 3600 / 7 | | R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i> | | Project (Number/Name) 67A011 / <i>Space Analysis and Application Development</i> | |
| B. Accomplishments/Planned Programs (\$ in Millions) | | | | | |
| | | | | | |
| <ul style="list-style-type: none"> - Determine touchpoints between space capabilities and the Offensive Counter Air and Fighter Escort / Fighter Sweep mission tasks within STORM - Refine/develop software code to represent US and adversary space interactions in engagement and mission level models - Develop software to input space effects from engagement and mission level models into STORM campaign-level M&S to determine effect of degraded space on U.S. military campaigns and global operations - Develop test cases to evaluate performance of campaign model - Analyze/assess modeling results to determine impact/effects of space activities on U.S. military campaigns and global operations <p>FY 2018 Base Plans: Determine touchpoints between space capabilities and mission tasks for additional Joint Mission Threads.</p> <ul style="list-style-type: none"> - Extend space modeling, simulation and analysis process to classified space capabilities - Expand analysis of degraded/denied space capabilities to an additional Theater - Assess use of Joint Space Doctrine & Tactics Forum (JSDTF) Space Modeling, Simulation and Analysis process in a different campaign model such as Joint Interagency Contingency Model (JICM) - Support cost-benefit analyses of Offensive/Defensive Space Control alternatives with quantifiable impacts to warfighter operations - Provide Modeling, Simulation, and Analysis support to inform Air Force Space Command's Space Enterprise Vision (SEV) - Incorporate enterprise-level model into overall JSDTF Space Modeling, Simulation and Analysis process to further inform senior leaders on future space architectures - Analyze/assess modeling results to determine impact/effects of space activities on U.S. military campaigns and global operations <p>FY 2018 OCO Plans: No OCO Requested</p> | | | | | |
| | | | | | |
| Title: Data Integration and Fusion Center | | | | | |
| Description: USSTRATCOM/J8 Data Integration and Fusion Center (DIFC) is an innovative organization developing and experimenting innovative concepts designed to validate both material and non-material methodologies to overcome data isolation in order to enable kill chains in the Joint Battlespace. The DIFC will work to update current government-owned software to ingest and disseminate new data sources from | | | | | |
| 0.000 | 0.990 | 0.818 | 0.000 | 0.818 | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i> | Project (Number/Name) 67A011 / <i>Space Analysis and Application Development</i> |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|--|----------------|----------------|---------------------|--------------------|----------------------|
| <p>Title 10 and Title 50 sensors. The DIFC efforts at COCOM sponsored experimentation events will inform service acquisition decisions, capability gaps, intelligence gaps and tactics, techniques and procedures (TTP) development and implementation to mitigate effects on warfighter operations.</p> <p>FY 2016 Accomplishments: N/A</p> <p>FY 2017 Plans: The DIFC will investigate, experiment, and disseminate various Title 10 and Title 50 data sources from collect through dissemination to tactical platforms using machine to machine solutions to move data more efficiently and affect kill chain timelines.</p> <p>FY 2018 Base Plans: The DIFC will continue to investigate, experiment, and disseminate various Title 10 and Title 50 data sources from collect through dissemination to tactical platforms using machine to machine solutions to move data more efficiently and affect kill chain timelines.</p> <p>FY 2018 OCO Plans: No OCO Requested</p> | | | | | |
| Accomplishments/Planned Programs Subtotals | 5.066 | 5.490 | 6.310 | 0.000 | 6.310 |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
| • N/A: N/A | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - |

Remarks

D. Acquisition Strategy
Any new projects funded in this program will be awarded using competitive procedures to the maximum extent possible.

Best value to the government selected contractors, universities, government facilities, federally funded research and development centers, laboratories, or other organizations

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i> | Project (Number/Name) 67A011 / <i>Space Analysis and Application Development</i> |

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

| | |
|--|---|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1202247F / AF TENCAP |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 37.489 | 28.413 | 31.914 | 0.000 | 31.914 | 27.189 | 21.525 | 21.846 | 22.293 | Continuing | Continuing |
| 670001: <i>Air Force TENCAP</i> | - | 37.489 | 28.413 | 31.914 | 0.000 | 31.914 | 27.189 | 21.525 | 21.846 | 22.293 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note
 In FY2018, PE 0207247F, AF TENCAP efforts were transferred to PE 1202247F, AF TENCAP, due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1202247F.

A. Mission Description and Budget Item Justification

Air Force TENCAP increases warfighter effectiveness through the exploitation of national capabilities and promotes cross-domain integration of these capabilities into military operations/training, intelligence, surveillance and reconnaissance (ISR) activities.

AF TENCAP exploits existing air, space, cyber, national and global ISR, and Non-Traditional ISR (NTISR) for operational and tactical applications by rapidly prototyping and providing capability demonstrations. Projects are designed to transition to warfighters and/or national intelligence agencies for operational use, sustainment and appropriate acquisition Programs of Record for further development. AF TENCAP projects can influence the design and operation of current and future air, space, cyber, national and global ISR and NTISR while providing situational awareness to warfighters, national intelligence agency organizations and units.

Program consists of multiple small projects supporting one of the Air Force Core Function Mission Areas (CFMAs). Projects are executed to provide continued support to the National Warfighter, operational and Tactical Warfighter, and to Special Operations Forces.

In FY2018, PE 0207247F, AF TENCAP efforts were transferred to PE 1202247F, AF TENCAP, due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1202247F.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1202247F / AF TENCAP |
|--|---|

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 31.428 | 28.413 | 22.821 | 0.000 | 22.821 |
| Current President's Budget | 37.489 | 28.413 | 31.914 | 0.000 | 31.914 |
| Total Adjustments | 6.061 | 0.000 | 9.093 | 0.000 | 9.093 |
| • 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 | 6.061 | 0.000 | | | |
| • SBIR/STTR Transfer | 0.000 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 9.093 | 0.000 | 9.093 |

Change Summary Explanation

- FY16: Below Threshold Reprogramming for \$3.261M for Talon HATE development and \$2.800M for Talon SPITBALL development efforts.

- FY18: \$9.093M add for Talon SPITBALL development efforts.

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
|---|----------------|----------------|----------------|

| | | | |
|---|-------|--------|--------|
| <p>Title: Exploitation Applications</p> <p>Description: Exploiting existing air, space, cyber, national and global ISR, and Non-Traditional ISR (NTISR) for operational and tactical applications by rapidly prototyping, demonstrating capability, and influencing the design and operation of future space, cyber, national and global ISR, and NTISR systems for tactical users.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Continued rapid prototype development of the AF TENCAP Portfolio comprised of 30+ Talon projects across the Air Force's twelve CFMA. (Talon is an approved and funded AF TENCAP effort) - Executed projects which provided support to the National Warfighter, Operational and Tactical Warfighter, and Special Operations Forces <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Continue to rapidly prototype projects and focus warfighter support and resource allocation based on AF TENCAP mission/investment areas as a reflection of CFMAs | 9.207 | 21.004 | 22.914 |
|---|-------|--------|--------|

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 1202247F / AF TENCAP | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <ul style="list-style-type: none"> - Continue to execute projects which provide continued support to the National Warfighter, Operational and Tactical Warfighter, and Special Operations Forces - Initiate "Classified Effort" <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will continue to rapidly prototype projects and focus warfighter support and resource allocation based on AF TENCAP mission/investment areas as a reflection of Air Force CFMAs - Will continue to execute projects which provide continued support to the National Warfighter, Operational and Tactical Warfighter, and Special Operations Forces - Will continue "Classified Effort" | | | | |
| <p>Title: Talon HATE</p> <p>Description: Talon HATE is a technology prototype to evaluate the military utility of a next-generation capability for the F-15C providing multi-domain information to tactical users. Talon HATE will provide a multi-domain environment for enhanced capability to the warfighter.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Continued development, testing, and fielding of four multi-domain fused information pods on F-15s <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Complete development, testing, and fielding of four multi-domain fused information pods on F-15s <p>FY 2018 Plans: N/A</p> | | 22.749 | 6.408 | 0.000 |
| <p>Title: Talon SPITBALL</p> <p>Description: Talon SPITBALL is a technology prototype to develop jam-resistant antenna for next-generation aircraft. Talon SPITBALL will enable tactical communications and intelligence for advanced aircraft operating in denied environments.</p> <p>FY 2016 Accomplishments:</p> <ul style="list-style-type: none"> - Continued development of jam-resistant antenna effort for advanced aircraft <p>FY 2017 Plans:</p> | | 5.533 | 1.001 | 9.000 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

| | |
|--|---|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1202247F / AF TENCAP |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| - Continue development of jam-resistant antenna effort for advanced aircraft | | | |
| FY 2018 Plans: - Will continue development and test of jam-resistant antenna effort for advanced aircraft | | | |
| Accomplishments/Planned Programs Subtotals | 37.489 | 28.413 | 31.914 |

| D. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
| • N/A: N/A | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - |

Remarks

E. Acquisition Strategy

Projects are selected based upon needs identified by the program's customers - DOD Departments, Combatant Commands, Components, MAJCOMs, and/or National Intelligence Agencies. Many projects are executed via existing contracts maintained by other agencies; others are executed via Air Force TENCAP contracts established with vendors responding to annual Broad Agency Announcements. The U.S. government organization sponsoring a project is responsible for assuming acquisition, deployment, logistics, sustainment and budgetary responsibilities for the developed capability after it has been successfully demonstrated by Air Force TENCAP.

AF TENCAP projects typically use an incremental acquisition strategy. AF TENCAP utilizes a disciplined systems engineering approach that allows program team to solve problems through a series of segments. Each increment has to be successful to pursue the following segment which mitigates cost and schedule risk.

Contracts funded in this program element will be awarded using competitive procedures to the maximum extent possible.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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|--|---|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1202247F / AF TENCAP | Project (Number/Name) 670001 / Air Force TENCAP |
|--|---|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Exploitation Applications | Various | Various : Various | - | 8.707 | Dec 2015 | 19.554 | Dec 2016 | 21.821 | Dec 2017 | 0.000 | | 21.821 | Continuing | Continuing | - |
| Talon HATE | C/CPFF | Boeing : Huntington Beach, CA | - | 21.749 | Jan 2016 | 6.158 | Jan 2017 | 0.000 | | 0.000 | | 0.000 | 0.000 | 27.907 | - |
| Talon SPITBALL | C/CPFF | Ball Aerospace : Littleton, CO | - | 5.533 | Dec 2015 | 1.001 | Dec 2016 | 9.093 | Dec 2017 | 0.000 | | 9.093 | Continuing | Continuing | - |
| Subtotal | | | - | 35.989 | | 26.713 | | 30.914 | | 0.000 | | 30.914 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 Oversight (PMA) | Various | Various : Various | - | 0.500 | Dec 2015 | 1.450 | Dec 2016 | 1.000 | Dec 2017 | 0.000 | | 1.000 | Continuing | Continuing | - |
| Program Support - Talon Hate | Various | Various : Various | - | 1.000 | Jan 2016 | 0.250 | Jan 2017 | 0.000 | | 0.000 | | 0.000 | 0.000 | 1.250 | - |
| Subtotal | | | - | 1.500 | | 1.700 | | 1.000 | | 0.000 | | 1.000 | - | - | - |

| | | | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|--|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| Project Cost Totals | | | - | 37.489 | 28.413 | 31.914 | 0.000 | 31.914 | - | - | - |

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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|--|---|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1202247F / AF TENCAP | Project (Number/Name) 670001 / Air Force TENCAP |
|--|---|---|

| | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force **Date:** May 2017

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|--|---|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1202247F / AF TENCAP | Project (Number/Name) 670001 / Air Force TENCAP |
|--|---|---|

Schedule Details

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| FY 2016 Exploitation Applications Developed | 1 | 2016 | 2 | 2017 |
| FY 2016 Exploitation Applications Tested, Evaluated, and Released | 2 | 2017 | 3 | 2017 |
| FY 2017 Exploitation Applications Developed | 1 | 2017 | 2 | 2018 |
| FY 2017 Exploitation Applications Tested, Evaluated, and Released | 2 | 2018 | 3 | 2018 |
| FY 2018 Exploitation Applications Developed | 1 | 2018 | 2 | 2019 |
| FY 2018 Exploitation Applications Tested, Evaluated, and Released | 2 | 2019 | 3 | 2019 |
| FY 2019 Exploitation Applications Developed | 1 | 2019 | 2 | 2020 |
| FY 2019 Exploitation Applications Tested, Evaluated, and Released | 2 | 2020 | 3 | 2020 |
| FY 2020 Exploitation Applications Developed | 1 | 2020 | 2 | 2021 |
| FY 2020 Exploitation Applications Tested, Evaluated, and Released | 2 | 2021 | 3 | 2021 |
| FY 2021 Exploitation Applications Developed | 1 | 2021 | 2 | 2022 |
| FY 2021 Exploitation Applications Tested, Evaluated, and Released | 2 | 2022 | 3 | 2022 |
| FY 2022 Exploitation Applications Developed | 1 | 2022 | 4 | 2022 |
| Talon HATE Developed | 1 | 2016 | 4 | 2016 |
| Talon HATE Integrated /Tested | 1 | 2016 | 2 | 2017 |
| Talon SPITBALL Developed | 1 | 2016 | 2 | 2019 |
| Talon SPITBALL Integrated/Tested | 1 | 2019 | 4 | 2019 |

Note

Most project selection activities occur approximately per the timelines shown, but some projects are initiated on a rolling basis throughout each year in response to time-sensitive operational requirements.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i> |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 12.313 | 52.578 | 32.426 | 0.000 | 32.426 | 21.871 | 23.506 | 17.841 | 18.527 | Continuing | Continuing |
| 672490: <i>Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)</i> | - | 12.313 | 52.578 | 32.426 | 0.000 | 32.426 | 21.871 | 23.506 | 17.841 | 18.527 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note

In FY2018, PE 0303001F, Family of Advanced BLoS Terminals (FAB-T) efforts were transferred to PE 1203001F, Family of Advanced BLoS Terminals (FAB-T) due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203001F.

Prior Years Funding \$180.602M was executed in PE 0303601F.

A. Mission Description and Budget Item Justification

The FAB-T program replaces legacy Milstar terminals and will provide Extremely High Frequency (EHF), protected high data rate communication for nuclear and conventional forces to include Presidential and National Voice Conferencing (PNVC). FAB-T will provide this new, highly secure, state-of-the-art capability for DoD platforms to include strategic platforms and airborne/ground command posts via Milstar, AEHF, and Enhanced Polar System (EPS) satellites. FAB-T terminals will also support the critical command and control (C2) of the Milstar, AEHF and EPS satellite constellations. The Air Force will continue development of the FAB-T Command Post Terminal (CPT), performing systems engineering, architecture studies, development & operational test efforts, FAB-T terminal interoperability with the full AEHF satellite constellation activities, and other program activities to meet current and future emerging SATCOM requirements. This includes, but is not limited to, planning and programming activities in support of implementing FAB-T requirements to support protected and survivable beyond line of sight EHF communications to platforms supporting conduct of global combat and reconnaissance operations via the Force Element Terminal (FET).

The PNVC capability is a critical element of the Nuclear Command, Control, and Communications (NC3) System. PNVC is the Survivable Emergency Conferencing Network (SECN) replacement capability which provides anti-jam, anti-scintillation, survivable, and endurable voice communications through the AEHF satellite system for national and strategic users. There are several components being developed and procured by other organizations that must be synchronized to expeditiously field this capability. The PNVC Integrator is responsible for end-to-end integration of these components, to include requirements traceability, end-to-end system testing, site installation and checkout activities, training and technical manuals, network transition support, identification of deficiencies in overall PNVC system capability, and logistics support for PNVC components. The AFPEO/SP approved entry into the acquisition lifecycle as a post MS-A ACAT III Program of Record in January 2016.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i> |
|--|--|

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 3.895 | 42.378 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 12.313 | 52.578 | 32.426 | 0.000 | 32.426 |
| Total Adjustments | 8.418 | 10.200 | 32.426 | 0.000 | 32.426 |
| • 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 | 8.680 | 0.000 | | | |
| • SBIR/STTR Transfer | -0.262 | 0.000 | | | |
| • Other Adjustments | 0.000 | 10.200 | 32.426 | 0.000 | 32.426 |

Change Summary Explanation

FY 2016: \$8.68M increase for FAB-T FET CCA was added.

FY 2017: \$10.2M increase for PNVC Integrator added in the Request for Additional Appropriation (RAA)

FY 2018: \$21.246M increase for PNVC Integrator.

FY 2018: \$11.18M increase for FAB-T Force Element Terminal (FET) Cost Capability Analysis (CCA).

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Title: FAB-T CPT Development | 3.533 | 14.555 | - |
| Description: The FAB-T program will provide EHF voice and data MILSATCOM for nuclear and conventional forces as well as airborne and ground command posts with connectivity to Milstar, AEHF, and EPS satellites. | | | |
| FY 2016 Accomplishments: FAB-T continued development efforts on CPT and conducted qualification testing on the Ground Transportable Antenna (GTA) and new antenna configurations. | | | |
| FY 2017 Plans: FAB-T will continue development efforts on CPT, continue flight and ground tests and conduct Functional Configuration Audit/ Physical Configuration Audit (FCA/PCA) on the Ground Transportable Antenna (GTA), new antenna configurations, and Block 2. | | | |
| Title: PNVC Integrator | 0.100 | 38.023 | 21.246 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>Description: PNVC is the SECN replacement capability which provides anti-jam, anti-scintillation, survivable, and endurable voice communications through the AEHF satellite system for national and strategic users. The PNVC capability consists of constituent programs being developed and produced by other organizations. This program will integrate test and support fielding of hardware from these other programs. PNVC components will be installed at ground fixed and mobile command locations, as well as in the airborne E-4B, E-6B and Very Important Person Special Airlift Mission (VIPSAM) aircraft.</p> <p>FY 2016 Accomplishments: AFPEO/SP approved entry into the acquisition lifecycle as a post MS-A ACAT III Program of Record in January 2016. PNVC Integrator developed a requirements traceability matrix among previously approved operational requirements documents to individual component specifications. A preliminary logistics assessment focused on gaining User feedback on sufficiency of component program training and technical orders (TO's) from a system perspective was conducted to inform a Request For Information for a future Product Support Integrator contract.</p> <p>FY 2017 Plans: Conduct PNVC Technical Review of system specification traceability, verification cross reference matrix, and system test verification plan for program office and end user authentication. Support site verification, validation, installation, and checkout fielding activities. Conduct Risk Reduction Test events focused on assessing cybersecurity and system functionality. Release solicitation for Product Support Integrator contract to address enterprise logistics shortfalls based on results from the Logistics Assessment focusing on training, technical publications, and system health metric reporting.</p> <p>FY 2018 Plans: Execute Developmental Test focused on system functional performance with expanded number of network participants in a scintillated environment potentially with Airborne Variant components if available. Continue support of fielding activities. Execute factory test with production assets to assess component compliance with authenticated system specification. Award Product Support Integrator contract to establish training and technical publications required to support Developmental and Operational Testing activities. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.</p> | | | | |
| <p>Title: FAB-T FET CCA</p> <p>Description: Conduct a Force Element Terminal (FET) Cost Capability Analysis (CCA) that includes requirements refinement, platform integration, and industry engagement addressing FET program start. FET CCA is a sub-program under FAB-T.</p> <p>FY 2016 Accomplishments:</p> | | 8.680 | - | - |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i> |
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| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Conduct a Force Element Terminal (FET) Cost Capability Analysis (CCA) that includes requirements refinement, platform integration, and industry engagement addressing FET program start. | | | |
| Title: FAB-T FET | - | - | 11.180 |
| Description: Funding to ensure continued effort to complete the cost/capability analysis and begin development of force element terminals on B-52, RC-135, and tanker aircraft. FAB-T FET is a sub-program under FAB-T and previously funded in FY16 under FAB-T FET CCA. | | | |
| FY 2018 Plans: Funding to ensure continued effort to complete the cost/capability analysis and begin development of force element terminals on B-52, RC-135, and tanker aircraft. FAB-T FET is a sub-program under FAB-T and previously funded in FY16 under FAB-T FET CCA. | | | |
| Accomplishments/Planned Programs Subtotals | 12.313 | 52.578 | 32.426 |

| D. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| • APAF; BA05, FBLOST: <i>FAB-T</i> | 43.843 | 4.673 | 22.252 | 0.000 | 22.252 | 14.410 | 1.985 | 1.589 | 0.000 | 0.000 | 88.752 |
| • APAF; BA05, PNVC: <i>PNVC</i> | 0.000 | 0.000 | 2.464 | 0.000 | 2.464 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 2.464 |
| • SPAF; BA03, FBLOST: <i>FAB-T</i> | 52.192 | 88.963 | 144.758 | 0.000 | 144.758 | 28.096 | 32.357 | 8.569 | 0.000 | 0.000 | 354.935 |
| • SPAF; BA03, PNVC: <i>PNVC</i> | 0.000 | 0.000 | 2.214 | 0.000 | 2.214 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 2.214 |
| • APAF; Aircraft Spares and Repair...: <i>FAB-T</i> | 3.235 | 3.561 | 1.343 | 0.000 | 1.343 | 6.191 | 0.057 | 0.001 | 0.000 | 0.000 | 14.388 |
| • SPAF; SSPARE Spares and Repair P...: <i>FAB-T</i> | 0.000 | 14.078 | 3.598 | 0.000 | 3.598 | 20.752 | 0.000 | 0.000 | 0.000 | 0.000 | 38.428 |
| • OPAF; BA03, 836700: <i>FAB-T</i> | 44.436 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 | 44.436 |

Remarks

In FY 2016 APAF Spares and Repair Parts and FY 2016 OPAF Spares and Repair parts PE: 0303601F transferred to PE: 0303001F.

In FY 2016 OPAF Project 836780 transferred to PROJECT: Space Programs FBLOST, same program element.

In FY 2017 OPAF Spares and Repair Parts transferred to PROJECT: Space Programs SSPARE, same program element.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i> | |
| E. Acquisition Strategy FAB-T Acquisition Strategy: In FY 2012, the government restructured the FAB-T development program to introduce competition into the acquisition strategy in order to reduce risk in delivering this capability as well as to drive down production costs. To ensure the best value to the government, the Air Force awarded production contracts in September 2013 to both contractors (Boeing and Raytheon). The production contracts began with production planning for both contractors. In June 2014, the Air Force down-selected to Raytheon. Development and production of FAB-T Command Post Terminals continued with Raytheon. The first Production contract options to produce CPT terminals were exercised after a successful Milestone C decision was approved September 1, 2015. PNVC Acquisition Strategy: On May 15, 2015 the Deputy Secretary of Defense assigned the PNVC End-to-End Integration responsibility to the Air Force; effective May 16, 2015, SAF/AQ designated the AFPEO/SP. The PNVC End-to-End Integrator program is responsible for requirements traceability, End-to-End system testing, site installation and checkout activities, training and technical manuals, network transition support, identifying deficiencies in the PNVC capability, and logistics supports for all PNVC components. | | |
| F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission. | | |

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203001F / Family of Advanced BLoS Terminals (FAB-T) | Project (Number/Name) 672490 / Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) |
|--|---|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| FAB-T Technical Mission Analysis | Various | Various : Various, MA | - | 2.038 | Jul 2016 | 10.400 | Dec 2016 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| FAB-T FET CCA Prime Contract | Various | Various : Various, MA | - | 4.619 | Nov 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| FAB-T FET CCA Technical Mission Analysis | Various | Various : Various, MA | - | 2.803 | Nov 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| FAB-T FET Prime Contract | Various | Various : Various, MA | - | 0.000 | | 0.000 | | 4.230 | Jan 2018 | 0.000 | | 4.230 | Continuing | Continuing | - |
| FAB-T FET Technical Mission Analysis | Various | Various : Various, MA | - | 0.000 | | 0.000 | | 4.200 | Jan 2018 | 0.000 | | 4.200 | Continuing | Continuing | - |
| PNVC Prime Contract | Various | Not specified. : TBD | - | 0.000 | | 27.200 | Jan 2017 | 11.394 | Feb 2018 | 0.000 | | 11.394 | Continuing | Continuing | - |
| PNVC Technical Mission Analysis | Various | Not specified. : TBD | - | 0.000 | | 6.809 | Jan 2017 | 5.149 | Jan 2018 | 0.000 | | 5.149 | Continuing | Continuing | - |
| Subtotal | | | - | 9.460 | | 44.409 | | 24.973 | | 0.000 | | 24.973 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| FAB-T Government Test and LDTO Support | Various | Various : Various | - | 0.600 | Jan 2016 | 2.800 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| PNVC Government Test and LDTO Support | Various | Not specified. : TBD | - | 0.000 | | 0.500 | Jan 2017 | 1.800 | Jan 2018 | 0.000 | | 1.800 | Continuing | Continuing | - |
| Subtotal | | | - | 0.600 | | 3.300 | | 1.800 | | 0.000 | | 1.800 | - | - | - |

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203001F / Family of Advanced BLoS Terminals (FAB-T) | Project (Number/Name) 672490 / Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) |
|--|---|--|

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| FAB-T A&AS | Various | Various : TBD | - | 0.500 | | 1.300 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| FAB-T Other Support | Various | Various : TBD | - | 0.395 | | 0.100 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| FAB-T FET CCA A&AS | Various | Various : TBD | - | 1.258 | Feb 2017 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| FAB-T FET A&AS | Various | Various : TBD | - | 0.000 | | 0.000 | | 2.500 | | 0.000 | | 2.500 | Continuing | Continuing | - |
| FAB-T FET Other Support | Various | Various : TBD | - | 0.000 | | 0.000 | | 0.250 | | 0.000 | | 0.250 | Continuing | Continuing | - |
| PNVC A&AS | Various | Not specified. : TBD | - | 0.000 | | 2.095 | | 1.796 | | 0.000 | | 1.796 | Continuing | Continuing | - |
| PNVC Other Support | Various | Various : TBD | - | 0.100 | | 1.374 | | 1.107 | | 0.000 | | 1.107 | Continuing | Continuing | - |
| Subtotal | | | - | 2.253 | | 4.869 | | 5.653 | | 0.000 | | 5.653 | - | - | - |

| | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| Project Cost Totals | | - | 12.313 | 52.578 | 32.426 | 0.000 | - | - | - |

Remarks
 FY17 RAA PNVC - +\$10.2M
 Prior Years Funding \$180.602M was executed in PE 0303601F

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i> | Project (Number/Name) 672490 / <i>Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)</i> |

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| FAB-T CPT Raytheon Development Contract | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| FAB-T Government Test Support | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PNVC Integrator | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i> | Project (Number/Name) 672490 / <i>Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)</i> |

Schedule Details

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| FAB-T CPT Raytheon Development Contract | 1 | 2016 | 1 | 2018 |
| FAB-T Government Test Support | 1 | 2016 | 1 | 2018 |
| PNVC Integrator | 4 | 2016 | 4 | 2022 |

Note
FAB-T Raytheon Development Contract actual award date 4Q 2012, completion is 3Q 2017.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203110F / <i>Satellite Control Network (SPACE)</i> |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 7.327 | 15.624 | 18.808 | 0.000 | 18.808 | 17.942 | 16.011 | 16.289 | 16.623 | Continuing | Continuing |
| 673276: <i>Satellite Control Network</i> | - | 7.327 | 15.624 | 18.808 | 0.000 | 18.808 | 17.942 | 16.011 | 16.289 | 16.623 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note
 In FY2018, PE 0305110F, Satellite Control Network efforts were transferred to PE 1203110F, Satellite Control Network due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203110F.

A. Mission Description and Budget Item Justification

The Air Force Satellite Control Network (AFSCN) is a satellite ground terminal network comprised of two communication nodes (Schriever AFB & Vandenberg AFB) and 15 antenna systems. The antennas are distributed around the globe at seven locations -- Vandenberg Tracking Station (VTS), Diego Garcia Station (DGS), Guam Tracking Station (GTS), Hawaii Tracking Station (HTS), New Hampshire Tracking Station (NHS), Thule Tracking Station (TTS) and Telemetry and Commanding Station (TCS) at RAF Oakhanger, England -- to ensure global coverage for 140 satellites in various orbits. The AFSCN conducts an average of 450 satellite contacts per day supporting Positioning, Navigation and Timing (PNT), Intelligence, Surveillance and Reconnaissance (ISR), Missile Warning, Communications, Weather, Launch Vehicle Support, and Research and Development (R&D) in support of Department of Defense (DoD), Intelligence Community (IC), and National Aeronautics and Space Administration (NASA) operations. While most of the 450 satellite contacts/day are routine command and control activities, the AFSCN is also used for satellite emergencies (e.g. tumbling satellite) because its high power antennas are often the only earthbound assets that can contact a non-responsive satellite to re-establish command & control. During FY 2016 the AFSCN supported 11 space vehicle emergencies resulting in the preservation of \$2.7B worth of satellites. In addition to routine and emergency satellite operations C2, the AFSCN provides support to launch vehicle and early orbit operations, ensuring worldwide antennas receive telemetry as the rocket travels through the atmosphere and transmit commands to a newly orbiting satellite to initiate early orbit checkout. In FY 2016, the AFSCN supported 21 NSS launches delivering \$9.8B worth of satellites to their operational orbits. Finally, the AFSCN provides Factory Compatibility Testing (FCT) to ensure satellites and rockets can communicate via the AFSCN before the satellite is launched. These funds are used to develop next-generation tools to improve the AFSCN and ensure the capability is available to support DoD, Intelligence, and civil users. These efforts support cybersecurity operations and systems engineering and integration (SE&I) activities as well as aligning with the evolving Space Warfighter Construct (SWC), Space Enterprise Visions (SEV), Enterprise Ground Services (EGS), and Commercial Augmentation.

REMOTE TRACKING STATION (RTS) BLOCK CHANGE (RBC) - SATELLITE ANOMALY RECOVERY AND SUPPORT UPGRADE; ENHANCED HIGH-POWER AMPLIFIER (EHPA): The Air Force will complete development testing of the Enhanced High Power Amplifier (EHPA) first article. The AFSCN is in jeopardy of losing the emergency high power satellite contact capability due to obsolete parts used in the legacy AFSCN system. The EHPA program will develop a new high power amplifier that resolves the obsolescence issue through the 2020s.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203110F / <i>Satellite Control Network (SPACE)</i> |
|--|--|

UNIFIED S-BAND (USB) UPLINK: The Air Force is adjusting the AFSCN for spectrum-sharing with industry by providing the capability to perform NSS spacecraft compatibility testing in both the current L-Band uplink/S-Band downlink spectrum and the industry standard Unified S-Band (USB) spectrum. RDT&E funds supported a first article integration of USB into the AFSCN baseline to begin supporting factory compatibility testing of NSS spacecraft. Development completed in FY16.

AFSCN DEFICIENCY RESOLUTION: Provides test, cyber security, requirements management, and system architecture support to the AFSCN.
 ELECTRONIC SCHEDULING AND DISSEMINATION: ESD will allow satellite operators to request contact time with their satellites via the shared AFSCN antennas, automatically deconflict overlapping requests, create a schedule, and publish the schedule in real-time to all users.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 7.861 | 15.624 | 18.754 | 0.000 | 18.754 |
| Current President's Budget | 7.327 | 15.624 | 18.808 | 0.000 | 18.808 |
| Total Adjustments | -0.534 | 0.000 | 0.054 | 0.000 | 0.054 |
| • 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 | -0.534 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 0.054 | 0.000 | 0.054 |

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Title: Remote Tracking Station (RTS) Block Change (RBC) - Satellite Anomaly Recovery and Support Upgrade; Enhanced High-Power Amplifier (EHPA): | 3.491 | 4.602 | 0.339 |
| Description: RBC development replaces outdated, unique RTS equipment with standardized equipment and technology to reduce failures and enhance sustainability. Provides Advisory and Assistance Services (A&AS) to execute the RBC upgrade effort. Effort accomplished under Satellite Control Network Contract (SCNC). | | | |
| FY 2016 Accomplishments: Completed amplifier vendor hardware and software development, vendor acceptance testing, and software qualification testing. | | | |
| FY 2017 Plans: Complete vendor deficiency resolution and execute state side mitigation testing and ship EHPA to site for final integration. Continue and complete Developmental & Operational testing 4Q FY 2017. | | | |
| FY 2018 Plans: | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 1203110F / <i>Satellite Control Network (SPACE)</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| Complete Contractor and Government Developmental testing 1Q FY2018 and Field First Article 3Q FY 2018. | | | | |
| <p>Title: Unified S-band (USB) uplink</p> <p>Description: Develop First Article Demonstration of USB uplink transmitter to enable commanding of satellites using USB frequency in addition to the legacy L-band frequency uplink commanding. Also provides Federally Funded Research and Development Center (FFRDC) support.</p> <p>FY 2016 Accomplishments: Completed software installation, integration and checkout, vendor acceptance test, qualification test. Prepared core system component to meet Factory Compatibility Test 4Q FY 2016.</p> | | 0.346 | - | - |
| <p>Title: AFSCN Deficiency Resolution</p> <p>Description: Provide test, cybersecurity, requirements management, and system architecture support to the AFSCN.</p> <p>FY 2017 Plans: Provide cybersecurity solutions and testing in support of 92 Information Operations Squadron (92nd IOS), Space Security and Defense Program (SSDP), Cyber computer network defense (CND), HQ AFSPC Cyber Team, and Red/Blue Team-discovered requirements, monitor, analyze and resolve RTS performance (low/high power signal response and power measurement accuracy, inconsistent range performance, and low data rate deficiencies). In addition, develop and document an enterprise architecture (EA) using the views prescribed in the Department of Defense Architecture Framework (DoDAF). Future activities include: AFSCN Test Bed (ATB) replacements, Range Automation and Multi-band/Phased Array antenna studies, and work package planning for RBC electronics core activities. Further, monitor and analyze RTS performance at RBC sites, continue future requirements development, and update AFSCN architecture roadmap.</p> <p>FY 2018 Plans: Continue independent SE&I efforts as required to integrate modernization and sustainment efforts into future sites. Provide systems and subsystem level definition, baseline, architecture, integration planning and support for the AFSCN. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.</p> | | - | 2.690 | 4.105 |
| <p>Title: Electronic Scheduling and Dissemination System (ESD)</p> <p>Description: Develop an upgrade for the aging, increasingly-unsustainable resource scheduling system needed to coordinate and manage satellite supports using the AFSCN antennas. Also provides FFRDC support. The Air Force completed the first ESD operational confidence test in 3Q FY 2016, however significant system deficiencies were discovered. These deficiencies are being resolved and re-tested in FY 2017. In parallel, the Air Force is exploring other technologies and tools that could be used to meet system requirements.</p> | | 3.490 | 5.658 | 12.748 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203110F / <i>Satellite Control Network (SPACE)</i> |
|--|--|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| <p><i>FY 2016 Accomplishments:</i> Corrected critical software deficiency reports (DRs) identified during Initial Developmental Tests and risk-reduction testing. Conducted initial Developmental Testing Phase (DTP) during 3Q FY 2016. Conducted user training to support entry into DTP.</p> <p><i>FY 2017 Plans:</i> Complete Minimal Capability Testing (MCT) for three viable vendors and downselect for fielding an AFSCN scheduling tool.</p> <p><i>FY 2018 Plans:</i> Make a final fielding selection, complete final design review, MCT deficiency resolution and start contractor developmental testing.</p> <p><i>Title:</i> Enterprise Systems Engineering and Integration</p> <p><i>Description:</i> SE&I manages the government controlled system and subsystem level baseline requirements including analysis of future changes to the fielded baseline. SE&I provides "government as the integrator" engineering support to ensure multiple separate modernizations and the sustainment baseline are synchronized. SE&I will develop and recommend investment strategies to keep the AFSCN operating well beyond the FYDP.</p> <p><i>FY 2017 Plans:</i> Conduct independent SE&I efforts as required to integrate modernization and sustainment efforts into future sites. Provide systems and subsystem level definition, baseline, architecture, integration planning and support for the AFSCN. Award RN Enterprise SE&I contract.</p> <p><i>FY 2018 Plans:</i> Continue Program Office Support and independent SE&I efforts as required to integrate modernization and sustainment efforts into future sites. Provide systems and subsystem level definition, baseline, architecture, integration planning and support for the AFSCN.</p> | - | 2.674 | 1.616 |
| Accomplishments/Planned Programs Subtotals | 7.327 | 15.624 | 18.808 |

| D. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
| • SPAF: BA01: Line Item # AFSCOM:: AF <i>Satellite Comm System</i> | 74.673 | 42.375 | 57.516 | 0.000 | 57.516 | 44.507 | 47.924 | 48.785 | 49.663 | Continuing | Continuing |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203110F / <i>Satellite Control Network (SPACE)</i> |
|--|--|

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|

Remarks
Procures the mission critical electronics and telecommunications equipment to upgrade the aging AFSCN Range and Network Operations segments.

E. Acquisition Strategy

RDT&E efforts focus on completing upgrades as well as future architectures and studies to ensure the best use of investment funding. The SE&I contractor maintains the DoD Architecture Framework (DoDAF) architecture and requirements baseline for Government approval and may perform studies to determine Government options. Limited RDT&E will be applied to the Consolidated Air Force Satellite Control Network (AFSCN) Modifications, Maintenance, and Operations (CAMMO) contract when sustaining engineering expertise is needed to finalize Government-approved architectures. FFRDC technical depth and breadth will be leveraged to ensure AFSCN modernization efforts are compatible with mission rules and do not pose a risk to safe and cost-effective satellite contacts.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203110F / <i>Satellite Control Network (SPACE)</i> | Project (Number/Name) 673276 / <i>Satellite Control Network</i> |
|--|--|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Satellite Control Network Contract (SCNC) | Various | Honeywell : Colorado Springs, CO | - | 3.938 | Dec 2015 | 4.900 | Oct 2016 | 10.868 | Oct 2017 | 0.000 | | 10.868 | Continuing | Continuing | - |
| Consolidated Air Force Satellite Control Network (AFSCN) Modifications, Maintenance, and Operations (CAMMO) | Various | CACI : Colorado Springs, CO | - | 0.000 | | 3.120 | Jun 2017 | 4.218 | Jun 2018 | 0.000 | | 4.218 | Continuing | Continuing | - |
| Air Force Research Laboratory (AFRL) | MIPR | AFRL : Dayton, OH | - | 1.038 | Aug 2016 | 3.111 | Jan 2017 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Enterprise Systems Engineering and Integration | C/CPIF | ENSCO : Colorado Springs, CO | - | 0.000 | Jan 1901 | 2.088 | Nov 2016 | 1.191 | Nov 2017 | 0.000 | | 1.191 | Continuing | Continuing | - |
| Technical Mission Analysis | RO | Aerospace Corp : El Segundo, CA | - | 1.037 | Oct 2015 | 1.297 | Oct 2016 | 1.336 | Oct 2017 | 0.000 | | 1.336 | Continuing | Continuing | - |
| Subtotal | | | - | 6.013 | | 14.516 | | 17.613 | | 0.000 | | 17.613 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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/T&M | Leidos : El Segundo, CA | - | 0.331 | Oct 2015 | 0.000 | Jan 1901 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Subtotal | | | - | 0.331 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | - | - | - |

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203110F / <i>Satellite Control Network (SPACE)</i> | Project (Number/Name) 673276 / <i>Satellite Control Network</i> |

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| EHPA First Article Test & Gov't accept | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| USB integration/test/Gov't accept | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ESD Vendor MCT Downselect/Fielding | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AFSCN Deficiency Resolution | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203110F / <i>Satellite Control Network (SPACE)</i> | Project (Number/Name) 673276 / <i>Satellite Control Network</i> |

Schedule Details

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| EHPA First Article Test & Gov't accept | 2 | 2016 | 3 | 2018 |
| USB integration/test/Gov't accept | 3 | 2016 | 4 | 2017 |
| ESD Vendor MCT Downselect/Fielding | 4 | 2016 | 3 | 2019 |
| AFSCN Deficiency Resolution | 1 | 2017 | 4 | 2022 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

| | |
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| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 1203165F I NAVSTAR Global Positioning System (Space and Control Segments) |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|-----------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 0.000 | 0.000 | 10.029 | 0.000 | 10.029 | 9.004 | 2.001 | 2.000 | 2.005 | 0.000 | 25.039 |
| 67A025: GPS Enterprise Integrator | - | 0.000 | 0.000 | 10.029 | 0.000 | 10.029 | 9.004 | 2.001 | 2.000 | 2.005 | 0.000 | 25.039 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

Detailed information on this effort remains classified and will be provided on a need-to-know basis.

B. Program Change Summary (\$ in Millions)

| | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|-------------------------------------|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 0.000 | 0.000 | 10.029 | 0.000 | 10.029 |
| Total Adjustments | 0.000 | 0.000 | 10.029 | 0.000 | 10.029 |
| • 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 | 10.029 | 0.000 | 10.029 |

Change Summary Explanation

FY2018: \$10.200M for classified requirement

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

| | FY 2016 | FY 2017 | FY 2018 |
|---|---------|---------|---------|
| Title: Classified Effort | - | - | 10.029 |
| Description: Classified effort | | | |
| FY 2018 Plans: Classified effort | | | |
| Accomplishments/Planned Programs Subtotals | - | - | 10.029 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203165F / <i>NAVSTAR Global Positioning System (Space and Control Segments)</i> |
|--|---|

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • N/A: N/A | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - |

Remarks

E. Acquisition Strategy

N/A

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203165F / NAVSTAR Global Positioning System (Space and Control Segments) | Project (Number/Name) 67A025 / GPS Enterprise Integrator |
|--|---|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Classified Effort | TBD | TBD : TBD | - | 0.000 | | 0.000 | | 10.029 | Oct 2017 | 0.000 | | 10.029 | Continuing | Continuing | - |
| Subtotal | | | - | 0.000 | | 0.000 | | 10.029 | | 0.000 | | 10.029 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| | | | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|--|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| Project Cost Totals | | | - | 0.000 | 0.000 | 10.029 | 0.000 | 10.029 | - | - | - |

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203165F / NAVSTAR Global Positioning System (Space and Control Segments) | Project (Number/Name) 67A025 / GPS Enterprise Integrator |

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|-------------------|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| Classified Effort | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203165F / NAVSTAR Global Positioning System (Space and Control Segments) | Project (Number/Name) 67A025 / GPS Enterprise Integrator |

Schedule Details

| Events | Start | | End | |
|-------------------|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Classified Effort | 1 | 2018 | 4 | 2022 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 3.490 | 3.989 | 25.051 | 0.000 | 25.051 | 61.563 | 33.893 | 3.959 | 4.040 | Continuing | Continuing |
| 67A014: <i>R&D Space and Missile Operations</i> | - | 3.490 | 3.989 | 25.051 | 0.000 | 25.051 | 61.563 | 33.893 | 3.959 | 4.040 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note
 In FY2018, PE 0305173F, Space and Missile Test and Evaluation Center efforts were transferred to PE 1203173F, Space and Missile Test and Evaluation Center due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203173F.

A. Mission Description and Budget Item Justification

The Research and Development Space and Missile Operations (RDSMO) program, executed by the Advanced Systems and Development Directorate at Kirtland AFB, NM, conducts space and missile Research and Developmental Test and Evaluation (RDT&E) and Initial Operational Test and Evaluation (IOT&E) in support of experimental, demonstration, and operational satellites. The program develops, acquires, and operates satellite command and control (C2) and fixed/deployable telemetry, tracking, and commanding (TT&C) antenna systems in support of AF and DoD missions. The RDSMO program is responsible for the design, development, integration, testing, sustainment and operations of the Multi-Mission Satellite Operations Center (MMSOC) C2 systems installed in the RDT&E Support Complex (RSC) at Kirtland AFB, NM and Schriever AFB, CO.

In FY2018, this Program Element contains the Enterprise Ground Service (EGS) as part of the evolving Space Warfighter Construct (SWC) in response to the Space Enterprise Vision (SEV). MMSOC capability will transition to become the EGS C2 product line. The EGS C2 product line will perform technology maturation, experiments, prototyping and operational mission transition for increased commonality and resiliency in space program ground systems.

The main objective of the EGS is to provide a robust enterprise ground architecture for Air Force space systems. In FY 2018, EGS includes efforts such as systems engineering, integration and test efforts, standards and interface development, architecture development, enhanced cybersecurity development and implementation, prototype demonstrations, C2 data center development at three space operations sites and operational mission transition support.

The main objective of the MMSOC Development is to develop the capability to rapidly support R&D and operational systems and to transition R&D space vehicle technology with residual military utility to operational status for immediate warfighter support. MMSOC is a multiple mission operation system that uses standard software to (1) perform satellite C2 in support of launch requirements; (2) develop and test tactics, techniques, procedures and concepts to conduct satellite operations; (3) provide a satellite C2 incremental block evolution resource for RDT&E of new systems and concepts; and (4) deliver operational flexibility for new and currently flying assigned satellites. A secondary objective of MMSOC is to provide a foundational C2 platform and product line for the EGS effort to build upon and to meet the evolving initiatives of the SWC.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development | R-1 Program Element (Number/Name) PE 1203173F I Space and Missile Test and Evaluation Center |
|---|--|

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 3.152 | 3.989 | 3.955 | 0.000 | 3.955 |
| Current President's Budget | 3.490 | 3.989 | 25.051 | 0.000 | 25.051 |
| Total Adjustments | 0.338 | 0.000 | 21.096 | 0.000 | 21.096 |
| • 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 | 0.338 | 0.000 | | | |
| • SBIR/STTR Transfer | 0.000 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 21.096 | 0.000 | 21.096 |

Change Summary Explanation

FY 2018: \$21.096M increase to fund the Enterprise Ground Service (EGS) in a single PE.

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Title: MMSOC Development | 3.490 | 3.589 | 4.026 |
| Description: Multi-Mission Satellite Operations Center (MMSOC) development/integration/test. | | | |
| FY 2016 Accomplishments: Provided capability to AFSPC for reduced cost of operations through use of MMSOC architecture by delivering MMSOC 2.1 as the initial EGS C2 product line capability for AFSPC. Continued to support operations of multiple satellites and enhance automation capability. Continued program office support and related support activities such as, but not limited to, mission support, special studies, Systems Engineering and Technical Assistance (SETA), Federally Funded Research and Development Centers (FFRDC), etc. | | | |
| FY 2017 Plans: Continue providing C2 product line capability to AFSPC for reduced cost of operations and maintenance through evolution of MMSOC architecture and automated processes. Refine and continue to support operations of multiple satellites and enhance automation capability. Continue program office support and related support activities such as, but not limited to, mission support, special studies, SETA, FFRDC, etc. | | | |
| FY 2018 Plans: Continue providing capability to AFSPC for reduced cost of operations and maintenance through evolution of MMSOC C2 architecture and automated processes to support the objectives of the EGS and SWC. Refine and continue to support operations | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| | |
|--|---|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i> |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| of multiple satellites and enhance automation capability. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc. | | | |
| <p>Title: Enterprise Ground Services (EGS)</p> <p>Description: Enterprise Ground Services (EGS) is envisioned to provide a robust enterprise ground architecture for Air Force space systems, which leverages mission commonality and automation to reduce sustainment costs and re-focus manpower on warfighting capabilities. In addition, EGS will enable a near-real-time common operating picture of enterprise-wide tactical health, status, indications, and warnings for Air Force satellites. The end-state will be a modern technical infrastructure which is cyber-secure and resilient against the Advanced Persistent Threat and employs streamlined architecting, acquisition, and operational processes. Through early architecture studies and prototyping, the government will establish clear ownership of the technical baseline as the EGS effort evolves through development. This effort provides focus and expertise for the development, test, certification and enforcement of standards and interfaces for all AFSPC satellite ground systems to enable transition planning for legacy ground systems, new capability demonstrations, and systems acquisition leading to an enterprise ground architecture for Air Force space systems.</p> <p>FY 2016 Accomplishments: N/A</p> <p>FY 2017 Plans: Continue to leverage the MMSOC C2 product line as a key enabler to evolve the EGS capability across the Command. Provide the initial C2 capability to support the Operationally Responsive Space (ORS) program at both RSC locations.</p> <p>FY 2018 Plans: Continue to develop the initial prototype capability for a robust enterprise ground architecture. Continue developing the programmatic, technical, and architectural roadmap to enable the phased transition of mission partners to EGS. EGS effort specifically includes development of the EGS C2 data center, prototype demonstrations with the Space Based Infrared System (SBIRS) Highly Elliptical Orbit (HEO) payloads 1-4, cybersecurity development and implementation, standards and interface development, integration and test of mission unique software, and integration of common applications and services. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.</p> | 0.000 | 0.400 | 21.025 |
| Accomplishments/Planned Programs Subtotals | 3.490 | 3.989 | 25.051 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

| | |
|--|---|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i> |
|--|---|

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • OPAF BA03: 834010: <i>General Information Technology</i> | 1.435 | 1.977 | 1.964 | 0.000 | 1.964 | 1.876 | 1.909 | 1.944 | 1.981 | Continuing | Continuing |

Remarks

Due to the creation of a new Major Force Program for Space, the OPAF funding listed above from FY 2016 to FY 2017 was originally budgeted in the PE 0305173F. Funding listed above for this effort from FY 2018 to FY 2022 is budgeted in PE 1203173F.

E. Acquisition Strategy

The Air Force uses the competitively awarded Engineering, Development, and Sustainment (EDS) Contract, managed by Space and Missile Systems Center (SMC), Advanced Systems and Development Directorate, to modernize and sustain MMSOC.

EGS leverages a multitude of contracts and other government agencies. Engineering and architecture support will be obtained from FFRDC (i.e. Aerospace and MITRE) and Air Force Space and Missile Systems Center competitively awarded SETA contracts. Developmental Test & Evaluation Support will be obtained from the 46 Test Squadron. Technology development and maturation will be obtained from Air Force Research Laboratory (AFRL) Small Business Innovative Research (SBIR) initiatives. Cybersecurity support will be obtained from Air Force Space Command 50th Space Wing, 50th Network Operations Group. Applications and services support will be obtained from external government agencies such as NASA Goddard Missions Services Evolution Center (GMSEC) and Naval Research Lab (NRL).

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

| | | |
|--|---|--|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i> | Project (Number/Name) 67A014 / <i>R&D Space and Missile Operations</i> |
|--|---|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Engineering, Development, and Sustainment (EDS) Follow-on Contract (MMSOC) | C/CPAF | Lockheed Martin : Santa Maria, CA | - | 1.147 | Oct 2015 | 1.569 | Oct 2016 | 1.200 | Oct 2017 | 0.000 | | 1.200 | Continuing | Continuing | - |
| Naval Research Lab | MIPR | Naval Research Lab : Washington, DC | - | 1.150 | Oct 2015 | 0.750 | Oct 2016 | 1.200 | Oct 2017 | 0.000 | | 1.200 | Continuing | Continuing | - |
| Service Bus Architecture Standards | MIPR | NASA Goddard : Greenbelt, MD | - | 0.000 | Oct 2015 | 0.000 | Oct 2016 | 0.050 | Oct 2017 | 0.000 | | 0.050 | Continuing | Continuing | - |
| Information Assurance (MMSOC) | Various | Various : TBD | - | 0.230 | Oct 2015 | 0.115 | Oct 2016 | 0.115 | Oct 2017 | 0.000 | | 0.115 | Continuing | Continuing | - |
| Enterprise Ground Services (EGS) | Various | Various : TBD | - | 0.000 | | 0.400 | Jan 2017 | 21.025 | Oct 2017 | 0.000 | | 21.025 | Continuing | Continuing | - |
| Subtotal | | | - | 2.527 | | 2.834 | | 23.590 | | 0.000 | | 23.590 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 Test and Engineering Contract (STEC) (MMSOC) | C/CPAF | LINQUEST : Kirtland, AFB, NM | - | 0.600 | Oct 2015 | 0.496 | Oct 2016 | 0.442 | Oct 2017 | 0.000 | | 0.442 | Continuing | Continuing | - |
| Subtotal | | | - | 0.600 | | 0.496 | | 0.442 | | 0.000 | | 0.442 | - | - | - |

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force **Date:** May 2017

| | | |
|--|---|--|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i> | Project (Number/Name) 67A014 / <i>R&D Space and Missile Operations</i> |
|--|---|--|

| FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 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 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| MMSOC Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Enterprise Ground Services (EGS) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MMSOC Space Test Program Satellite-2 (STPSat-2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MMSOC Sapce Test Program Satellite-3 (STPSat-3) (Customer Funded) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MMSOC CloudSat Supt (Customer Funded) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MMSOC Automated Navigation and Guidance Experiment for Local Space (ANGELS) Support (Customer Funded) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MMSOC Green Propellant Infusion Mission (GPIM) Support (Customer Funded) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MMSOC Demonstration and Science Experiment (DSX) Support (Customer Funded) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MMSOC ORS-5 Support (Customer Funded) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MMSOC ORS-6 Support (Customer Funded) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MMSOC Evolved Expendable Launch Vehicle (EELV) Secondary Payload Adapter (ESPA) Augmented Geostationary Laboratory Experiment (EAGLE) Support (Customer Funded) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MMSOC Mycroft Support (Customer Funded) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EGS Space Based Infrared System (SBIRS) Highly Elliptical Orbit (HEO) and Geosynchronous Orbit (GEO) Support (Customer Funded) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force **Date:** May 2017

| | | |
|--|---|--|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i> | Project (Number/Name) 67A014 / <i>R&D Space and Missile Operations</i> |
|--|---|--|

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| EGS Geosynchronous Space Situational Awareness Program (GSSAP) Support (Customer Funded) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EGS Bluegill Support (Customer Funded) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EGS MMSOC Backwards Compatibility Demonstration | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EGS Weather System Follow-on-Microwave (WSF-M) Support (Customer Funded) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MMSOC Long Duration Propulsive ESPA-1 (Customer Funded) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EGS Tetra 1 and Tetra 2 (Customer Funded) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EGS Tetra 3 and Tetra 4 (Customer Funded) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EGS ORS-8 Support (Customer Funded) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EGS Long Duration Propulsive ESPA-2 (Customer Funded) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EGS Long Duration Propulsive ESPA-3 (Customer Funded) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EGS Long Duration Propulsive ESPA-4 (Customer Funded) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EGS Long Duration Propulsive ESPA-5 (Customer Funded) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i> | Project (Number/Name) 67A014 / <i>R&D Space and Missile Operations</i> |
|--|---|--|

Schedule Details

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| MMSOC Development | 1 | 2016 | 4 | 2022 |
| Enterprise Ground Services (EGS) | 1 | 2017 | 4 | 2022 |
| MMSOC Space Test Program Satellite-2 (STPSat-2) | 1 | 2016 | 4 | 2020 |
| MMSOC Sapce Test Program Satellite-3 (STPSat-3) (Customer Funded) | 1 | 2016 | 4 | 2020 |
| MMSOC CloudSat Supt (Customer Funded) | 1 | 2016 | 4 | 2020 |
| MMSOC Automated Navigation and Guidance Experiment for Local Space (ANGELS) Support (Customer Funded) | 1 | 2016 | 4 | 2019 |
| MMSOC Green Propellant Infusion Mission (GPIM) Support (Customer Funded) | 1 | 2016 | 4 | 2018 |
| MMSOC Demonstration and Science Experiment (DSX) Support (Customer Funded) | 1 | 2016 | 4 | 2018 |
| MMSOC ORS-5 Support (Customer Funded) | 1 | 2016 | 4 | 2022 |
| MMSOC ORS-6 Support (Customer Funded) | 1 | 2016 | 1 | 2019 |
| MMSOC Evolved Expendable Launch Vehicle (EELV) Secondary Payload Adapter (ESPA) Augmented Geostationary Laboratory Experiment (EAGLE) Support (Customer Funded) | 1 | 2016 | 4 | 2022 |
| MMSOC Mycroft Support (Customer Funded) | 1 | 2016 | 4 | 2022 |
| EGS Space Based Infrared System (SBIRS) Highly Elliptical Orbit (HEO) and Geosynchronous Orbit (GEO) Support (Customer Funded) | 1 | 2016 | 4 | 2022 |
| EGS Geosynchronous Space Situational Awareness Program (GSSAP) Support (Customer Funded) | 1 | 2017 | 3 | 2021 |
| EGS Bluegill Support (Customer Funded) | 2 | 2017 | 3 | 2020 |
| EGS MMSOC Backwards Compatibility Demonstration | 3 | 2017 | 2 | 2019 |
| EGS Weather System Follow-on-Microwave (WSF-M) Support (Customer Funded) | 4 | 2019 | 4 | 2022 |
| MMSOC Long Duration Propulsive ESPA-1 (Customer Funded) | 1 | 2018 | 3 | 2020 |

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force **Date:** May 2017

| | | |
|--|---|--|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203173F / <i>Space and Missile Test and Evaluation Center</i> | Project (Number/Name) 67A014 / <i>R&D Space and Missile Operations</i> |
|--|---|--|

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| EGS Tetra 1 and Tetra 2 (Customer Funded) | 2 | 2017 | 4 | 2022 |
| EGS Tetra 3 and Tetra 4 (Customer Funded) | 4 | 2017 | 2 | 2020 |
| EGS ORS-8 Support (Customer Funded) | 1 | 2018 | 4 | 2022 |
| EGS Long Duration Propulsive ESPA-2 (Customer Funded) | 1 | 2019 | 4 | 2022 |
| EGS Long Duration Propulsive ESPA-3 (Customer Funded) | 1 | 2020 | 4 | 2022 |
| EGS Long Duration Propulsive ESPA-4 (Customer Funded) | 1 | 2021 | 4 | 2022 |
| EGS Long Duration Propulsive ESPA-5 (Customer Funded) | 1 | 2022 | 4 | 2022 |

Note

Note: The attached schedule reflects RDSMO support to the customer funded missions and may not directly align with customer program office schedules.

Continue to leverage the MMSOC C2 product-line as a key enabler to evolve the EGS capability across the Command. Deliver the initial service capability in support of the AFSPCs Operationally Responsive Space program at both KAFB and SAFB.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

| | |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203174F / <i>Space Innovation, Integration and Rapid Technology Development</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 1.543 | 3.070 | 11.390 | 0.000 | 11.390 | 11.178 | 11.383 | 11.584 | 11.821 | Continuing | Continuing |
| 67A011: <i>Space Analysis and Application Development</i> | - | 1.543 | 3.070 | 11.390 | 0.000 | 11.390 | 11.178 | 11.383 | 11.584 | 11.821 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note

In FY2018, PE 0305174F, Space Innovation, Integration and Rapid Technology Development efforts were transferred to PE 1203174F, Space Innovation, Integration and Rapid Technology Development due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203174F.

A. Mission Description and Budget Item Justification

Located at Peterson AFB, Colorado, the Space Innovation, Integration and Rapid Technology Development program develops and modifies modeling and simulation tools that Air Force Space Command's Space Analysis Center uses for operations research, military utility analyses, tradeoff studies, and other evaluations of space mission areas to guide planning, programming, requirements generation, analyses of alternatives, and other activities. Development activities incorporate changes in fielded and projected space operational capabilities, as well as technical improvements, into the group's software tools to ensure their data and technology remain current. Its innovation, education, and training activities foster solutions to operational deficiencies and enhance the integration of space systems into Air Force operations, thereby enabling service and joint warfighters to realize the full potential of existing and planned space capabilities.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 1.543 | 7.785 | 2.957 | 0.000 | 2.957 |
| Current President's Budget | 1.543 | 3.070 | 11.390 | 0.000 | 11.390 |
| Total Adjustments | 0.000 | -4.715 | 8.433 | 0.000 | 8.433 |
| • 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 | -4.715 | 8.433 | 0.000 | 8.433 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203174F / <i>Space Innovation, Integration and Rapid Technology Development</i> |
|--|---|

Change Summary Explanation

FY2018: \$8.433M increase to meet USSTRATCOM-led Joint Space Doctrine and Tactics Forum requirement to develop more accurate modeling and analytical tools for depicting space contributions across all phases of conflict. Funds subject matter expertise to develop space modeling, simulation and analysis tools at the engagement, mission and campaign levels for 15 different warfighter mission areas.

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

| | FY 2016 | FY 2017 | FY 2018 |
|---|---------|---------|---------|
| <p>Title: Model/Tool Development and Capability Upgrades</p> <p>Description: Develops, verifies, and validates models for space and cyber mission areas and modifies existing models to portray new capabilities. Advancing M&S tools to incorporate space effects at the campaign, mission and engagement levels with the goal of enhancing decision support, visualization, exercise and wargaming. The space and cyber MS&A Models are used for military utility analyses, trade studies, and other evaluations of space/cyber programs supporting program offices at the Space and Missile Center, HQ AFSPC and other activities with a space/cyber focus.</p> <p>FY 2016 Accomplishments: Developed and modified several models and tools in support of space and cyber analysis.</p> <p>SSNAM – Produced 180 days of simulated data on 100,000 satellites to support JMS testing and validation</p> <p>SEAS - Updated tool to support Warfighter Vignette Analysis efforts providing AFSPC leadership insights into the impact of space and cyberspace capabilities on military operations. Supported Space Enterprise Vision (SEV) and Joint Space Doctrine and Tactics Forum (JSOTF) analysis of the impact of space capabilities on warfighting operations in a contested environment.</p> <p>STORM – Updated tool to capture the impact of Space-Based Infrared System (SBIRS) capabilities on achieving Air Superiority in an Anti-Access/Area Denial (A2/AD) environment</p> <p>FY 2017 Plans: Develop and modify several models and tools in support of space and cyber analysis. Continue building on FY 2016 activities.</p> <p>SSNAM – Continue support to JMS and support analysis for changes to the Space Surveillance Network</p> <p>STORM - Improve space/cyber representation in STORM. Enhance STORM non-lethal effects modeling supporting JSOTF</p> <p>SEAS – Continued improvements for space/cyber representation enabling simulation of joint military force interactions utilizing these capabilities (JP 3-14, 64 Joint Mission Threads)</p> <p>Other model modifications as needed based on leadership questions and future AoAs</p> | 0.741 | 1.474 | 5.484 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 1203174F / <i>Space Innovation, Integration and Rapid Technology Development</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>Jamming and Intercept Advance Notice Tool (JIANT):</p> <p>Develops defensive counterspace software tools to provide operational security/mission protection capabilities to counter near-peer investments in ground-based jammers/overhead collection assets. Provides enhanced overhead protection capability which can perform link-budget calculations to improve efficacy of collection vulnerability warnings to deployed troops and SATCOM centric capabilities. Provides timely analysis necessary to expedite countermeasures to enemy jamming activities.</p> <p>Tiny-Tattle:</p> <p>Modifies software on Low Probability of Intercept/ Detection (LPI/LPD)small Size Weight and Power (SWaP)Target, Tracking and Locating (TTL) devices used via AFSPC Space/Cyber-associated tools/assets supporting Joint/SOF National Mission Force. Project exploits the investment made in other Space Command developments and provides a TTL device that works world-wide without dependencies on other platforms. Upgrades will provide increased situational awareness and assist in reducing fratricide.</p> <p>Fly Swatter:</p> <p>Develops prototype sensor to detect small UAVs (commercial class) via AFSPC Space/Cyber-associated tools/assets supporting Joint/SOF National Mission Force that are used by insurgents. Provides engineering level testing of prototype sensors against a range of commercially available drones capable of ISR activities or deli...</p> <p>FY 2018 Plans:</p> <p>Develop and modify several models and tools in support of space and cyber analysis. Continue building on FY 2017 activities.</p> <p>SSNAM – Continue support to JMS and analysis and studies of the Space Surveillance Network</p> <p>SEAS/STORM – Continue to produce technically sound and responsive space/cyberspace analyses analyzing warfighter ops in a highly-contested environment in support of national and military needs (SEV and JSDTF)</p> <p>Other model modifications as needed based on leadership questions and future AoAs</p> | | | | |
| <p>Title: Model Verification</p> <p>Description: Verification of changes made to models.</p> <p>FY 2016 Accomplishments:</p> <p>Verified model changes resulting from Model Development and Modification efforts.</p> <p>FY 2017 Plans:</p> | | 0.324 | 0.645 | 2.385 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203174F / <i>Space Innovation, Integration and Rapid Technology Development</i> |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Verification of model changes resulting from Model Development and Modification efforts. | | | |
| FY 2018 Plans: Verification of model changes resulting from Model Development and Modification efforts. | | | |
| Title: Model Validation Description: Validated model change results. | 0.478 | 0.951 | 3.521 |
| FY 2016 Accomplishments: Validated model changes resulting from Model Development and Modification efforts. | | | |
| FY 2017 Plans: Validation of model changes resulting from Model Development and Modification efforts. | | | |
| FY 2018 Plans: Validation of model changes resulting from Model Development and Modification efforts. | | | |
| Accomplishments/Planned Programs Subtotals | 1.543 | 3.070 | 11.390 |

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • OPAF: BA03: Line Item # 834010: <i>General Information Technology</i> | 1.221 | 1.481 | 0.709 | 0.000 | 0.709 | 0.617 | 0.627 | 0.639 | 0.000 | Continuing | Continuing |

Remarks
Funding and content procures equipment for the SIIRTD AFSPC Virtual Analysis Capability (AVAC) system. Supports space and cyber modeling and analysis using a variety of Linux and Windows based hardware and software suites.

E. Acquisition Strategy
Any new projects funded in this program will be awarded using competitive procedures to the maximum extent possible.

F. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203174F / <i>Space Innovation, Integration and Rapid Technology Development</i> | Project (Number/Name) 67A011 / <i>Space Analysis and Application Development</i> |
|--|---|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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/modify software tools/models | C/FP | Various : Various | - | 0.602 | Nov 2015 | 1.220 | Mar 2017 | 4.576 | Mar 2018 | 0.000 | | 4.576 | Continuing | Continuing | - |
| Develop/modify software tools and models | C/FP | Various : Various | - | 0.941 | Nov 2015 | 1.850 | Jan 2017 | 6.814 | Jan 2018 | 0.000 | | 6.814 | Continuing | Continuing | - |
| Subtotal | | | - | 1.543 | | 3.070 | | 11.390 | | 0.000 | | 11.390 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| | | | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|--|--|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|
| Project Cost Totals | | | - | 1.543 | 3.070 | 11.390 | 0.000 | 11.390 | - | - | - |

Remarks

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203174F / <i>Space Innovation, Integration and Rapid Technology Development</i> | Project (Number/Name) 67A011 / <i>Space Analysis and Application Development</i> |

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| Model development/modification, verification, and validation | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203174F / <i>Space Innovation, Integration and Rapid Technology Development</i> | Project (Number/Name) 67A011 / <i>Space Analysis and Application Development</i> |

Schedule Details

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Model development/modification, verification, and validation | 1 | 2016 | 4 | 2022 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

| | |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203179F / <i>Integrated Broadcast Service (IBS)</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 9.760 | 8.833 | 8.747 | 0.000 | 8.747 | 8.632 | 8.794 | 8.947 | 9.130 | Continuing | Continuing |
| 674779: <i>Integrated Broadcast Service (IBS)</i> | - | 9.760 | 8.833 | 8.747 | 0.000 | 8.747 | 8.632 | 8.794 | 8.947 | 9.130 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note
 In FY2018, PE0305179F Integrated Broadcast System efforts were transferred to PE1203179F, Integrated Broadcast System due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE1203179F

A. Mission Description and Budget Item Justification
 In FY2018, PE0305179F Integrated Broadcast System efforts were transferred to PE1203179F, Integrated Broadcast System due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE1203179F.

The IBS fulfills the warfighter's requirements for worldwide threat warning and situational awareness information with timely production and simultaneous dissemination of Intelligence, Surveillance, and Reconnaissance (ISR) derived combat information. It also provides target tracking data to support threat avoidance, targeting, force protection, and situational awareness. This information is continually refined in near real time by strategic, operational and tactical sensors.

- IBS is comprised of the following:
- A Common Interactive Broadcast (CIB) on UHF (Ultra High Frequency) satellite channel using a Common Message Format (CMF) and a Military Standard (MIL-STD) Demand Assigned Multiple Access (DAMA) compliant waveform and Line of Sight (LOS) using the Wideband Networking Waveform (WNW) and Joint Tactical Terminal (JTT).
 - IBS-Network Services (IBS-NS) includes two Global IBS Network Servers (GINS) and four Theater Interface Nodes (TINs) to support the geographic Combatant Commanders (COCOMs), all built to validated warfighter requirements.
 - Two GINS receive data from each theater and integrate this data into a worldwide picture available to all network/broadcast users.
 - Four regional TINs allow local and out-of-theater users (not directly receiving IBS broadcast) to receive the CIB information broadcast. Additionally, the TIN will receive and inject data into the CIB for producers without access to the theater CIB.

This PE funds:
 - Development/upgrades of IBS (IBS-NS, CIB, and CMF)

This project will identify and implement an open, scalable system architecture that will accommodate growth as the virtual world grows and cyber operations change.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date: May 2017**

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203179F / <i>Integrated Broadcast Service (IBS)</i> |
|--|---|

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 7.860 | 8.833 | 8.722 | 0.000 | 8.722 |
| Current President's Budget | 9.760 | 8.833 | 8.747 | 0.000 | 8.747 |
| Total Adjustments | 1.900 | 0.000 | 0.025 | 0.000 | 0.025 |
| • 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 | 1.900 | 0.000 | | | |
| • SBIR/STTR Transfer | 0.000 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 0.025 | 0.000 | 0.025 |

Change Summary Explanation

FY16 Above Threshold Reprogramming for \$1.9M for polar dissemination development effort.

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Title: Development/upgrades of the Integrated Broadcast Service (IBS-NS, CIB, and CMF) | 8.270 | 7.343 | 7.257 |
| Description: Development/upgrades of the IBS (IBS-NS, CIB, and CMF). | | | |
| FY 2016 Accomplishments: | | | |
| - Initiated development, synchronization and integration with the DOD Intelligence Community (IC) Cloud as a potential producer/consumer; the capability provided a long term searchable data store for IBS information | | | |
| - Completed phase one of providing IBS Enterprise-level real-time and analytic views on Global and COCOM watch floors; the watch can now access real time CIB broadcast data from the Command (CCMD) TIN | | | |
| - Initiated performance enhancement to throughput, storage and replay to address increased volume of messages for IBS-NS as well as Over the Air (OTA) capabilities | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 1203179F / <i>Integrated Broadcast Service (IBS)</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <ul style="list-style-type: none"> - Completed initial terminal testing to provide resilience to IBS CIB UHF Broadcast by utilizing the Mobile User Objective System (MUOS) Wideband Code Division Multiple Access (WCDMA) SATCOM payload and supporting the receipt of IBS on 1st generation MUOS terminals - Continued connecting the COCOM J2 CIB planning function with the COCOM J6 Integrated Waveform planning function - Initiated integration of the CIB Planning Tool and IBS-NS capability at the COCOMs to allow automated planning to occur for active producers - Continued upgrading P5 system health and welfare status at the COCOMs to include Alternate (Alt)-Path -- Completed and implemented phase one of polar coverage - Initiated transition of current classified dissemination path to new architecture and enabled Sensitive Compartmented Information (SCI)-level dissemination of data - Initiated enhancement of uplink sites to handle operational surge increases - Initiated modifying monitoring and control tools to assist in assured dissemination tasks at COCOM uplink watches, development and fielding of Downlink Monitoring Element (DME) - Continued integrating CMF updates into IBS-NS - Completed Initial Operational Capability (IOC) of the IBS-NS Enterprise <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Continue developing, synchronizing and integrating with DOD IC Cloud as a potential producer/consumer; this capability provides a long term searchable data store for IBS information - Continue enhancing IBS Enterprise-level real-time and analytic views on Global and COCOM watch floors; further integrate uplink sites with associated TIN by reducing equipment overhead and streamlining data flows - Continue developing volumetric increases providing ten times performance enhancement to throughput, storage and replay to address message volume; this increases the enterprise output to 100M messages per day | | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203179F / <i>Integrated Broadcast Service (IBS)</i> |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| <ul style="list-style-type: none"> - Continue providing resilience to IBS CIB UHF Broadcast by utilizing the MUOS Wideband Code Division Multiple Access SATCOM payload and supporting the receipt of IBS on 1st generation MUOS terminals - Continue upgrading and connecting the COCOM J2 CIB planning function with the COCOM J6 Integrated Waveform planning function - Continue integrating the CIB Planning Tool and IBS-NS capability at the COCOMs to allow automated planning to occur for active producers - Initiate developing the IBS Thin Client, which provides a light weight application to receive IBS information on mobile devices - Initiate developing the CIB MUOS Group Integration - Many to Many, which achieves IBS Over the Air requirements on the MUOS Wideband Code Division Multiple Access (WCDMA) payload - Continue upgrading P5 system health and welfare status at the COCOMs to include Alt-Path -- Continue upgrading the resiliency of IBS to include polar coverage - Continue upgrading and transitioning of current classified dissemination path to new architecture and enabling SCI-level dissemination of data - Continue upgrading of the uplink sites to handle operational surge increases - Continue developing the monitoring and control tools to assist in assured dissemination tasks at COCOM uplink watches, development and fielding of Downlink Monitoring Element <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Will continue to synchronize and integrate with DOD IC Cloud as a potential producer/consumer; the capability will provide a long term searchable data store for IBS information. - Will continue to upgrade the IBS Enterprise-level real-time and analytic views on Global and COCOM watch floors; further integrate uplink sites with associated TIN by reducing equipment overhead and streamlining data flows - Will continue to upgrade volumetric increase to provide ten times performance enhancement to throughput, storage and replay to address message volume; this will increase the enterprise output to 100M messages per day | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 1203179F / <i>Integrated Broadcast Service (IBS)</i> | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <ul style="list-style-type: none"> - Will continue to provide resilience to IBS CIB UHF Broadcast by utilizing the MUOS Wideband Code Division Multiple Access SATCOM payload and supporting the receipt of IBS on 1st generation MUOS terminals - Will continue to upgrade and connect the COCOM J2 CIB planning function with the COCOM J6 Integrated Waveform planning function - Will continue to upgrade the CIB Planning Tool and IBS-NS capability at the COCOMs to allow automated planning to occur for active producers - Will continue development of the IBS Thin Client, which provides a light weight application to receive IBS information on mobile devices - Will continue development of the CIB MUOS Group Integration - Many to Many, which achieves IBS Over the Air requirements on the MUOS, WCDMA payload - Will continue to upgrade the P5 system health and welfare status at the COCOMs to include Alt-Path -- Will continue to upgrade the resiliency of IBS to include polar coverage - Will continue to upgrade and transition current classified dissemination path to new architecture and enable SCI-level dissemination of data - Will continue enhancement of uplink sites to handle operational surge increases - Will continue to upgrade the monitoring and control tools to assist in assured dissemination tasks at COCOM uplink watches, development and fielding of Downlink Monitoring Element (DME) ... | | | | |
| Title: Enterprise Systems Engineering | | 0.700 | 0.700 | 0.700 |
| Description: Enterprise Systems Engineering/CMF Integration/CIB Integration. | | | | |
| FY 2016 Accomplishments: | | | | |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203179F / <i>Integrated Broadcast Service (IBS)</i> |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| - Continued Enterprise Systems Engineering/CMF Integration/CIB Integration FY 2017 Plans: - Continuing Enterprise Systems Engineering/CMF Integration/CIB Integration FY 2018 Plans: - Will continue Enterprise Systems Engineering/CMF Integration/CIB Integration | | | |
| Title: Test & Evaluation Description: Tests & Evaluates the IBS system. FY 2016 Accomplishments: - Tested and evaluated the IBS system FY 2017 Plans: - Testing and evaluating the IBS system FY 2018 Plans: - Will test and evaluate the IBS system | 0.790 | 0.790 | 0.790 |
| Accomplishments/Planned Programs Subtotals | 9.760 | 8.833 | 8.747 |

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| • OPAF: BA03: Line Item # 832070: <i>Intelligence Comm Equipment</i> | 15.011 | 16.452 | 17.283 | 0.000 | 17.283 | 16.580 | 16.875 | 17.179 | 17.490 | Continuing | Continuing |

Remarks

E. Acquisition Strategy
 IBS is in the PEO Battle Management portfolio and executed by AFLCMC/HBG.

 IBS uses an Adaptive Life-cycle approach that provides incremental improvement and new capability in 90-day cycles.

 For contracting efforts, a Single Award IDIQ contract with multiple task orders was awarded to CACI International Inc.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203179F / <i>Integrated Broadcast Service (IBS)</i> |
|--|---|

F. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203182F / <i>Spacelift Range System (SPACE)</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 5.708 | 11.867 | 10.549 | 0.000 | 10.549 | 10.721 | 10.918 | 11.106 | 11.335 | Continuing | Continuing |
| 674137: <i>Launch and Test Range System (LTRS) Modernization</i> | - | 5.708 | 11.867 | 10.549 | 0.000 | 10.549 | 10.721 | 10.918 | 11.106 | 11.335 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note

In FY2018, PE 0305182F, Spacelift Range System efforts were transferred to PE 1203182F, Spacelift Range System due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203182F.

A. Mission Description and Budget Item Justification

The Launch and Test Range System (LTRS), provides public safety and assured access to space. LTRS operates at the Eastern Range (ER) at Patrick AFB/Cape Canaveral AFS, FL and the Western Range (WR) at Vandenberg AFB, CA. LTRS provides tracking, telemetry, communications, flight safety, and other capabilities to support launch of national security space (NSS), civil and commercial space payloads, Intercontinental and Sea Launched ballistic missile and missile defense evaluations, and aeronautical and guided weapon tests. LTRS enables national security, civil, and commercial spacelift operations to be conducted safely; together with national security space launch capability, LTRS provides assured access to space for the nation. The ER and WR are designated as Department of Defense Major Range and Test Facility Bases (MRTFB).

LTRS is comprised of twelve subsystems that together provide this capability to the ranges. The Range Safety and Command Destruct subsystems provide the capability to destroy an errant rocket, if necessary to protect public safety. These subsystems rely on the Telemetry, Radar, and Optics subsystems to provide tracking data. The Weather and Surveillance subsystems allow range operators and customers to determine if conditions are safe for launch. The Communications, Data Handling, and Timing & Sequencing subsystems ensure critical data is expeditiously routed from remote sensors (e.g. radars, optics) to range operators and customers. Finally, the Planning and Scheduling subsystem ensures all assets are available when needed for a launch or test operation.

As aging range systems exhibit decreasing reliability, leading to higher operations and maintenance costs and increasing the risk of launch delays, the Air Force requires RDT&E funds to conduct architecture analyses to optimize investment planning for safety of flight (such as the use of drones, high definition optics, phased-array radars etc.), commercial launch, Space Warfighter Construct, and Space Enterprise Vision implementation.

This program activity is in Budget Activity 7, Operational System Development, because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | | | Date: May 2017 | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 1203182F / <i>Spacelift Range System (SPACE)</i> | | | |
| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
| Previous President's Budget | 6.881 | 11.867 | 10.518 | 0.000 | 10.518 |
| Current President's Budget | 5.708 | 11.867 | 10.549 | 0.000 | 10.549 |
| Total Adjustments | -1.173 | 0.000 | 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 | 0.000 | | | |
| • Congressional Directed Transfers | 0.000 | 0.000 | | | |
| • Reprogrammings | 0.000 | 0.000 | | | |
| • SBIR/STTR Transfer | -1.173 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 0.031 | 0.000 | 0.031 |
| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 | | |
| Title: Systems Engineering Support to Operational Baseline | 3.133 | 7.654 | 6.453 | | |
| Description: Provides Advisory and Assistance Services (A&AS) support of the operational baseline (all twelve subsystems) to include configuration management of all range assets, requirements analyses, and special studies. Provides support for Systems Program Office operations, Systems Engineering and Technical Assistance (SETA), and Federally Funded Research and Development Centers (FFRDC). | | | | | |
| FY 2016 Accomplishments: Managed the baseline (all twelve subsystems) to include configuration management of all range assets, requirements, analysis, and special studies. | | | | | |
| FY 2017 Plans: Manage the baseline (all twelve subsystems) to include configuration management of all range assets, requirements, analysis, and special studies. | | | | | |
| FY 2018 Plans: Continue to manage the baseline (all twelve subsystems) to include configuration management of all range assets, requirements, analysis and special studies. | | | | | |
| Title: Enterprise Systems Engineering and Integration to Support Government-Controlled Baseline | 2.575 | 4.213 | 4.096 | | |
| Description: SE&I manages the government controlled system and subsystem level baseline requirements including analysis of future changes to the fielded baseline. SE&I provides "government as the integrator" engineering support to ensure multiple separate modernizations and the sustainment baseline are synchronized. SE&I will develop and recommend investment | | | | | |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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|--|---|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203182F / <i>Spacelift Range System (SPACE)</i> |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| strategies to keep the Eastern and Western Ranges operating well beyond the FYDP. The current contract will transition to a Range and Network Enterprise SE&I contract in FY 2017. <i>FY 2016 Accomplishments:</i> Continued independent SE&I efforts as required to integrate modernization and sustainment efforts into future ranges. Provided systems and subsystem level definition, baseline, architecture, integration planning and support for future ranges. <i>FY 2017 Plans:</i> Continue independent SE&I efforts as required to integrate modernization and sustainment efforts into future ranges. Provide systems and subsystem level definition, baseline, architecture, integration planning and support for future ranges. Award Enterprise SE&I contract. <i>FY 2018 Plans:</i> Continue independent SE&I efforts as required to integrate modernization and sustainment efforts into future ranges. Provide systems and subsystem level definition, baseline, architecture, integration planning and support for future ranges. | | | |
| Accomplishments/Planned Programs Subtotals | 5.708 | 11.867 | 10.549 |

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> | <u>FY 2018</u> | <u>FY 2018</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> | <u>Total Cost</u> |
|--|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|-------------------|
| | | | <u>Base</u> | <u>OCO</u> | <u>Total</u> | | | | | <u>Complete</u> | <u>Total Cost</u> |
| • SPAF: BA01: Line Item | 103.275 | 123.088 | 113.874 | 0.000 | 113.874 | 133.474 | 123.248 | 110.325 | 112.580 | Continuing | Continuing |
| #SPRNGE: <i>Spacelift Range System Space</i> | | | | | | | | | | | |

Remarks

E. Acquisition Strategy
 Due to the fielded LTRS age and obsolescence issues, many systems need to be replaced (e.g. communications systems at ER & WR). These major modifications will be competed, typically among small business contractors, and selected through best value source selections. The competitively-selected SE&I contractor manages government-controlled requirements and processes as well as provide support to the "government as the integrator" between LTRS Integrated Support Contract (LISC) and separately competed modernization projects. FFRDC provides mission assurance oversight to ensure capabilities meet operational need.

F. Performance Metrics
 Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203182F / <i>Spacelift Range System (SPACE)</i> | Project (Number/Name) 674137 / <i>Launch and Test Range System (LTRS) Modernization</i> |
|--|---|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| SLRS Enterprise Systems Engineering and Integration | C/CPIF | Booz Allen Hamilton : McLean, VA | - | 2.575 | Dec 2015 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Enterprise Systems Engineering and Integration | C/TBD | TBD : TBD | - | 0.000 | | 4.213 | Oct 2016 | 4.096 | Oct 2017 | 0.000 | | 4.096 | Continuing | Continuing | - |
| Range Technology Integration | C/Various | Various : TBD | - | 1.986 | May 2016 | 6.986 | May 2017 | 5.799 | May 2018 | 0.000 | | 5.799 | Continuing | Continuing | - |
| Subtotal | | | - | 4.561 | | 11.199 | | 9.895 | | 0.000 | | 9.895 | - | - | - |

Remarks
Product Development: The AF is recompeting the Systems Engineering and Integration Contract in FY 2017.

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 (WS) | Various | MIT, 17th Test Squad, NAVAIR : Various | - | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Subtotal | | | - | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | - | - | - |

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203182F / <i>Spacelift Range System (SPACE)</i> | Project (Number/Name) 674137 / <i>Launch and Test Range System (LTRS) Modernization</i> |

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------|------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| SLRS Enterprise SE&I | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Range Technology Integration | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Enterprise SE&I | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203182F / <i>Spacelift Range System (SPACE)</i> | Project (Number/Name) 674137 / <i>Launch and Test Range System (LTRS) Modernization</i> |

Schedule Details

| Events | Start | | End | |
|------------------------------|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| SLRS Enterprise SE&I | 1 | 2016 | 4 | 2016 |
| Range Technology Integration | 1 | 2016 | 4 | 2021 |
| Enterprise SE&I | 1 | 2017 | 1 | 2022 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date: May 2017**

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203265F / <i>GPS III Space Segment</i> |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | 2,799.129 | 147.398 | 179.188 | 243.435 | 0.000 | 243.435 | 127.699 | 44.129 | 12.254 | 8.771 | Continuing | Continuing |
| 676007: <i>SAR- GPS</i> | 7.668 | 1.286 | 1.295 | 1.324 | 0.000 | 1.324 | 1.345 | 1.370 | 1.393 | 1.422 | Continuing | Continuing |
| 67A011: <i>Space Analysis and Application Development</i> | 0.000 | 0.000 | 0.000 | 10.029 | 0.000 | 10.029 | 10.004 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 67A019: <i>GPS III</i> | 2,791.461 | 146.112 | 177.893 | 232.082 | 0.000 | 232.082 | 116.350 | 42.759 | 10.861 | 7.349 | 40.618 | 3,565.485 |

Program MDAP/MAIS Code: 292

Note

This program, BA 07 PE 1203265F, project 67A011, M-Code Hosted Payload, is a new start.

In FY2018, PE 0305265F, GPS III Space Segment efforts were transferred to PE 1203265F, GPS III Space Segment, due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203265F.

A. Mission Description and Budget Item Justification

The Global Positioning System (GPS) is a space-based navigation system that fills validated Joint Service requirements for worldwide, accurate, common grid three dimensional positioning/navigation for military aircraft, ships, and ground personnel. The consistent accuracy, unaffected by location or weather and available in real time, significantly improves effectiveness of reconnaissance, weapons delivery, mine countermeasures and rapid deployment for all services. GPS must comply with Title 10 United States Code (USC) Sec. 2281 which requires that the Secretary of Defense ensures that continued sustainment and operations of GPS for military and civilian purposes and 51 USC Sec. 50112 which requires that GPS complies with certain standards and facilitates international cooperation.

The system is composed of three segments: User Equipment (funded under PE 1203164F), Space (funded under this PE and PE 1203165F) and a Control Network (funded under PE 1203165F and PE 1203423F). The satellites broadcast high accuracy data using precisely synchronized signals which are received and processed by user equipment installed in military platforms. This equipment computes the platform position and velocity and provides steering vectors to target locations or navigation waypoints. The control segment provides daily updates to the navigation messages broadcast from the satellites to maintain system precision in three dimensions to 16 meters spherical error probable worldwide. Additionally, GPS supports the United States Nuclear Detonation (NUDET) Detection System (NDS) mission and provides strategic and tactical support to the following Department of Defense (DoD) missions: Joint Operations by providing capabilities for Positioning, Navigation, and Timing (PNT); Command, Control, Communications, and Intelligence (C3I); Special Operations; Military Operations in Urban Terrain (MOUT); Defense-Wide Mission Support; Air Mobility; and Space Launch Orbital Support.

GPS III is the next generation Space Vehicle (SV) to join the GPS constellation. GPS III SVs will deliver significant enhancements, including a new civil (L1C) Galileo-compatible signal, and enhanced anti-jam power. Two auxiliary payloads, Search and Rescue/GPS (SAR/GPS) and Laser Retro-reflector Array (LRA) will be added no earlier than SV11. The SAR/GPS payload provided by Canada will fill a validated National Search and Rescue Committee requirement to provide enduring, space-based

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203265F / <i>GPS III Space Segment</i> | |
| <p>distress alerting capability to detect, locate, and relay distress alerts to fulfill its responsibilities under international agreements for Search and Rescue. LRA, built by the Naval Research Lab (NRL), is a passive reflector that will improve accuracy and provide better ephemeris data. National Geospatial-Intelligence Agency (NGA) funds the integration costs of the LRA.</p> <p>This program funds GPS III and supports research, development, test and evaluation (RDT&E) of GPS III SV01-02 and risk-reducing simulators through a systems engineering approach that matures and delivers SVs for launch. This PE includes SV01-02 engineering studies and analyses, trade studies, system development, test and evaluation efforts, integrated logistics support products, on-orbit support, and mission operations support for civil and military applications that protect U.S. military and Allied use of GPS.</p> <p>The program also includes Contingency Operations (COps) as risk mitigation to late Next Generation Operational Control System (OCX) delivery. COps will fly GPS III SVs to be brought into the operational constellation, sustaining current levels of performance and avoiding degradation. The current acquisition schedule of OCX Block 1 (capability to operate GPS III satellites) puts GPS constellation sustainment at risk since the current control segment cannot operate GPS III satellites. GPS III COps is a modification to the current control segment to operate GPS III satellites' PNT and NUDET Detection System (NDS) and maintain limited test M-Code capability until OCX Block 1 is delivered.</p> <p>On 3 July 2015, USD(AT&L) approved the first phase of a two-phased GPS III SV acquisition strategy starting no earlier than SV11. Phase 1 is a Production Readiness Feasibility Assessment which will provide data and insight into contractors' GPS III Production Design with emphasis on a mature navigation payload to include a regional M-Code capability that is consistent with the GPS Enterprise Analysis of Alternatives (AOA). Phase 1 utilizes FY2015-2018 RDTE funding for up to three contractors' GPS production designs. Phase 2 has not been approved and options continue to be explored. Notionally, Phase 2 will be a full and open competition for up to 22 GPS III SVs with an expected decision no earlier than SV11. Phase 2 is funded via Space Procurement Air Force (SPAF) in PE 1203265F, BPAC: 23GPS3.</p> <p>Space Modernization Initiative (SMI) focuses on space vehicle affordability and capability, addresses obsolescence, future requirements and resiliency needs, and expands the industrial base to enhance future competition. Phase 1 will address GPS Enterprise AoA recommendations to increase GPS signal strength from space by maturing navigation payload technologies that include a new regional M-Code capability. The Air Force is using its research laboratories to mature an On-Orbit Reprogrammable Digital Waveform Generator which will provide signal flexibility (to change the signal form while the satellite is on-orbit). This effort will be funded with Air Force Research Lab's Science & Technology (S&T) funding and PE 1203265F to increase the number of alternate navigation payload awards.</p> <p>Mission Readiness Campaign (MRC) activities include launch preparation, planning, mission readiness testing to validate space-ground-user interfaces, mission crew exercises and rehearsals, launch vehicle integration, and On-Orbit Checkout activities to validate performance prior to launch. Newly certified launch vehicles must be incorporated into the GPS III launch baseline. Integration requires the development of plans and procedures, and procurement of special support equipment.</p> <p>The Global Positioning System (GPS) supports the early deployment of Global M-Code to meet congressional mandate limiting user equipment purchase to M-Code capable receivers starting in FY17. The funds will cover the M-Code Early Use (MCEU) program and support development costs associated with updating the legacy GPS control segment software to provide core M-Code capabilities to the warfighter, as well as the ability to command and control, process, and monitor the M-Code</p> | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203265F / <i>GPS III Space Segment</i> |
|--|--|

signal. MCEU mitigates delays with the Next Generation Operational Control Segment (OCX), supports Military Global Positioning System User Equipment (MGUE) testing, and allows for early M-Code operations. M-Code provides greater security to protect navigation and timing in electronically contested environments.

Impacts of the M-Code deployment include:

- Compliance with AFSPC/CC mandate to provide global monitoring necessary for Early M-Code Operational Use and verification of Navigation Warfare (NAVWAR) effects.
- Direction to improve the resiliency of the GPS capability.
- Confirmation that Enterprise modernization efforts are integrated and deployed properly.
- Testing and Verification of M-Code capability on MGUE/GPS III solution and early M-Code use tied to MGUE fielding

The FY 2018 funding request was reduced by \$35.000 million to account for the availability of prior year execution balances.

In FY 2018, BPAC 67A011, Space Analysis Application Development M-Code Hosted Payload includes new start efforts.

This program is a Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full-rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 180.359 | 141.888 | 110.860 | 0.000 | 110.860 |
| Current President's Budget | 147.398 | 179.188 | 243.435 | 0.000 | 243.435 |
| Total Adjustments | -32.961 | 37.300 | 132.575 | 0.000 | 132.575 |
| • 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 | -32.961 | 0.000 | | | |
| • SBIR/STTR Transfer | 0.000 | 0.000 | | | |
| • Other Adjustments | 0.000 | 37.300 | 132.575 | 0.000 | 132.575 |

Change Summary Explanation

FY16: -\$32.961M Transfer to fund OCX to cost estimate

FY17: +\$26.300M FY17 Request for Additional Appropriation - Fund GPS Mission Readiness Campaign

FY17: +\$11.000M FY17 Request for Additional Appropriation - Fund M-Code Early Use (MCEU)

FY18: +\$36.000M to fund GPS III Mission Readiness Campaign

FY18: +\$67.800M realignment for GPS III 11+

FY18: -\$35.000M reduction due to availability of prior year execution balances

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203265F / <i>GPS III Space Segment</i> | |
| FY18: +\$53.229M to fund M-Code Early Use FY18: +\$10.000M increase for M-Code Hosted Payload FY18: +\$0.575M inflation adjustment | | |

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment | | | | Project (Number/Name) 676007 / SAR- GPS | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 676007: SAR- GPS | 7.668 | 1.286 | 1.295 | 1.324 | 0.000 | 1.324 | 1.345 | 1.370 | 1.393 | 1.422 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

Search and Rescue GPS (SAR/GPS) is an approved auxiliary payload on GPS III beginning no earlier than SV11. SAR/GPS fills validated National Search and Rescue Committee requirements to provide enduring, space-based distress alerting capability to detect, locate, and relay distress alerts to fulfill its responsibilities under international agreements for Search and Rescue.

In addition, the USAF has on-going requirements to rescue US Military personnel in harm's way per Air Force Doctrine Document 2-1.6. The implementation of a US Medium Earth Orbiting (MEO) Search and Rescue Space Segment is via a Canadian-provided 406 MHz SAR repeater on GPS III SVs. This system presents a cost effective, low-risk opportunity that accommodates existing and planned 406 MHz beacons across the globe. Per National Security Presidential Directive (NSPD)-39, USAF and USCG, the US operators of the civil Cosmicheskaya Sistyema Poiska Avaryinich Sudov-Search and Rescue Satellite-Aided Tracking (COSPAS/SARSAT) system and the international search and rescue system will integrate the Canadian-provided SAR repeater into GPS III beginning no earlier than SV11.

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

| | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Title: SAR/GPS | 1.286 | 1.295 | 1.324 |
| Description: Nonrecurring costs for systems engineering activities to integrate the payload onto the GPS III SVs starting no earlier than SV11. | | | |
| FY 2016 Accomplishments: Continued to design and develop SAR/GPS antennas, associated hardware and cabling, and space vehicle software; systems engineering associated with integrating SAR payload onto the GPS III SVs; enterprise-level System Engineering, Integration, Test and Program Management (SEIT/PM). Costs do not include development and production of Canadian payload unit. | | | |
| FY 2017 Plans: Continue to complete the design and development of SAR/GPS antennas, associated hardware and cabling, and space vehicle software; systems engineering associated with integrating SAR payload onto the GPS III SVs; enterprise-level SEIT/PM, and award contract. Costs do not include development and production of Canadian payload unit. | | | |
| FY 2018 Plans: Continue to complete the design and development of SAR/GPS antennas, associated hardware and cabling, and space vehicle software; systems engineering associated with integrating SAR payload onto the GPS III SVs; enterprise-level SEIT/PM. Continue | | | |

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force **Date: May 2017**

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|--|---|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment | Project (Number/Name) 676007 / SAR- GPS |
|--|---|---|

| | | | |
|--|----------------|----------------|----------------|
| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
| program office and other related support activities that may include, but are not limited to studies, technical analysis, etc. Costs do not include development and production of Canadian payload unit. | | | |
| Accomplishments/Planned Programs Subtotals | 1.286 | 1.295 | 1.324 |

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

| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|---------|---------|-----------------|----------------|------------------|---------|---------|---------|-----------|---------------------|------------|
| • SPAF: BA01: Line Item # GPSIII: GPS III | 198.370 | 34.059 | 85.894 | 0.000 | 85.894 | 783.805 | 796.375 | 779.683 | 1,131.497 | 7,395.744 | 11,205.427 |
| • NGA: National Geospatial-Intelligence Agency | 0.000 | 2.000 | 1.000 | 0.000 | 1.000 | 1.000 | 0.400 | 0.000 | 0.000 | 0.000 | 4.400 |

Remarks

D. Acquisition Strategy

SAR/GPS and Laser Retroreflector Array (LRA) will be integrated as part of the GPS III program no earlier than SV11.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

| | | |
|--|---|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment | Project (Number/Name) 676007 / SAR- GPS |
|--|---|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Search and Rescue SAR/ GPS | C/CPIF | Lockheed Martin : Littleton, CO | 7.668 | 1.286 | Jul 2016 | 1.295 | Dec 2016 | 1.324 | Dec 2017 | 0.000 | | 1.324 | Continuing | Continuing | 17.093 |
| Subtotal | | | 7.668 | 1.286 | | 1.295 | | 1.324 | | 0.000 | | 1.324 | - | - | 17.093 |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| | | | Prior Years | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract |
|----------------------------|--|--|-------------|---------|--|---------|--|--------------|--|-------------|--|---------------|------------------|------------|--------------------------|
| Project Cost Totals | | | 7.668 | 1.286 | | 1.295 | | 1.324 | | 0.000 | | 1.324 | - | - | - |

Remarks
Search and Rescue/SAR

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment | Project (Number/Name) 676007 / SAR- GPS |
|--|---|---|

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|--|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| Planned SAR/GPS RFP Release | | | | | | | | ■ | | | | | | | | | | | | | | | | | | | | |
| Planned SAR/GPS Contract Award | | | | | | | | | | | | ■ | | | | | | | | | | | | | | | | |
| Planned SAR/GPS Payload Critical Design Review (CDR) | | | | | | | | | | | | | | | | | | | | | | | | | | | | ■ |
| Planned SAR/GPS Engineering Design Unit (EDU) | | | | | | | | | | | | | | | | | | | | | | | | | | | | ■ |
| Planned SAR/GPS Flight 1 (First Article) Payload | | | | | | | | | | | | | | | | | | | | | | | | | | | | ■ |

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force **Date:** May 2017

| | | |
|--|---|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment | Project (Number/Name) 676007 / SAR- GPS |
|--|---|---|

Schedule Details

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Planned SAR/GPS RFP Release | 4 | 2017 | 4 | 2017 |
| Planned SAR/GPS Contract Award | 1 | 2019 | 1 | 2019 |
| Planned SAR/GPS Payload Critical Design Review (CDR) | 1 | 2022 | 1 | 2022 |
| Planned SAR/GPS Engineering Design Unit (EDU) | 4 | 2021 | 4 | 2021 |
| Planned SAR/GPS Flight 1 (First Article) Payload | 4 | 2022 | 4 | 2022 |

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force **Date:** May 2017

| | | |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment | Project (Number/Name) 67A011 / Space Analysis and Application Development |
|--|---|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 67A011: <i>Space Analysis and Application Development</i> | 0.000 | 0.000 | 0.000 | 10.029 | 0.000 | 10.029 | 10.004 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note
This program, BA 07 PE 1203265F, project 67A011, M-Code Hosted Payload, is a new start.

A. Mission Description and Budget Item Justification

Space Analysis and Application Development M-Code Hosted Payload is an FY2018 New Start effort that will provide additional mission assurance through redundant systems not directly connected with the current US GPS satellite constellation. The feasibility studies and preliminary engineering analyses funded in this project will determine whether an initiative to host Global Positioning System (GPS) M-Code augmentation payloads on other satellite systems is practical and beneficial.

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

| | FY 2016 | FY 2017 | FY 2018 |
|---|---------|---------|---------|
| Title: M-Code Hosted Payload | - | - | 10.029 |
| Description: The initial studies will explore size, weight, and power (SWAP) requirements of potential payloads, the level of broadcast power as received on the ground, the needed modifications that will allow current and future GPS ground control systems to communicate with these payloads, and how best to upgrade GPS user equipment with minimal impact on cost and downtime to existing GPS users. The current program under investigation has both a challenging SWAP requirement and launch schedule, requiring immediate action by the US if it is to deliver a payload in time for integration into the host vehicles. | | | |
| FY 2018 Plans: Begin and/or continue initial feasibility study and preliminary engineering analysis, with the goal of a PDR-level design NLT 1QFY2019. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc. | | | |
| Accomplishments/Planned Programs Subtotals | - | - | 10.029 |

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

| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| • N/A: N/A | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - |

Remarks

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203265F / <i>GPS III Space Segment</i> | Project (Number/Name) 67A011 / <i>Space Analysis and Application Development</i> |

D. Acquisition Strategy
Hosted payload studies and engineering analysis to be conducted by GPS satellite vendors, as well as those involved with Increment 1 of the Military GPS User Equipment (MGUE) contract

E. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment | Project (Number/Name) 67A011 / Space Analysis and Application Development |
|--|---|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| M-Code Hosted Payload | TBD | TBD : El Segundo, CA | 0.000 | 0.000 | | 0.000 | | 8.729 | | 0.000 | | 8.729 | 8.504 | 17.233 | 17.233 |
| Subtotal | | | 0.000 | 0.000 | | 0.000 | | 8.729 | | 0.000 | | 8.729 | 8.504 | 17.233 | 17.233 |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | TBD | Various : Various | 0.000 | 0.000 | | 0.000 | | 1.300 | | 0.000 | | 1.300 | 1.500 | 2.800 | 2.800 |
| Subtotal | | | 0.000 | 0.000 | | 0.000 | | 1.300 | | 0.000 | | 1.300 | 1.500 | 2.800 | 2.800 |

| | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | Cost To Complete | Total Cost | Target Value of Contract | |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|------------------|------------|--------------------------|---|
| Project Cost Totals | | 0.000 | 0.000 | 0.000 | 10.029 | 0.000 | 10.029 | 10.004 | 20.033 | - |

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment | Project (Number/Name) 67A011 / Space Analysis and Application Development |

| FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 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 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------|------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Hosted Payload PDR-level design | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------|------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment | Project (Number/Name) 67A011 / Space Analysis and Application Development |

Schedule Details

| Events | Start | | End | |
|---------------------------------|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Hosted Payload PDR-level design | 1 | 2018 | 4 | 2019 |

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|--|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment | | | | Project (Number/Name) 67A019 / GPS III | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 67A019: GPS III | 2,791.461 | 146.112 | 177.893 | 232.082 | 0.000 | 232.082 | 116.350 | 42.759 | 10.861 | 7.349 | 40.618 | 3,565.485 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

GPS III is the next generation Space Vehicle (SV) supporting the GPS constellation and is funded in PE 1203265F. GPS III SVs will deliver significant enhancements, including a new civil (L1C) Galileo-compatible signal, enhanced anti-jam power, and a growth path to full warfighter capabilities. GPS III SV03-10 is in the Production & Deployment Phase.

RDT&E, AF PE 1203265F funds GPS III and supports research, development, test and evaluation of GPS III SV01-02 and risk-reducing simulators through a systems engineering approach that matures and delivers SVs for launch. This PE includes SV01-02 engineering studies and analyses, trade studies, system development, test and evaluation efforts, integrated logistics support products, on-orbit support, and mission operations support for civil and military applications that protect U.S. military and allied use of GPS. The program also includes Contingency Operations (COps) as a bridge capability to fly GPS III SVs until the Next Generation Operational Control System (OCX) delivery.

Space Modernization Initiative (SMI) focuses on space vehicle affordability and capability, addresses future requirements and resiliency needs, and expands the industrial base to enhance future competition. Phase 1 will address GPS Enterprise Analysis of Alternative (AoA) recommendations to increase GPS signal strength from space by maturing navigation payload technologies that include a new regional M-Code capability. The Air Force is using its research laboratories to mature an On-Orbit Reprogrammable Digital Waveform Generator (ORDWG) which will provide signal flexibility (to change the signal form while the satellite is on-orbit). This effort will be funded with Air Force Research Lab's Science & Technology (S&T) funding and PE 1203265F to increase the number of alternate navigation payloads.

Mission Readiness Campaign (MRC) activities include launch preparation, planning, mission readiness testing to validate space-ground-user interfaces, mission crew exercises and rehearsals, launch vehicle integration, and On-Orbit Checkout activities to validate performance prior to launch. Newly certified launch vehicles must be incorporated into the GPS III launch baseline. Integration requires the development of plans and procedures, and procurement of special support equipment.

The Global Positioning System (GPS) supports the early deployment of Global M-Code to meet congressional mandate limiting user equipment purchase to M-Code capable receivers starting in FY17. The funds will cover the M-Code Early Use (MCEU) program and support development costs associated with the GPS control segment software to provide core M-Code capabilities to the warfighter, as well as the ability to command and control, process, and monitor the M-Code signal. MCEU mitigates delays with the Next Generation Operational Control Segment (OCX), supports Military Global Positioning System User Equipment (MGUE) testing, and allows for early M-Code operations. M-Code provides greater security to protect navigation and timing in electronically contested environments.

Impacts of the M-Code deployment include:

- Compliance with AFSPC/CC mandate to provide global monitoring necessary for Early M-Code Operational Use and verification of Navigation Warfare (NAVWAR) effects.
- Direction to improve the resiliency of the GPS capability.
- Confirmation that Enterprise modernization efforts are integrated and deployed properly.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment | Project (Number/Name) 67A019 / GPS III |
|--|---|--|

- Testing and Verification of M-Code capability on MGUE/GPS III solution and early M-Code use tied to MGUE fielding

The feasibility studies and preliminary engineering analyses that are funded by this budget item will determine whether or not an initiative to host Global Positioning System (GPS) M-Code augmentation payloads on other satellite systems is practical and beneficial. The primary goal is to provide additional mission assurance through redundant systems not directly connected with the current US GPS satellite constellation.

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

| | FY 2016 | FY 2017 | FY 2018 |
|--|---------|---------|---------|
| <p>Title: GPS III SV01-02</p> <p>Description: Development, test and evaluation of two GPS III space vehicles and associated simulators, engineering studies and analyses, trade studies, system development, test and evaluation efforts, and integrated logistics support products.</p> <p>FY 2016 Accomplishments: Continued GPS III space vehicle development, SE&I, technical and program support. Completed SV01 post-environmental final system performance testing. Delivered SV02 Navigation Payload.</p> <p>FY 2017 Plans: Continue GPS III space vehicle development, SE&I, technical and program support. Begin SV02 Thermal Vacuum (TVAC) testing and perform qualification testing. Complete SV01 Available For Launch (AFL) activities. Begin Mission Readiness Campaign (MRC) for GPS III SV01. MRC events will initiate GPS III SV01-SV02 MRC activities which include launch preparation, planning, mission readiness testing to validate space-ground-user interfaces, mission crew exercises and rehearsals, launch vehicle integration, and On-Orbit Checkout activities to validate performance prior to launch. In addition, newly certified launch vehicles must be incorporated into the GPS III launch baseline. Integration requires the development of plans and procedures, and procurement of special support equipment.</p> <p>FY 2018 Plans: Continue GPS III space vehicle development, SE&I, systems engineering, integration support, EELV early and detailed integration, mission unique items to support launch activities, technical and program support of SV01-02. Complete SV02 Thermal Vacuum (TVAC) testing and all qualification testing. Complete SV02 Available For Launch (AFL) activities. Finalize MRC for GPS III SV01 and initiate MRC activities for SV02. MRC events will continue and complete GPS III SV01 and begin SV02 MRC activities which include launch preparation, planning, mission readiness testing to validate space-ground-user interfaces, mission crew exercises and rehearsals, launch vehicle integration, and On-Orbit Checkout activities to validate performance prior to launch. In addition, newly certified launch vehicles must continue incorporation into the GPS III launch baseline. Integration requires the development and refinement of plans and procedures, and procurement of special support equipment. Continue technical support for the launch processing facility at CCAFS. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.</p> | 101.277 | 93.377 | 82.165 |
| <p>Title: GPS III SV11+ (Production Readiness)</p> | 9.429 | 24.816 | 47.888 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment | Project (Number/Name) 67A019 / GPS III |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| <p>Description: USD(AT&L) approved the first phase of a two-phased GPS III SV acquisition strategy starting no earlier than SV11. The strategy utilizes FY 2015-2017 RDTE funding for the Phase 1 effort to mature three contractors' GPS III production designs. The Phase 1 Production Readiness Feasibility Assessment is providing data and insight into contractors GPS III Production Design with emphasis on a mature navigation payload and production-ready designs. Phase 1 requires contractors to provide a GPS III space vehicle and navigation payload production designs, manufacturing plans, and a navigation payload engineering brass board (hardware).</p> <p>FY 2016 Accomplishments: Released Phase 1 RFP in January 2016 and awarded three Phase 1 contracts in May 2016. Delivered Phase 1 navigation payload and initial production design and manufacturing plans (Preliminary Design Review (PDR)-level). Awarded On Orbit Reprogrammable Digital Waveform Generator (ORDWG) maturation contracts via AFRL to support SMI activities.</p> <p>FY 2017 Plans: Deliver Phase 1 space vehicle initial production design (PDR-level), navigation payload production design (Critical Design Review (CDR)-level) and engineering brass board (hardware) results. Exercise Phase 1 contract options, to continue navigation payload maturity. Continue ORDWG maturation via AFRL to support SMI activities. Explore further Phase 1 risk reduction opportunities to ensure a viable, production-ready, GPS III Follow-On competition in FY 2018. Release Phase 2 Request for Proposal (RFP).</p> <p>FY 2018 Plans: Complete Source Selection activities to award Phase 2 in FY2018, initiating design turn documentation efforts preparing for delta Critical Design Review (CDR) in FY 2019. Continue ORDWG maturation via AFRL to support SMI activities. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.</p> | | | |
| <p>Title: Contingency Operations (COps)</p> <p>Description: COps is a risk reduction activity to maintain constellation sustainment as prescribed by the GPS III Space Vehicle Acquisition Strategy the Next Generation GPS Operational Control System (OCX) will not deliver in time to support initial GPS III operations. COps adds to the existing Operational Control System (OCS) Architecture Evolution Plan (AEP) command, control, maneuver planning, re-programmability, navigation functionality, NDS support, and external interfaces for the GPS III Space Vehicle (SV). COps includes integrating GPS III SV simulation modules to the GPS System Simulator (GSS) and updates to the Positional Training Emulator (PTE).</p> <p>FY 2016 Accomplishments:</p> | 35.406 | 41.200 | 48.800 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment | Project (Number/Name) 67A019 / GPS III | | |
| B. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>Negotiated and awarded COps contract vehicle (2QFY 2016). Completed COps PDR, and began activities for CDR. Completed development laboratory set-up; began component integration Test planning; began GSS development and integration planning; completed GSS drawings. Obtained Milestone B approval (4QFY 2016).</p> <p>FY 2017 Plans: Complete Critical Design Review; begin code and unit testing; obtain initial Defense Security Service (DSS) certifications for the development laboratory; complete integration test planning, begin and complete 1 AEP sustainment software baseline merge; begin Factory Qualification Test (FQT) planning; begin TT&C, Navigation, and Software Infrastructure integration test; complete GSS hardware purchase, installation, and integration planning; start PTE development.</p> <p>FY 2018 Plans: Complete code and unit testing; complete Software integration testing: obtain final DSS certifications for the development laboratory; complete 2 AEP sustainment software baseline merges; complete Factory Qualification Test (FQT) risk reduction activities; complete GSS hardware purchase, installation, and integration; Start Development Test and Evaluation activities; continue PTE development and testing. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.</p> | | | | |
| <p>Title: Enterprise Ground Services (EGS)</p> <p>Description: Enterprise Ground Services (EGS) will provide a robust enterprise ground architecture for Air Force space systems, which leverages mission commonality and automation to reduce sustainment costs and re-focus manpower on warfighting capabilities. In addition, EGS will enable a near-real-time common operating picture of enterprise-wide tactical health, status, indications, and warnings for Air Force satellites. The end-state will be a modern technical infrastructure which is cyber-secure and resilient against the Advanced Persistent Threat and employs streamlined architecting, acquisition, and operational processes. Through early architecture studies and prototyping, the government will establish clear ownership of the technical baseline to meet Better Buying Power principles as the EGS effort evolves through development. This effort provides focus and expertise for the development, test, certification and enforcement of standards and interfaces for all AFSPC satellite ground systems to enable transition planning for legacy ground systems, new capability demonstrations, and systems acquisition leading to an enterprise ground architecture for Air Force space systems. In FY2018, this effort transfers to Space and Missile Test and Evaluation Center, PE 1203173F.</p> <p>FY 2016 Accomplishments: N/A</p> <p>FY 2017 Plans: Conduct developmental planning, mature technologies, and develop initial small-scale prototype capability for the enterprise ground architecture. Efforts in 2017 will include, but are not limited to, systems engineering, special studies, cybersecurity planning and implementation, standards and interface development and codification, integration and test efforts in support of</p> | | 0.000 | 7.500 | 0.000 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment | Project (Number/Name) 67A019 / GPS III |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| demonstrations, and operational architecture planning. In addition, this effort will build the technical and programmatic roadmap to enable a phased enterprise transition in the future. | | | |
| FY 2018 Plans: N/A | | | |
| Title: AEP M-Code Monitoring Description: The M-Code Early Use (MCEU) program initiative will cover the development costs associated with updating the legacy control segment software, AEP (Architectural Evolution Program), with additional capabilities needed to provide M-Code operations. MCEU will provide the Joint Space Operations Center (JSpOC) with command and control (C2), processing, and integrity monitoring for the M-Code signal. The development will also include the integration of modernized Monitor Station Technology Improvement Capability (MSTIC) receivers, which are being procured separately using O&M as a Form-Fit-Functional replacement for the legacy Monitor Station Receiver Element (MSRE) Y-Code receivers. MCEU will take those MSTIC receivers and add a software upgrade to allow it to process M-Code signals. | - | 11.000 | 53.229 |
| FY 2017 Plans: Efforts in 2017 will include, but are not limited to: contract award, development planning, systems engineering, standards and interface development, and architectural planning. | | | |
| FY 2018 Plans: Complete and deliver Modernized Monitoring Station Technology Improvement and Capability (M-MSTIC) receiver upgrade and begin integrating the receivers into the GPS enterprise. Continue program office operations and other related support activities that may include, but are not limited to studies, technical analysis, etc. | | | |
| Accomplishments/Planned Programs Subtotals | 146.112 | 177.893 | 232.082 |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
| • SPAF: BA01: Line Item # GPS III: GPS III | 198.370 | 34.059 | 85.894 | 0.000 | 85.894 | 783.805 | 796.375 | 779.683 | 1,131.497 | 7,395.744 | 11,205.427 |

Remarks

D. Acquisition Strategy
The GPS III next generation space segment rapidly and affordably responds to warfighter capability requirements. The acquisition approach utilizes a disciplined systems engineering approach which focuses on mitigating cost and schedule risk through a lower risk incremental delivery of mature technologies. This approach focuses on mission success and on time delivery. The GPS III SVs will have GPS IIF capabilities plus up to a 3x-8x increase in anti-jam signal power, 3x improved

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203265F / <i>GPS III Space Segment</i> | Project (Number/Name) 67A019 / <i>GPS III</i> |
|--|--|---|

accuracy, 3+ year increased design life, a new civil (L1C) signal compatible with the European Galileo system and a satellite bus capable of supporting future SV capability additions.

On 3 Jul 2015 USD(AT&L) approved the first phase of a two-phased GPS III SV acquisition strategy starting no earlier than SV11. The strategy utilizes FY2015-2017 RDTE funding for the Phase 1 effort to mature three contractors' GPS III production designs. The Phase 1 Production Readiness Feasibility Assessment is providing data and insight into contractors GPS III Production Design with emphasis on a mature navigation payload and production-ready designs. Phase 1 requires contractors to provide GPS III space vehicle and navigation payload production designs, manufacturing plans, and a navigation payload engineering brass board (hardware). The Air Force is using its research laboratories to mature an On-Orbit Reprogrammable Digital Waveform Generator which will provide signal flexibility (to change the signal form while the satellite is on-orbit). This effort will be funded with Air Force Research Lab's Science & Technology (S&T) funding and PE 1203265F to increase the number of alternate navigation payload awards.

On 19 Jul 2016 the PEO approved the Acquisition Strategy Document (ASD) for the COps effort. The strategy utilizes contingency constellation sustainment capability for GPS III Positioning, Navigation, and Timing (PNT). GPS III COps is needed because the GPS Next Generation Operational Control System (OCX) will not deliver in time to support initial GPS III Space Vehicle operations. COps operates (post-launch and check-out) GPS III SVs at the capability level of GPS IIR-M or GPS IIF using the existing Architecture Evolution Plan (AEP) control segment.

On 21 Jan 2017, the PEO approved the ASD for the M-Code Early Use (MCEU) program. The MCEU acquisition strategy, when executed, will enable the GPS Enterprise to provide core M-Code capabilities to the warfighter prior to OCX delivery. MCEU will also support the scheduled operational testing of Military GPS User Equipment (MGUE). MCEU will update the GPS control segment software, AEP, to allow for command and control, processing, and integrity monitoring of the M-Code signal. MCEU will acquire this capability by using the existing GPS III prime contract vehicle to modify the operational AEP software.

HQ USAF/A5R approved reinstatement of a previously deferred KSA on 10 Feb 2016. The MSTIC receivers currently under development will get a software upgrade to process M-Code data. This \$7.96M project to procure the M-MSTIC receivers is being funded through 3400 funds in FY16-FY18. Performance monitoring, integration and test will be conducted by M-Code Early Use program and sustained under the GPL Lockheed Martin Contract. Funding is sent through a Form-9 from DoD to Lockheed Martin.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

| | | |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment | Project (Number/Name) 67A019 / GPS III |
|--|---|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| GPS III Development | C/CPIF | Lockheed Martin : Denver, CO | 2,443.810 | 65.244 | Dec 2015 | 33.824 | Dec 2016 | 24.005 | Dec 2017 | 0.000 | | 24.005 | 55.812 | 2,622.695 | 2,622.695 |
| GPS III Development _ 11+ | TBD | TBD : TBD, CA | 5.000 | 6.029 | May 2016 | 0.000 | May 2017 | 10.000 | May 2018 | 0.000 | | 10.000 | 35.000 | 56.029 | 436.701 |
| GPS III Development_ COps | C/CPIF | Lockheed Martin : Denver, CO | 0.856 | 31.462 | Feb 2016 | 32.702 | Feb 2017 | 42.874 | Feb 2018 | 0.000 | | 42.874 | 26.941 | 134.835 | 136.827 |
| GPS III Development_MCEU | C/CPIF | Lockheed Martin : Denver, CO | 0.000 | 0.000 | | 9.487 | Jun 2017 | 49.533 | Oct 2017 | 0.000 | | 49.533 | 51.157 | 110.177 | 120.000 |
| GPS III Technical Mission Analysis | MIPR | Various : Various | 1.884 | 7.600 | Oct 2015 | 14.053 | Oct 2016 | 27.923 | Oct 2017 | 0.000 | | 27.923 | 5.310 | 56.770 | 84.160 |
| GPS III Enterprise SE&I | C/CPAF | TASC : El Segundo, CA | 77.461 | 8.533 | Nov 2015 | 4.287 | Nov 2016 | 4.800 | Nov 2017 | 0.000 | | 4.800 | 8.099 | 103.180 | 132.760 |
| GPS III Launch Support | RO | 45th : Cape Canaveral, FL | 18.538 | 2.975 | Mar 2016 | 32.059 | Mar 2017 | 37.974 | Mar 2018 | 0.000 | | 37.974 | 42.028 | 133.574 | - |
| GPS III Production Readiness/SMI | C/CPAF | TBD : TBD | 15.000 | 3.400 | Feb 2016 | 17.306 | Feb 2017 | 9.156 | Feb 2018 | 0.000 | | 9.156 | 0.000 | 44.862 | 44.862 |
| GPS III Enterprise Ground Service | C/CPAF | TBD : TBD | 0.000 | 0.000 | | 7.500 | Jan 2017 | 0.000 | | 0.000 | | 0.000 | 0.000 | 7.500 | 7.500 |
| Subtotal | | | 2,562.549 | 125.243 | | 151.218 | | 206.265 | | 0.000 | | 206.265 | 224.347 | 3,269.622 | - |

Remarks
GPS III SV11+ Phase 1 Production Readiness Feasibility Assessment contracts awarded to Lockheed Martin Space Systems Corp (Littleton, CO), Northrop Grumman Aerospace Systems Corp (Redondo Beach, CA), and Boeing Aerospace Corp (El Segundo, CA). Air Force Research Laboratory (AFRL) contracts for On-Orbit Reprogrammable Digital Waveform Generator (ORDWG) supporting GPS III SMI activities awarded to Northrop Grumman Aerospace Systems Corp (Redondo Beach, CA), Boeing Aerospace Corp (El Segundo, CA), and General Dynamics Mission Systems Corp (Scottsdale, AZ).

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

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Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force **Date:** May 2017

| | | |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment | Project (Number/Name) 67A019 / GPS III |
|--|---|--|

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| GPS III SV01 Available for Launch | | | | | | | | ■ | | | | | | | | | | | | | | | | | | | | |
| GPS III SV02 Available for Launch | | | | | | | | | | | | ■ | | | | | | | | | | | | | | | | |
| GPS III SV11+ Phase 2 Acquisition Decision | | | | | | | | ■ | | | | | | | | | | | | | | | | | | | | |
| GPS III SV11+ Phase 2 Request for Proposal Release | | | | | | | | ■ | | | | | | | | | | | | | | | | | | | | |
| GPS III SV11+ Phase 2 Contract Award | | | | | | | | | | | | ■ | | | | | | | | | | | | | | | | |
| GPS III SV11+ Phase 2 Delta CDR (If required) | | | | | | | | | | | | | | | | ■ | | | | | | | | | | | | |
| COps Pre-Milestone B | | | | ■ | | | | | | | | | | | | | | | | | | | | | | | | |
| COps Critical Design Review (CDR) | | | | | | | | ■ | | | | | | | | | | | | | | | | | | | | |
| COps Formal Qualification Test Readiness Review (FQT TRR) | | | | | | | | | | | | ■ | | | | | | | | | | | | | | | | |
| COps Milestone C | | | | | | | | | | | | | | | | ■ | | | | | | | | | | | | |
| COps Ready to Operate | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Automated M-Code Test | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Core M-Code on OCX | | | | | | | | | | | | | | | | | | | | | | | | | | | | ■ |
| Deployment of full M-Code on OCX | | | | | | | | | | | | | | | | | | | | | | | | | | | | ■ |

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203265F / GPS III Space Segment | Project (Number/Name) 67A019 / GPS III |
|--|---|--|

Schedule Details

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| GPS III SV01 Available for Launch | 4 | 2017 | 4 | 2017 |
| GPS III SV02 Available for Launch | 2 | 2018 | 2 | 2018 |
| GPS III SV11+ Phase 2 Acquisition Decision | 4 | 2017 | 4 | 2017 |
| GPS III SV11+ Phase 2 Request for Proposal Release | 4 | 2017 | 4 | 2017 |
| GPS III SV11+ Phase 2 Contract Award | 4 | 2018 | 4 | 2018 |
| GPS III SV11+ Phase 2 Delta CDR (If required) | 1 | 2019 | 4 | 2019 |
| COps Pre-Milestone B | 4 | 2016 | 4 | 2016 |
| COps Critical Design Review (CDR) | 1 | 2017 | 1 | 2017 |
| COps Formal Qualification Test Readiness Review (FQT TRR) | 3 | 2018 | 3 | 2018 |
| COps Milestone C | 2 | 2019 | 2 | 2019 |
| COps Ready to Operate | 3 | 2019 | 3 | 2019 |
| Automated M-Code Test | 4 | 2019 | 1 | 2020 |
| Core M-Code on OCX | 4 | 2021 | 4 | 2021 |
| Deployment of full M-Code on OCX | 4 | 2022 | 4 | 2022 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203400F / <i>Space Superiority Intelligence</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 13.965 | 13.880 | 12.691 | 0.000 | 12.691 | 12.900 | 13.140 | 13.368 | 13.642 | Continuing | Continuing |
| 67A051: <i>Space Superiority - Advanced Intelligence Systems</i> | - | 13.965 | 13.880 | 12.691 | 0.000 | 12.691 | 12.900 | 13.140 | 13.368 | 13.642 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note

In FY2018, PE 0301400F, Space Superiority Intelligence efforts were transferred to PE 1203400F, Space Superiority Intelligence due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203400F.

A. Mission Description and Budget Item Justification

Provides Electronic Support (ES) for key find, fix, track, target, engage and assess (F2T2EA) requirements supporting Space Superiority activities. Funds developmental intelligence collection to support new capability acquisition and development. This project also funds transportable intelligence collection and analysis capabilities that are modular (plug-and-play), and can keep pace with technological advances and emerging threats. It provides intelligence support systems for Space Situational Awareness activities that provide the requisite current and predictive knowledge of space events and threat conditions and intelligence support to Space Protection Programs by providing architectural survivability analysis of critical mission assets for mission assurance. It also supports phased threat system analysis and studies (A&S), test support, lab equipment, and Material Acquisition and Exploitation (MAE) for system development and vulnerability/susceptibility assessments to support tactics, techniques and procedures (TTP) development and future threat technology studies necessary for mission area success and achievement of space superiority, and to preserve the US space advantage across all domains.

This program is in Budget Activity 7, Operational System Development, because it includes development efforts to upgrade systems that have been fielded.

| B. Program Change Summary (\$ in Millions) | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|---|-----------------------|-----------------------|----------------------------|---------------------------|-----------------------------|
| Previous President's Budget | 12.315 | 13.880 | 14.100 | 0.000 | 14.100 |
| Current President's Budget | 13.965 | 13.880 | 12.691 | 0.000 | 12.691 |
| Total Adjustments | 1.650 | 0.000 | -1.409 | 0.000 | -1.409 |
| • 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 | 1.650 | 0.000 | | | |
| • SBIR/STTR Transfer | 0.000 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | -1.409 | 0.000 | -1.409 |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | | R-1 Program Element (Number/Name) PE 1203400F / <i>Space Superiority Intelligence</i> | | |
| <p>Change Summary Explanation FY 2016: \$1.650M increase to support the development of the Missile Defeat Enterprise, conducted by the National Air and Space Intelligence Center.</p> <p>FY 2018: -\$1.409M for higher Air Force priorities</p> | | | | |
| C. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>Title: Advanced Intelligence Systems for Space Superiority</p> <p>Description: Develops transportable and fixed collection and analysis capability.</p> <p>FY 2016 Accomplishments: Supported Space Superiority RDT&E activities by developing, integrating, and fielding enhanced Space Control, Space Situational Awareness, and Space Protection Program capabilities. Integrated new technologies into transportable and fixed collection capabilities to improve data analysis, product development, deployment and testing activity support.</p> <p>FY 2017 Plans: Will continue to support Space Superiority RDT&E activities to include developing new platforms and modernizing fixed site infrastructure to support mission expansion. Will develop new methods to rapidly deliver actionable intelligence to support mission expansion and new capability development within the space control arena. Will expand fixed collection and analysis capabilities to correct identified space superiority intelligence shortfalls.</p> <p>FY 2018 Plans: Will begin Space Superiority RDT&E through transformation of collection and production activities by developing an intelligence architecture capable of front-end collection and analysis of new technologies in near real-time. This capability will be expanded across the Special Missions Enterprise to allow access to sensitive information from each point of presence providing production analysts the ability to rapidly exploit known vulnerabilities and develop new capabilities to counter adversary technological advances.</p> | | 12.315 | 13.880 | 12.691 |
| <p>Title: Missile Defeat Intelligence</p> <p>Description: Congressional Special Interest Item to support the development of the Missile Defeat Enterprise, conducted by the National Air and Space Intelligence Center</p> <p>FY 2016 Accomplishments: Funded development of Missile Defeat Enterprise to improve national response to specific threats through integration of Department of Defense and Intelligence Community efforts.</p> <p>FY 2017 Plans:</p> | | 1.650 | 0.000 | 0.000 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203400F / <i>Space Superiority Intelligence</i> |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| NA | | | |
| FY 2018 Plans: | | | |
| NA | | | |
| Accomplishments/Planned Programs Subtotals | 13.965 | 13.880 | 12.691 |

| D. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| • None: <i>None</i> | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Remarks

E. Acquisition Strategy

All contracts funded in this program will be awarded using competitive procedures to the maximum extent possible.

Space Superiority and R&D Intelligence Development: Single Delivery, CPFF, advisory and assistance contractor supporting development efforts. Prime contractor is Macaulay-Brown.

Architecture upgrades to SSA, SPP, and Space Superiority: Multiple Delivery, CPFF integration contract. Prime contractor is BITSYSTEMS Data Analysis

Production development for R&D: Multiple Delivery, CPFF production contract supporting vulnerabilities analysis. Prime Contractor is Booz-Allen Hamilton Intelligence systems

Testing and data collection: Multiple Delivery, CPFF production contract providing independent validation and verification of new capability development. Prime contractor is Booz-Allen Hamilton.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203400F / <i>Space Superiority Intelligence</i> | Project (Number/Name) 67A051 / <i>Space Superiority - Advanced Intelligence Systems</i> |
|--|---|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Space Superiority and R&D intelligence Development | Various | Various : TBD | - | 2.705 | Nov 2015 | 3.250 | Nov 2016 | 2.750 | | 0.000 | | 2.750 | Continuing | Continuing | - |
| Architecture upgrades to SSA, SPP, and Space Superiority | Various | Various : TBD | - | 4.302 | Nov 2015 | 5.061 | Nov 2016 | 4.550 | | 0.000 | | 4.550 | Continuing | Continuing | - |
| Data analysis and product development for R&D | Various | Various : TBD | - | 4.050 | Nov 2015 | 4.150 | Nov 2016 | 4.100 | | 0.000 | | 4.100 | Continuing | Continuing | - |
| Intelligence systems testing and data collection | Various | Various : TBD | - | 0.460 | Nov 2015 | 0.600 | Nov 2016 | 0.500 | | 0.000 | | 0.500 | Continuing | Continuing | - |
| Missile Defeat Enterprise Development | Various | Various : TBD | - | 1.650 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Subtotal | | | - | 13.167 | | 13.061 | | 11.900 | | 0.000 | | 11.900 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | Various | Various : TBD | - | 0.798 | | 0.819 | | 0.791 | | 0.000 | | 0.791 | Continuing | Continuing | - |

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203400F / <i>Space Superiority Intelligence</i> | Project (Number/Name) 67A051 / <i>Space Superiority - Advanced Intelligence Systems</i> |

| FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 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 |

| | |
|--|--|
| Architecture upgrade for SSA, SPP, and Space Superiority | |
| | |
| | |
| Data analysis and product development for R&D intelligence | |
| | |
| | |
| Deployment for testing and data collection | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203400F / <i>Space Superiority Intelligence</i> | Project (Number/Name) 67A051 / <i>Space Superiority - Advanced Intelligence Systems</i> |

Schedule Details

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Architecture upgrade for SSA, SPP, and Space Superiority | 1 | 2016 | 4 | 2022 |
| Data analysis and product development for R&D intelligence | 1 | 2016 | 4 | 2022 |
| Deployment for testing and data collection | 1 | 2016 | 4 | 2022 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | 0.000 | 80.669 | 87.889 | 99.455 | 0.000 | 99.455 | 93.206 | 66.771 | 69.415 | 70.835 | Continuing | Continuing |
| 67A030: <i>Infrastructure</i> | 0.000 | 30.018 | 27.526 | 28.030 | 0.000 | 28.030 | 12.005 | 0.000 | 0.000 | 0.000 | 0.000 | 97.579 |
| 67A031: <i>Mission Applications</i> | 0.000 | 38.270 | 20.496 | 15.595 | 0.000 | 15.595 | 11.806 | 0.000 | 0.000 | 0.000 | 0.000 | 86.167 |
| 67A035: <i>Enterprise Space BMC2</i> | 0.000 | 12.381 | 39.867 | 55.830 | 0.000 | 55.830 | 69.395 | 66.771 | 69.415 | 70.835 | Continuing | Continuing |

Program MDAP/MAIS Code: N82

Note

In FY2018, PE 0305614F, JSpOC Mission System efforts were transferred to PE 1203614F, JSpOC Mission System due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203614F.

A. Mission Description and Budget Item Justification

The Joint Space Operations Center (JSpOC) Mission System (JMS) Program is a Space Command and Control (C2) capability for the Commander, Joint Functional Component Commander for Space (JFCC SPACE). The JMS program is predominately a software effort that will produce an integrated, net-centric Service Oriented Architecture (SOA) and the necessary software applications to accomplish required missions. The program will provide a collaborative environment that will enhance and modernize space situational awareness (SSA) capabilities; create decision-relevant views of the space environment; rapidly detect, track and characterize objects of interest; identify / exploit traditional and non-traditional sources; perform space threat analysis; and enable efficient distribution of data across the Space Surveillance Network (SSN). Furthermore, it provides a viable migration path from the legacy Space Defense Operations Center (SPADOC) system, which has 75% of its components beyond end of life or end of service, and the majority of its software is no longer vendor-supported. Enterprise Space BMC2 (previously JMS Increment 3) will provide a Battle Management Command & Control (BMC2) system which will allow the Commander, JFCC-Space to command and control space forces in the space control and space situational awareness realms. This system will develop and integrate battle management mission applications, create an interactive modeling and simulation environment to support training and exercises, provide for secure data sharing and workflow, and Course of Action (COA) development. Funding includes technical studies, development, experimentation, integration and related support costs.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203614F / <i>JSpOC Mission System</i> |
|--|---|

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 80.669 | 72.889 | 62.799 | 0.000 | 62.799 |
| Current President's Budget | 80.669 | 87.889 | 99.455 | 0.000 | 99.455 |
| Total Adjustments | 0.000 | 15.000 | 36.656 | 0.000 | 36.656 |
| • 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 | 15.000 | 36.656 | 0.000 | 36.656 |

Change Summary Explanation

FY 2017: \$15.000M FY2017 Request for Additional Appropriations to fund Enterprise Space BMC2

FY 2018: \$36.646M increase due to funding realignment to support Increment 2 schedule slip.

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| | | | | | | | | | | | | |
|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|---|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System | | | | Project (Number/Name) 67A030 / Infrastructure | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 67A030: Infrastructure | 0.000 | 30.018 | 27.526 | 28.030 | 0.000 | 28.030 | 12.005 | 0.000 | 0.000 | 0.000 | 0.000 | 97.579 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

Infrastructure provides a Service Oriented Architecture (SOA), net-centric collaborative information environment at the Unclassified, Secret, and TS/SCI levels. Efforts incorporate net-centric enterprise services and integrating incremental space mission applications services. Priority is migration off the legacy SPADOC hardware and services into a sustainable infrastructure. Effort integrates components of SSA mission applications and C2 capabilities into the JSpOC to create timely, actionable knowledge necessary for maintaining space superiority and exercising command and control of space forces.

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

| | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Title: Increment 2 | 30.018 | 27.526 | 28.030 |
| Description: Pursues and integrates a collaborative net-centric, SOA information environment. | | | |
| FY 2016 Accomplishments: Continued testing of SP-9 and development/integration of SP-11. Continued to develop JMS Standard Space Trainer. | | | |
| FY 2017 Plans: Complete testing of SP-9 and development/integration of SP-11. Update Standard Space Trainer with SP-11 capabilities and develop capability to net-centrally expose intelligence data and non-traditional data sources. | | | |
| FY 2018 Plans: Execute testing for SP-11 to include content accelerated from SP-13 and complete Standard Space Trainer. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc. | | | |
| Accomplishments/Planned Programs Subtotals | 30.018 | 27.526 | 28.030 |

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

| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| • SPAF: BA01: Line Item # 836790: Space Mods Space | 0.000 | 0.000 | 3.850 | 0.000 | 3.850 | 20.533 | 12.471 | 12.695 | 12.956 | 134.274 | 196.779 |

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| | |
|---|-----------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | Date: May 2017 |
|---|-----------------------|

| | | |
|--|--|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System | Project (Number/Name) 67A030 / Infrastructure |
|--|--|---|

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

| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
|------------------|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|

Remarks
Replaces JMS components and provides an operational, sustainable environment to maintain capabilities that fuse data from space intelligence, surveillance, reconnaissance, and environmental sources. This modification will procure commercial hardware, software licenses, and warranties to upgrade the operational environment enclaves (2 Secret / 2 TS/SCI), as well as keep up to date development/operational testing locations.

D. Acquisition Strategy

The JMS overarching Acquisition Strategy, approved by the Milestone Decision Authority on 15 April 2012, provides for a multi-increment program to develop, integrate, test, and deliver JMS capability. The acquisition strategy reflects new principles that address the speed, agility, and adaptability required for successful IT acquisition resulting in a tailored incremental acquisition approach to deliver early and often by leveraging mature industry capabilities and taking advantage of previous Government investments in Federally Funded Research and Development Center (FFRDC) and Government lab prototyping efforts.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

| | | |
|--|--|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System | Project (Number/Name) 67A030 / Infrastructure |
|--|--|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| SOA, Infrastructure and core service development | Various | Various : Various | 0.000 | 6.744 | Dec 2015 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 12.005 | 18.749 | 18.782 |
| High-performance computing and security infrastructure development | Various | Various : Various | 0.000 | 2.031 | Dec 2015 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 2.031 | 2.593 |
| Government Capability Providers | Various | Various : Various | 0.000 | 0.000 | | 1.178 | Dec 2016 | 0.000 | | 0.000 | | 0.000 | 0.000 | 1.178 | 1.575 |
| JMS Enterprise SEI | Various | Various : Various | 0.000 | 0.000 | | 22.618 | Nov 2016 | 25.300 | Nov 2017 | 0.000 | | 25.300 | 0.000 | 47.918 | 45.784 |
| Mission Infrastructure | Various | Various : Various | 0.000 | 8.050 | Nov 2015 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 8.050 | 10.256 |
| Net-Centric Sensors and Data Sources | Various | Various : Various | 0.000 | 0.835 | Nov 2015 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.835 | 0.642 |
| Standard Space Trainer | C/TBD | Sonalyt : Colorado Springs, CO | 0.000 | 2.150 | Nov 2015 | 1.000 | Nov 2016 | 0.100 | Nov 2017 | 0.000 | | 0.100 | 0.000 | 3.250 | 4.425 |
| Integration & Acq Logistics | Various | SPAWAR : San Diego, CA | 0.000 | 7.504 | Nov 2015 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 7.504 | 13.623 |
| Subtotal | | | 0.000 | 27.314 | | 24.796 | | 25.400 | | 0.000 | | 25.400 | 12.005 | 89.515 | 97.680 |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force **Date:** May 2017

| | | |
|--|--|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System | Project (Number/Name) 67A030 / Infrastructure |
|--|--|---|

Schedule Details

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Commerical Software Operation Licenses (Nov 2015) | 1 | 2016 | 1 | 2016 |
| Service Pack 9 Development and Delivery | 1 | 2016 | 4 | 2017 |
| Service Pack 11 Development and Delivery | 1 | 2016 | 3 | 2019 |
| Inc 2 Full Deployment Decision (FDD) | 3 | 2019 | 3 | 2019 |

Note

Continue testing of SP-9 and development/integration of SP-11. Develop JMS Standard Space Trainer.

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force **Date:** May 2017

| | | | | | | | | | | | | |
|--|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|---|----------------|-------------------------|-------------------|
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System | | | | Project (Number/Name) 67A031 / Mission Applications | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 67A031: Mission Applications | 0.000 | 38.270 | 20.496 | 15.595 | 0.000 | 15.595 | 11.806 | 0.000 | 0.000 | 0.000 | 0.000 | 86.167 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

Mission applications provides space services to enhance the accuracy, sustainability, and responsiveness of space surveillance capabilities by providing the knowledge environment necessary to enable the Commander JFCC Space to make rapid, responsive decisions for the protection of space assets from proliferating threats (adversary as well as orbiting debris). The system provides a high accuracy space catalog (knowledge of space objects), increased observation verification and capabilities, and improved event processing. Research, development, and system design provides SSA space catalog applications, services, space surveillance observation processing, and sensor tasking. Funding includes technical studies, development, and integration.

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

| | FY 2016 | FY 2017 | FY 2018 |
|---|---------|---------|---------|
| Title: Increment 2 | 38.270 | 20.496 | 15.595 |
| Description: Services/mission applications to conduct space control/situational awareness. | | | |
| FY 2016 Accomplishments: Continued development, testing and fielding of commercial software, capabilities for Space Event Processing and other operator tools. | | | |
| FY 2017 Plans: Complete testing and fielding of commercial software for event processing functions, complete integration of exercise/training capabilities and software management tools. | | | |
| FY 2018 Plans: Integrate and test commercial software supporting test, training and exercises as well as software management tools. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc. | | | |
| Accomplishments/Planned Programs Subtotals | 38.270 | 20.496 | 15.595 |

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

| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| • SPAF: BA01: Line Item #836790: Space Mods Space | 0.000 | 0.000 | 3.850 | 0.000 | 3.850 | 20.533 | 12.471 | 12.695 | 12.956 | 134.274 | 196.779 |

Remarks

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force Date: May 2017

| | | |
|--|---|--|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203614F / <i>JSpOC Mission System</i> | Project (Number/Name) 67A031 / <i>Mission Applications</i> |
|--|---|--|

D. Acquisition Strategy

The JMS overarching Acquisition Strategy, approved by the Milestone Decision Authority on 15 Apr 2012, provides for a multi-increment program to develop, integrate, test, and deliver JMS capability. The acquisition strategy reflects new principles that address the speed, agility, and adaptability required for successful IT acquisition resulting in a tailored incremental acquisition approach to deliver early and often by leveraging mature industry capabilities and taking advantage of previous Government investments in Federally Funded Research and Development Center (FFRDC) and Government lab prototyping efforts.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

| | | |
|--|--|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System | Project (Number/Name) 67A031 / Mission Applications |
|--|--|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Mission applications and service pack content development | Various | Various : Various | 0.000 | 14.833 | Dec 2015 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 14.833 | 5.845 |
| JMS Enterprise SEI | Various | Various : Various | 0.000 | 0.000 | | 6.575 | Nov 2016 | 2.660 | Jan 2017 | 0.000 | | 2.660 | 0.000 | 9.235 | 9.235 |
| Technical Mission Analysis (WS) | Various | Various : Various | 0.000 | 1.152 | Nov 2015 | 1.302 | Nov 2016 | 0.400 | Nov 2016 | 0.000 | | 0.400 | 0.000 | 2.854 | 11.094 |
| COTS hardware, software purchase and engineering support | Various | Various : Various | 0.000 | 13.965 | Nov 2015 | 5.556 | Nov 2016 | 6.788 | Oct 2016 | 0.000 | | 6.788 | 0.000 | 26.309 | 27.923 |
| Subtotal | | | 0.000 | 29.950 | | 13.433 | | 9.848 | | 0.000 | | 9.848 | 0.000 | 53.231 | 54.097 |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Support Costs | Various | Various : Various | 0.000 | 0.361 | Nov 2015 | 0.372 | Nov 2016 | 0.300 | Nov 2016 | 0.000 | | 0.300 | 0.000 | 1.033 | 1.033 |
| Subtotal | | | 0.000 | 0.361 | | 0.372 | | 0.300 | | 0.000 | | 0.300 | 0.000 | 1.033 | 1.033 |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Combined Developmental Test / Operational Test | Various | Various : Various | 0.000 | 2.300 | Nov 2015 | 2.300 | Nov 2016 | 2.300 | Dec 2016 | 0.000 | | 2.300 | 0.000 | 6.900 | 6.157 |
| Combined Test Facility | Various | Various : Various | 0.000 | 1.623 | Nov 2015 | 1.207 | Nov 2016 | 1.210 | Dec 2016 | 0.000 | | 1.210 | 0.000 | 4.040 | 4.473 |
| Subtotal | | | 0.000 | 3.923 | | 3.507 | | 3.510 | | 0.000 | | 3.510 | 0.000 | 10.940 | 10.630 |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | Various | Various : Various | 0.000 | 2.912 | Dec 2015 | 1.685 | Dec 2016 | 1.337 | Nov 2016 | 0.000 | | 1.337 | 0.000 | 5.934 | 3.338 |

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force **Date:** May 2017

| | | |
|--|---|--|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203614F / <i>JSpOC Mission System</i> | Project (Number/Name) 67A031 / <i>Mission Applications</i> |
|--|---|--|

Schedule Details

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Commerical Software Operation Licenses (Nov 2015) | 1 | 2016 | 1 | 2016 |
| Service Pack 9 Development and Delivery | 1 | 2016 | 4 | 2017 |
| Service Pack 11 Development and Delivery | 1 | 2016 | 3 | 2019 |
| Increment 2 FDD | 3 | 2019 | 3 | 2019 |

Note

Continue testing of SP-9 and development/integration of SP-11. Develop JMS Standard Space Trainer.

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| | | | | | | | | | | | | |
|---|--------------------|----------------|----------------|---------------------|--|----------------------|----------------|----------------|--|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System | | | | Project (Number/Name) 67A035 / Enterprise Space BMC2 | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 67A035: Enterprise Space BMC2 | 0.000 | 12.381 | 39.867 | 55.830 | 0.000 | 55.830 | 69.395 | 66.771 | 69.415 | 70.835 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

Enterprise Space BMC2 (previously JMS Increment 3) will provide a Battle Management Command & Control (BMC2) System that allows JFCC Space to meet emerging threats. This system will develop and integrate mission applications which include, but are not limited to, providing the ability to aggregate intelligence data from various user-defined sources and automatically generating alerts, provide an integrated operating picture for radio frequency spectrum inputs, and create an interactive modeling and simulation environment to support training and exercises, collaborative data sharing, and Course of Action (COA) development and assessment. Funding includes technical studies, development, experimentation, integration and related support costs.

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

| | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Title: Enterprise Space BMC2 | 12.381 | 39.867 | 55.830 |
| Description: Services/mission applications to deliver a robust, responsive BMC2 capability to meet emerging threats. Completion of Enterprise Space BMC2 (previously JMS Increment 3) will deliver a system which provides critical margin of excellence for decision makers trying to prevent a conflict from extending to space, or winning it if it does. | | | |
| FY 2016 Accomplishments: Began systems engineering, design, and integration market research. Executed risk reduction with Joint Emergent Operational Need (JEON) ST-0006 to continue requirements refinement and program planning for Enterprise Space BMC2 (previously JMS Increment 3). Conducted technical maturation studies and risk reduction efforts to enable migration from catalog maintenance to predictive battle management and improved integration planning for intelligence and sensor data. Performed market research and data calls to determine existing capabilities that can be integrated into JMS to meet BMC2 objectives. Identified low tech maturity areas and mitigate program risk and include early prototyping. | | | |
| FY 2017 Plans: Mature requirements to support Enterprise Space BMC2, continue systems engineering and program planning. Conduct developmental planning efforts to migrate from catalog maintenance of space to predictive battle management and conduct integration of intelligence and sensor data. Perform market research and data calls and developmental planning contracts to determine existing capabilities that can meet ESBMC2 objectives. Initial Design, Build, and test will commence leveraging Government capabilities, industry capabilities and commercially available capabilities in order to understand and then mature Technology Readiness Levels (TRL). FY17 investments will develop prototypes to support experiments which will inform TTPs and CONOPS while revising or confirming requirements. | | | |
| FY 2018 Plans: | | | |

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force **Date:** May 2017

| | | |
|--|--|--|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System | Project (Number/Name) 67A035 / Enterprise Space BMC2 |
|--|--|--|

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|---------|---------|---------|
| Continue developmental planning and contracting efforts to include contract awards from program support, systems engineering, design, technical maturation and risk reduction, prototyping and integration of Enterprise Space BMC2 commercial and government capabilities. Systems Engineering Enterprise Management will build roadmaps for BMC2 efforts including AFRCO, JEON and BMC2 prototypes. Contract for comprehensive system development and initial integration with government/commercial provider(s). Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, systems engineering, design, capability development, prototype development and integration, experimentation, program integration, support to residual capabilities and software integration. | | | |
| Accomplishments/Planned Programs Subtotals | 12.381 | 39.867 | 55.830 |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
| • N/A: N/A | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - |

Remarks

D. Acquisition Strategy
 The Air Force is in developmental planning for the Enterprise Space BMC2 (previously JMS Increment 3) acquisition strategy. Increments 1 and 2 used a government-as-an-integrator model with the Navy's SPAWAR Systems Center leading those efforts. The program developed and incrementally delivered service packs into operations. The Enterprise Space BMC2 (previously JMS Increment 3) strategy will focus on rapidly delivering capability to warfighters, leveraging commercial and government prototypes, followed by a sustained comprehensive system delivery.

E. Performance Metrics
 Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

| | | |
|--|--|--|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System | Project (Number/Name) 67A035 / Enterprise Space BMC2 |
|--|--|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| BMC2 Tools | Various | Various : Various | 0.000 | 0.000 | | 17.659 | Jun 2017 | 15.504 | Nov 2017 | 0.000 | | 15.504 | Continuing | Continuing | - |
| Government Capability Development | Various | Various : Various | 0.000 | 3.204 | Apr 2016 | 12.821 | Jun 2017 | 12.400 | Nov 2017 | 0.000 | | 12.400 | Continuing | Continuing | - |
| Integration | Various | Various : Various | 0.000 | 0.000 | | 0.000 | | 17.700 | Jan 2108 | 0.000 | | 17.700 | Continuing | Continuing | - |
| Enterprise Systems Engineering & Integration | Various | Various : Various | 0.000 | 3.633 | Apr 2016 | 5.175 | Jun 2017 | 3.200 | Oct 2017 | 0.000 | | 3.200 | Continuing | Continuing | - |
| Technical Mission Analysis (WS) | Various | Various : Various | 0.000 | 0.000 | | 0.000 | | 0.584 | Oct 2017 | 0.000 | | 0.584 | Continuing | Continuing | - |
| Subtotal | | | 0.000 | 6.837 | | 35.655 | | 49.388 | | 0.000 | | 49.388 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | Various | Various : Various | 0.000 | 2.494 | Apr 2016 | 3.572 | Jun 2017 | 5.585 | Nov 2017 | 0.000 | | 5.585 | Continuing | Continuing | - |
| FFRDC | Various | Various : Various | 0.000 | 3.000 | Apr 2016 | 0.570 | Jan 1901 | 0.752 | Oct 2017 | 0.000 | | 0.752 | Continuing | Continuing | - |
| Other Support | Various | Various : Various | 0.000 | 0.050 | Apr 2016 | 0.070 | Jun 2017 | 0.105 | Oct 2017 | 0.000 | | 0.105 | Continuing | Continuing | - |
| Subtotal | | | 0.000 | 5.544 | | 4.212 | | 6.442 | | 0.000 | | 6.442 | - | - | - |

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force **Date:** May 2017

| | | |
|--|--|--|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203614F / JSpOC Mission System | Project (Number/Name) 67A035 / Enterprise Space BMC2 |
|--|--|--|

Schedule Details

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Milestone A | 2 | 2018 | 2 | 2018 |
| Tech Exploration, Maturation & Risk Reduction | 2 | 2017 | 2 | 2018 |
| Systems Engineering/Design Effort | 3 | 2016 | 2 | 2019 |
| Prototyping & Experimentation | 4 | 2017 | 4 | 2022 |
| Development/Integration | 3 | 2018 | 4 | 2022 |
| Milestone B | 3 | 2020 | 3 | 2020 |

Note

Prepare for Milestone-A activities for Enterprise Space BMC2. Begin integration of applications and capabilities. Continue BAA to determine existing capabilities that can be integrated into the program of record to meet BMC2 objectives. Continue systems engineering as well as technical maturation and risk reduction efforts on predictive battle management and conduct integration of intelligence and sensor data. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, systems engineering and design.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

| | |
|--|--|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203620F / <i>National Space Defense Center</i> |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--------------------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 0.000 | 0.000 | 18.052 | 0.000 | 18.052 | 12.005 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 67A035: <i>Enterprise Space BMC2</i> | - | 0.000 | 0.000 | 18.052 | 0.000 | 18.052 | 12.005 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

In FY2018, this program element will develop Battle Management and Command and Control (BMC2) applications for the National Space Defense Center (NSDC) (formerly Joint Interagency Combined Space Operations Center (JICSpOC)). In addition, this element will develop hardware and software prototypes to support US Strategic Command Joint Emergent Operational Need (ST-0006) for an Accelerated BMC2 capability. The NSDC allows the national security space community to effectively respond to potential future space threat events and will have the capability to develop, test, and integrate new space system tactics, techniques and procedures (TTPs) in support of both DoD and Intelligence Community operations.

B. Program Change Summary (\$ in Millions)

| | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|-------------------------------------|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 0.000 | 0.000 | 18.052 | 0.000 | 18.052 |
| Total Adjustments | 0.000 | 0.000 | 18.052 | 0.000 | 18.052 |
| • 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 | 18.052 | 0.000 | 18.052 |

Change Summary Explanation

FY2018: \$18.052M to develop Battle Management and Command and Control (BMC2) applications for the National Space Defense Center (NSDC) (formerly JICSpOC).

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

| | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|---------------------------------|----------------|----------------|---------------------|--------------------|----------------------|
| Title: BMC2 Applications | 0.000 | 0.000 | 18.052 | 0.000 | 18.052 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

| | |
|--|--|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203620F / <i>National Space Defense Center</i> |
|--|--|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|---------|---------|-----------------|----------------|------------------|
| Description: Develop and field Space Battlement Management and Command and Control capabilities. FY 2016 Accomplishments: NA FY 2017 Plans: NA FY 2018 Base Plans: Continue prototyping efforts to develop tools to fill capability gaps uncovered in experimentation. FY 2018 OCO Plans: NA | | | | | |
| Accomplishments/Planned Programs Subtotals | 0.000 | 0.000 | 18.052 | 0.000 | 18.052 |

| D. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
| • NA: NA | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.00 | 0.000 |

Remarks

E. Acquisition Strategy
 The Accelerated Space BMC2 JEON (ST-0006) is led by AFRL/RV and will utilize existing contracts e.g. Space Security and Defense Program (SSDP) and SMC/SY) and provide funds to other AF/DoD organizations to execute on their contracts. Additionally AFRL/RV will initiate and utilize commercial consortiums to develop capabilities.

F. Performance Metrics
 Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

| | | |
|--|---|--|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203620F / National Space Defense Center | Project (Number/Name) 67A035 / Enterprise Space BMC2 |
|--|---|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 ENGINEERING | Various | Various : Colorado Springs, CO | - | 0.000 | | 0.000 | | 2.000 | Oct 2017 | 0.000 | | 2.000 | Continuing | Continuing | - |
| BMC2 APPLICATION DEVELOPMENT | Various | Various : Colorado Springs, CO | - | 0.000 | | 0.000 | | 14.000 | Oct 2017 | 0.000 | | 14.000 | Continuing | Continuing | - |
| Subtotal | | | - | 0.000 | | 0.000 | | 16.000 | | 0.000 | | 16.000 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Management Services (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | Various | Various : Colorado Springs, CO | - | 0.000 | | 0.000 | | 0.500 | Oct 2017 | 0.000 | | 0.500 | Continuing | Continuing | - |
| FFRDC | SS/FP | Various : Colorado Springs, CO | - | 0.000 | | 0.000 | | 1.552 | Oct 2017 | 0.000 | | 1.552 | Continuing | Continuing | - |
| Subtotal | | | - | 0.000 | | 0.000 | | 2.052 | | 0.000 | | 2.052 | - | - | - |

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203620F / <i>National Space Defense Center</i> | Project (Number/Name) 67A035 / <i>Enterprise Space BMC2</i> |

| FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| 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 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------|------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| BMC2 APPLICATION DEVELOPMENT | [REDACTED] | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------|------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203620F / <i>National Space Defense Center</i> | Project (Number/Name) 67A035 / <i>Enterprise Space BMC2</i> |

Schedule Details

| Events | Start | | End | |
|------------------------------|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| BMC2 APPLICATION DEVELOPMENT | 1 | 2017 | 4 | 2019 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

| | |
|--|---|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203699F / <i>Shared Early Warning (SEW)</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 0.845 | 6.366 | 1.373 | 0.000 | 1.373 | 1.251 | 1.274 | 1.296 | 1.322 | Continuing | Continuing |
| 674838: <i>Shared Early Warning System</i> | - | 0.845 | 6.366 | 1.373 | 0.000 | 1.373 | 1.251 | 1.274 | 1.296 | 1.322 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note

- In FY 2017, funding increased \$4.951M to conduct an analysis of alternatives for potential replacement of the North Warning System (NWS); funding request resumes normal development for SEW in FY 2018.
- In FY 2018, PE 0308699F, Shared Early Warning (SEW) efforts were transferred to PE 1203699F, Shared Early Warning (SEW) due to the creation of a new Major Force Program for Space. FY 2016 and FY 2017 funding is now documented in the exhibits for PE 1203699F. This is not a new start.

A. Mission Description and Budget Item Justification

The Shared Early Warning System (SEWS) is the result of Presidential foreign policy initiatives which began in 1996. The SEWS continues to provide Theater Combatant Commanders and foreign nation customers direct operational benefit by improving the architectural design and equipment thereby providing enhanced mission capabilities (i.e., expanded coverage, emerging capability integration, etc.). Foreign customer arrangements are negotiated with individual countries on a bilateral basis to provide selected region-specific missile warning information. SEWS Integration and Test facility is kept current by enhancing systems to improve analysis of real world events. To enhance mission capability the SEWS program tests message format updates, cross domain solution updates, mandatory crypto upgrades, SEWS integration with other warning systems, and the transition to "coalition-based" warning.

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

The North Warning System (NWS) is composed of 1970s era radar systems. The existing radar technology is quickly approaching obsolescence with regards to future threats.

In FY 2017, NWS analysis of alternatives was a new start.

In FY 2018, PE 0308699F, Shared Early Warning (SEW) efforts were transferred to PE 1203699F, Shared Early Warning (SEW) due to the creation of a new Major Force Program for Space. FY 2016 and FY 2017 funding is now documented in the exhibits for PE 1203699F.

BA7 - This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203699F / <i>Shared Early Warning (SEW)</i> |
|--|---|

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.849 | 6.366 | 1.369 | 0.000 | 1.369 |
| Current President's Budget | 0.845 | 6.366 | 1.373 | 0.000 | 1.373 |
| Total Adjustments | -0.004 | 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 | -0.004 | 0.000 | | | |
| • Other Adjustments | 0.000 | 0.000 | 0.004 | 0.000 | 0.004 |

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
|---|----------------|----------------|----------------|

Title: Shared Early Warning System (SEWS) 0.845 1.415 1.373

Description: Development of SEWS common architecture and SEWS initiatives as identified by theater commanders.

FY 2016 Accomplishments:

- Evaluated Combatant Command (CCMD) Joint Staff validated requirements and integrated derived requirements into plans for SEWS component enhancements like Radiant Mercury (RM) Common Message Format (CMF) rule development, new CMF data parsing capability, transition of receiver and data recording equipment to CMF formats
- Completed the One-to-Many Force Protection Tiered Notification System (FPTNS) rule set development, accreditation and testing for Central Command (CENTCOM). Cross Domain Solution (CDS) was fielded, accredited and first implementation with one of the CENTCOM partners completed and tested
- Completed the development of enhanced SEW architecture to facilitate the integration and correlation of infrared/radar missile tracks in SEW Global Command and Control System - Joint (GCCS-J) for a single integrated missile picture supporting the partner SEW sites and CCMD SA sites and Centralized Distribution Facility (CDF)
- Integrated United States European Command (EUCOM) partner SEW-Radar (SEW-R) data into the CDF and developed recording and playback capability to test and evaluate performance of GCCS-J Kinematic Correlation capability with real Link-16 radar tracks
- Developed CMF parser and rule set for CENTCOM partners and tested RM 5.1 performance with Common Message Format (CMF) data received from the new Common Interactive Broadcast (CIB)
- Developed RM ruleset and tested a SEW JREAP-B data interface to a SEW partner missile defense system to eliminate current legacy formats used for this interface

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203699F / <i>Shared Early Warning (SEW)</i> |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| <ul style="list-style-type: none"> - Conducted testing and provided developer with software problem reports for Tactical Receive Suite (TRS) 4.0 CMF data filtering capability - Conducted testing of TRS Dashboard 5.0 beta software implementing a new CMF data record and playback capability required to test new RM 5.1 CMF rulesets and SEW GCCS-J - Developed infrastructure and ruleset to provide a SEW Sensitive But Unclassified (SBU) data feed for a partner country <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Investigate and evaluate new CCMD Joint Staff validated SEW requirements and integrate derived requirements into plans for SEW system component enhancements like RM 6.0 CMF rule development, GCCS-J 6.0 with a CMF input capability and transition of operational sites to SEW data in a CMF format - Continue to evaluate solutions, enhancements, and approaches for an improved infrared/radar integrated missile picture based on SEW GCCS-J correlation of SEW-Space (SEW-S) and SEW-R data to include association of multiple tracked objects to a single event and display of the weapon track resulting is a correct missile count and improved impact prediction - Develop and test Phase 3 FPTNS to provide automatic data transfer from GCCS-J to FPTNS to eliminate operator entry errors and to significantly improve the delivery time of secondary missile warning to SEW partner command centers and lower tier sites - Implement SEW CMF rule sets for RM 6.0, conduct tests and verify proper operation, timely processing and output of SEW partner data to multiple sites, develop enhancements to provide new releasable CMF fields to partners; identify software/hardware problems and develop fixes and enhancements to support fielding of the new RM 6.0 architecture - Develop and test end-to-end SEW architecture with CMF input data from the receivers to ensure proper operation/compatibility of implemented RM 6.0 and GCCS-J 6.0 on partner and CCMD SA SEW servers - Test GCCS-J 3D Agile Client for use as the SEW partner display and verify all required capabilities are functioning properly including configuring communications channels, SEW data record and playback, display of infrared/radar single integrated missile picture, TES site status window and capability to manage track database - Develop improved and enhanced mobile SEWS capability for use with partner deployable active missile defense systems - Conduct research and support tests with United States Strategic Command (USSTRATCOM) and TES Program Offices to develop enhancements to improve... <p>FY 2018 Plans:</p> <ul style="list-style-type: none"> - Investigate and evaluate new CCMD Joint Staff validated SEW requirements and integrate derived requirements into plans for SEW system component enhancements like RM 6.0 CMF rule development, GCCS-J 6.0 with a CMF input capability and transition of operational sites to SEW data in a CMF format - Continue to evaluate solutions, enhancements, and approaches for an improved infrared/radar integrated missile picture based on SEW GCCS-J correlation of SEW-S and SEW-R data to include association of multiple tracked objects to a single event and display of the weapon track resulting is a correct missile count and improved impact prediction | | | |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

| | |
|--|---|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203699F / <i>Shared Early Warning (SEW)</i> |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| - Develop and test Phase 3 FPTNS to provide automatic data transfer from GCCS-J to FPTNS to eliminate operator entry errors and to significantly improve the delivery time of secondary missile warning to SEW partner command centers and lower tier sites - Implement SEW CMF rule sets for RM 6.0, conduct tests and verify proper operation, timely processing and output of SEW partner data to multiple sites, develop enhancements to provide new releasable CMF fields to partners. Identify software/hardware problems and develop fixes and enhancements to support fielding of the new RM 6.0 architecture - Develop and test end-to-end SEW architecture with CMF input data from the receivers to ensure proper operation/compatibility of implemented RM 6.0 and GCCS-J 6.0 on partner and CCMD SA SEW servers - Test GCCS-J 3D Agile Client for use as the SEW partner display and verify all required capabilities are functioning properly including configuring communications channels, SEW data record and playback, display of infrared/radar single integrated missile picture, TES site status window and capability to manage track database - Develop improved and enhanced mobile SEWS capability for use with partner deployable active missile defense systems - Conduct research and support tests with USSTRATCOM and TES Program Offices to develop enhancements to improv... | | | |
| Title: North Warning System (NWS) Description: Conduct an analysis of alternatives for potential replacement of the NWS. FY 2016 Accomplishments: N/A FY 2017 Plans: - Conduct analysis of alternatives FY 2018 Plans: N/A | 0.000 | 4.951 | 0.000 |
| Accomplishments/Planned Programs Subtotals | 0.845 | 6.366 | 1.373 |

| D. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
| • OPAF: BA03: Line Item # 838010: <i>Comm Elect Mods</i> | 0.220 | 0.403 | 0.392 | 0.000 | 0.392 | 0.351 | 0.358 | 0.364 | 0.370 | Continuing | Continuing |
| Remarks | | | | | | | | | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203699F / <i>Shared Early Warning (SEW)</i> | |
| E. Acquisition Strategy The acquisition strategy is to build on existing capabilities using evolutionary acquisition to modernize and sustain SEWS. The program office serves as the SEW system integrator, relying on a Prime Contractor for Logistics, Operations, and Sustainment support. The projects described will be accomplished on the existing SEWS Single-Award Indefinite Delivery Indefinite Quantity (SA IDIQ) contract. This contract was re-competed through full and open competition in 2012. The current contract has a Period of Performance (PoP) through 30 Sep 2017. Additionally, some SEWS requirements are satisfied through Military Interdepartmental Purchase Requests to external programs of record. The analysis of alternatives for potential replacement of the NWS will be accomplished using a to be determined mix of organic, federally funded research and development center, and advisory and assistance support contractor efforts. | | |
| F. Performance Metrics Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission. | | |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203906F / NCMC - TW/AA System |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 0.000 | 4.951 | 5.000 | 0.000 | 5.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| 67A051: <i>Space Superiority - Advanced Intelligence Systems</i> | - | 0.000 | 4.951 | 5.000 | 0.000 | 5.000 | 0.000 | 0.000 | 0.000 | 0.000 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

Funding in this exhibit was previously budgeted in PE 0305906F, NCMC - TW/AA System.

This program element supports development activities for the current and potential future NORAD Cheyenne Mountain Complex - Integrated Tactical Warning Attack Assessment (NCMC-ITW/AA) system providing authorities with accurate, timely, unambiguous warning and attack assessment of air, missile and space threats.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018 Base</u> | <u>FY 2018 OCO</u> | <u>FY 2018 Total</u> |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Current President's Budget | 0.000 | 4.951 | 5.000 | 0.000 | 5.000 |
| Total Adjustments | 0.000 | 4.951 | 5.000 | 0.000 | 5.000 |
| • 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 | 4.951 | 5.000 | 0.000 | 5.000 |

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

| | FY 2016 | FY 2017 | FY 2018 |
|--|---------|---------|---------|
| Title: ITW/AA AOA | 0.000 | 4.951 | 5.000 |
| Description: Conduct Analysis of Alternatives (AOA) for the Integrated Tactical Warning and Attack Assessment (ITW/AA) Command and Control (C2) system. | | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203906F / NCMC - TW/AA System |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| <p><i>FY 2016 Accomplishments:</i> N/A</p> <p><i>FY 2017 Plans:</i> Conducted Analysis of Alternatives (AOA) for the Integrated Tactical Warning and Attack Assessment (ITW/AA) Command and Control (C2) system.</p> <p><i>FY 2018 Plans:</i> Conduct Analysis of Alternatives (AOA) for the Integrated Tactical Warning and Attack Assessment (ITW/AA) Command and Control (C2) system.</p> | | | |
| Accomplishments/Planned Programs Subtotals | 0.000 | 4.951 | 5.000 |

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

N/A

Remarks

E. Acquisition Strategy

N/A

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203913F / <i>NUDET Detection System (SPACE)</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 14.403 | 21.093 | 31.508 | 0.000 | 31.508 | 19.927 | 17.100 | 14.269 | 14.561 | Continuing | Continuing |
| 672808: <i>Nuc Detonation Det Sys (sensors)</i> | - | 14.403 | 21.093 | 31.508 | 0.000 | 31.508 | 19.927 | 17.100 | 14.269 | 14.561 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

Note

In FY2018, PE 0305913F, NNUDET Detection System efforts were transferred to PE 1203913F, NUDET Detection System due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203913F.

A. Mission Description and Budget Item Justification

The United States Nuclear Detonation (NUDET) Detection System (USNDS) provides a near real-time worldwide, highly survivable/endurable capability to detect, locate, and report any nuclear detonations in the earth's atmosphere or in near space. USNDS supports NUDET detection requirements across five mission areas: Integrated Tactical Warning and Attack Assessment (ITW/AA), Nuclear Force Management (NFM), Space Control (SC), Treaty Monitoring (TM), and a classified mission.

The USNDS program is jointly sponsored and funded by the Department of Defense (DoD), through the US Air Force (AF), and the Department of Energy (DOE), through the National Nuclear Security Administration (NNSA) and its Nuclear Detonation Detection (NA-22) office, respectively. NNSA/NA-22 supplies USNDS space sensors as Government Furnished Equipment (GFE) to the AF's USNDS Program Office, which is responsible for all acquisition and systems engineering, integration and test (SEIT) activities on space vehicles (SVs), to include Global Positioning System (GPS) and additional hosts, and their supporting ground control segments. The AF directly funds the development of the USNDS ground segment (described below).

DoD funds their contribution to the NDS program in Program Element (PE) 1203913F with RDT&E, SPAF, and O&M.

USNDS consists of space sensors and complex ground segments. The space segment sensors, funded by DOE, consists of three nuclear detection sensor payloads: the Radiation Detection Capability (RADEC) payload for Defense Support Program (DSP) satellites, the Global Burst Detection (GBD) payload for Medium Earth Orbit (MEO) platforms (GPS satellites), and the Space Atmospheric Burst Reporting System (SABRS) payload for Geosynchronous Earth Orbit (GEO) platforms (classified GEO host). Together, these sensors and associated communications capability provided by the host satellites comprise the global NUDET space segment detection capability for the USNDS. Space sensors communicate NUDET indications to the fixed ground segment (the RADEC Data Processor (RDP) and the Integrated Correlation and Display System (ICADS)), the deployable mobile ground segment (survivable Ground NDS Terminals (GNTs)), and the survivable/endurable Universal Ground NDS Terminals (UGNTs), when fielded. The ground segment provides ground receiving analysis and reporting capabilities to national authorities, commands, and forward users as well as Department of State (DOS) for the Treaty Monitoring and Verification mission. The ground control segment is being modernized and continuously improved through an incremental, evolutionary acquisition approach.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203913F / <i>NUDET Detection System (SPACE)</i> |
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The upgrade to the GNT is the survivable/endurable Universal Ground NDS Terminal, funded with AF Research, Development, Test & Evaluation (RDT&E) in this PE. The UGNT provides NUDET Detection Reports to end users through survivable and endurable USNDS communications via Milstar/Advanced Extremely High Frequency (AEHF) circuits. The GNT supports ITW/AA and NFM missions. The UGNT program modifies the baseline of the GNT program and deploys as an integral part of the Space Based Infrared System (SBIRS) Survivable / Endurable Evolution (S2E2) Mobile Ground System (SMGS) units also in support of ITW/AA and NFM. The UGNT, when integrated with the SMGS, will perform NUDET event processing with fused NDS data from GPS and DSP. SMGS capability refers to the result of the S2E2 upgrade program for the MGS mission processing capability, including the integration of UGNT. The intended end state of UGNT integration is delivery of enhanced NUDET detection capabilities which meet survivable/endurable attack assessment requirements directed by the President, SECDEF, Joint Staff, and USSTRATCOM, delivering long-term, cost effective, multi-role, multi-mission space effects to the war fighter across the range of military operations.

This budget line includes systems engineering, research and development, on-orbit and field testing and end-to-end verification of USNDS space sensors, ground analysis and reporting systems in support of the five USNDS mission areas. Sensor integration for GPS IIF and GPS III are funded in their respective PEs.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 14.403 | 21.093 | 31.418 | 0.000 | 31.418 |
| Current President's Budget | 14.403 | 21.093 | 31.508 | 0.000 | 31.508 |
| Total Adjustments | 0.000 | 0.000 | 0.090 | 0.000 | 0.090 |
| • 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 | 0.090 | 0.000 | 0.090 |

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Title: UNIVERSAL GROUND NDS TERMINALS (UGNT) | 9.627 | 12.078 | 21.655 |
| Description: Delivers enhanced missile warning and NUDET detection capabilities that meet survivable/endurable tactical warning and attack assessment requirements directed by the President, SECDEF, Joint Staff and USSTRATCOM delivering long-term, cost effective, multi-role, multi-mission space effects to the warfighter across the range of military operations. | | | |
| FY 2016 Accomplishments: | | | |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203913F / <i>NUDET Detection System (SPACE)</i> |
|--|---|

| C. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|---|----------------|----------------|----------------|
| Completed contractor and Air Force DT&E of UGNTs. Began final testing and integration of hardware and software into the third UGNT trailer. FY 2017 Plans: Deliver first, second and third UGNT trailers to the SBIRS S2E2 program for integration into the S2E2 Force Package (FPAK). Commence integration and testing of UGNT 3. FY 2018 Plans: Deliver, Integrate, and test fourth and fifth UGNT trailers. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc. | | | |
| Title: Systems Engineering/On-Orbit Support & Testing Description: Support costs included such activities as, on-orbit NDS sensor integration, check-out/support, testing and system engineering. FY 2016 Accomplishments: Provided SE&I, technical support and program technical support for the five NDS mission areas. Delivered GBD for GPS III SV04, SV05, and supported SV integration activities. Supported GPS IIF-11 and IIF-12, integration checkout of NDS sensors during on-orbit activities. FY 2017 Plans: Provide SE&I, technical support and program technical support for the five NDS mission areas. Deliver GBD for GPS III SV06 and SV07. FY 2018 Plans: Deliver GBD for SV08. Launch activate/checkout NDS payloads on GPS III SV01. | 4.776 | 9.015 | 9.853 |
| Accomplishments/Planned Programs Subtotals | 14.403 | 21.093 | 31.508 |

| D. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|---|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-----------------------------------|-------------------|
| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To</u> <u>Complete</u> | <u>Total Cost</u> |
| • SPAF:BA03:Line Item # NUDETS: <i>Nudet Detection Sys Space</i> | 5.095 | 4.395 | 6.370 | 0.000 | 6.370 | 6.469 | 6.583 | 6.701 | 6.838 | Continuing | Continuing |
| Remarks | | | | | | | | | | | |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force Date: May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203913F / <i>NUDET Detection System (SPACE)</i> |
|--|---|

E. Acquisition Strategy

The USNDS Acquisition Strategy is to develop, integrate, field and sustain USNDS satellite sensors and USNDS ground data processing and distribution hardware and software as well as mission operational and technical program support to sustain the USNDS capability on GPS, DSP, and an Alternate Host; funding is sent by Military Interdepartmental Purchase Request (MIPR) from DoD and Department of Energy (DOE) to Sandia, Lawrence Livermore, Los Alamos National Laboratories and other agencies on existing DOE/NNSA contracts.

F. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203913F / NUDET Detection System (SPACE) | Project (Number/Name) 672808 / Nuc Detonation Det Sys (sensors) |
|--|--|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| USNDS ICADS and GNT/UGNT | MIPR | Sandia National Laboratory : Albuquerque, NM | - | 9.627 | Jan 2016 | 12.078 | May 2017 | 21.655 | Nov 2017 | 0.000 | | 21.655 | Continuing | Continuing | - |
| USNDS Technical Mission Analysis | MIPR | Aerospace : El Segundo, CA | - | 1.566 | Nov 2015 | 1.813 | May 2017 | 1.882 | Nov 2017 | 0.000 | | 1.882 | Continuing | Continuing | - |
| USNDS Enterprise SE&I | C/CPAF | TASC : El Segundo, CA | - | 1.460 | Dec 2015 | 1.140 | Dec 2016 | 1.140 | Dec 2017 | 0.000 | | 1.140 | Continuing | Continuing | - |
| Subtotal | | | - | 12.653 | | 15.031 | | 24.677 | | 0.000 | | 24.677 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| USNDS Testing | Various | 17th Test Squadron, JITC : Schriever AFB, CO | - | 0.307 | Dec 2015 | 0.313 | May 2017 | 0.692 | Dec 2017 | 0.000 | | 0.692 | Continuing | Continuing | - |
| USNDS On-orbit Sensor Testing | MIPR | Various : LANL, SNL, NM | - | 0.000 | | 2.900 | Jun 2017 | 3.200 | Dec 2017 | 0.000 | | 3.200 | Continuing | Continuing | - |
| Subtotal | | | - | 0.307 | | 3.213 | | 3.892 | | 0.000 | | 3.892 | - | - | - |

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203913F / NUDET Detection System (SPACE) | Project (Number/Name) 672808 / Nuc Detonation Det Sys (sensors) |

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|--|------------|---|---|---|------------|---|---|---|------------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| UGNT 1 Integration & Delivery | ██████████ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| UGNT 2 Integration & Delivery | ██████████ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| UGNT Test Readiness Review | ██ | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| UGNT 1&2 to SBIRS Mobile Ground System | | | | | ██ | | | | | | | | | | | | | | | | | | | | | | | |
| UGNT 3 Integration & Delivery | | | | | ██████████ | | | | | | | | | | | | | | | | | | | | | | | |
| UGNT 3 to SBIRS Mobile Ground System | | | | | ██ | | | | | | | | | | | | | | | | | | | | | | | |
| UGNT 4-5 Integration & Delivery | | | | | | | | | ██████████ | | | | | | | | | | | | | | | | | | | |
| UGNT Initial Operations Capability | | | | | | | | | | | | | ██ | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203913F / NUDET Detection System (SPACE) | Project (Number/Name) 672808 / Nuc Detonation Det Sys (sensors) |

Schedule Details

| Events | Start | | End | |
|--|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| UGNT 1 Integration & Delivery | 1 | 2016 | 1 | 2017 |
| UGNT 2 Integration & Delivery | 2 | 2016 | 1 | 2017 |
| UGNT Test Readiness Review | 1 | 2016 | 1 | 2016 |
| UGNT 1&2 to SBIRS Mobile Ground System | 1 | 2017 | 1 | 2017 |
| UGNT 3 Integration & Delivery | 4 | 2016 | 4 | 2017 |
| UGNT 3 to SBIRS Mobile Ground System | 4 | 2017 | 4 | 2017 |
| UGNT 4-5 Integration & Delivery | 3 | 2018 | 4 | 2018 |
| UGNT Initial Operations Capability | 2 | 2019 | 2 | 2019 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i> |
|--|---|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | - | 23.416 | 93.802 | 99.984 | 0.000 | 99.984 | 50.241 | 23.140 | 23.557 | 22.668 | Continuing | Continuing |
| 670004: <i>Other STRATCOM Activities</i> | - | 0.000 | 73.652 | 71.340 | 0.000 | 71.340 | 30.522 | 2.673 | 2.712 | 2.775 | Continuing | Continuing |
| 67A017: <i>Sensor Service Life Extension Program</i> | - | 23.416 | 20.150 | 28.644 | 0.000 | 28.644 | 19.719 | 20.467 | 20.845 | 19.893 | 0.000 | 153.134 |

Note

In FY2018, PE 0305940F, BA07, Space Situational Awareness Operations efforts were transferred to PE 1203940F, BA07, Space Situational Awareness Operations due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1203940F.

A. Mission Description and Budget Item Justification

Space Situational Awareness (SSA) is knowledge of all aspects of space related to operations. As the foundation for space control, SSA encompasses surveillance of all space objects and activities; detailed reconnaissance of specific space assets; monitoring space environmental conditions; monitoring cooperative space assets; gathering intelligence on adversary space operations; and conducting integrated command, control, communications, processing, analysis, dissemination, and archiving activities. This program element fields, upgrades, operationalizes, operates and maintains Air Force sensors and information integration capabilities within the SSA network while companion program element 1206425F, Space Situational Awareness Systems, develops new network sensors and improved information integration capabilities across the network. Activities funded in this program element (1203940F) focus on surveillance of objects in earth orbit to aid tasks including satellite tracking; space object identification; tracking and cataloging; satellite attack warning; notification of satellite flyovers to U.S. forces; space treaty monitoring; and technical intelligence gathering.

The Sensor Life Extension Programs (SLEPs) project funds efforts to upgrade, operationalize and extend the life of operational SSA sensors, as needed. These SLEPs include, but are not limited to, programs which extend the serviceable life of assets and maintain critical capability by replacing aging and increasingly unsustainable components with modern and sustainable equipment. SLEPs may incorporate equipment which inherently includes technological advances resulting in enhanced or increased capabilities. In addition, the SLEP itself may be designed to increase capabilities not currently realized. The on-going Ground-based Electro Optics Deep Space Surveillance (GEODSS) Phase II is representative of sensor system upgrades in the SLEP project. As the need arises in the execution year, funds in this project may be used to begin sensor life extension programs on additional efforts.

Global Sensor Watch Program provides an integrated SSA Tip and Cue capability that implements a survivable architecture which provides overlapping, assured, and viable surveillance options for executing event response (demonstrated by the SSA Ops Demo), multiple level security processing of SSA data and automated cross-sensor tipping and cueing around the globe.

Beginning in FY17 this program element will begin fielding and sustaining the Joint Interagency Combined Space Operations Center (JICSpOC) infrastructure in response to US Strategic Command Joint Emergent Operational Need (ST-0006). The JICSpOC seeks to improve unity of effort and information sharing across the

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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|--|---|
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i> |
|--|---|

national security space community to effectively respond to potential future space threat events and will have the capability to develop, test, and integrate new space system tactics, techniques and procedures (TTPs) in support of both DoD and Intelligence Community operations.

In FY18 this program element will continue a series of Ground Radar Upgrades designed to improve the sensitivity, search capability and CONOPS of existing SSA sensors to better support fire control timelines.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 20.016 | 35.002 | 22.803 | 0.000 | 22.803 |
| Current President's Budget | 23.416 | 93.802 | 99.984 | 0.000 | 99.984 |
| Total Adjustments | 3.400 | 58.800 | 77.181 | 0.000 | 77.181 |
| • 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 | 3.903 | 0.000 | | | |
| • SBIR/STTR Transfer | -0.503 | 0.000 | | | |
| • Other Adjustments | 0.000 | 58.800 | 77.181 | 0.000 | 77.181 |

Change Summary Explanation

FY 2016: Increase due to higher Air Force prioritization of SSA Operations activities due to emerging threats.

FY 2017: \$58.800M FY17 Request for Additional Appropriations (RAA) to address emergency warfighting readiness requirements

FY 2018: \$8.291M Increase due to higher Air Force prioritization of SSA Operations activities due to emerging threats. \$0.09M inflation adjustment. \$68.8m to support NSDC. Total increase of \$77.181M.

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i> | | | | Project (Number/Name) 670004 / <i>Other STRATCOM Activities</i> | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 670004: <i>Other STRATCOM Activities</i> | - | 0.000 | 73.652 | 71.340 | 0.000 | 71.340 | 30.522 | 2.673 | 2.712 | 2.775 | Continuing | Continuing |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The National Space Defense Center (NSDC), formerly the Joint Interagency Combined Space Operations Center (JICSpOC), seeks to improve unity of effort and information sharing across the national security space community to effectively respond to potential future space threat events. The NSDC requires effective battle management, command and control (BMC2) to integrate and synchronize space and cyber forces and the intelligence community with efforts across all domains and to execute unity of effort through the core command and control functions of: situation monitoring, planning, decision making, space force management and space force direction. The NSDC will have the capability to develop, test, and integrate new space system tactics, techniques and procedures (TTPs) in support of both DoD and Intelligence Community (IC) operations. Lessons learned from NSDC experimentation will inform requirements development for future BMC2 architectures.

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

| | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| <p>Title: NSDC Infrastructure</p> <p>Description: Develop and field space battle management, command and control (BMC2) infrastructure.</p> <p>FY 2016 Accomplishments: N/A</p> <p>FY 2017 Plans: Design, develop and field a communications architecture and suite of decision support and analytical tools to support space BMC2.</p> <p>FY 2018 Plans: Conduct space defense experimentation and exercises to further refine necessary capabilities and tactics, techniques, and procedures to enable the NSDC to conduct the space defense mission. Continue prototyping efforts to develop tools to fill capability gaps uncovered in experimentation.</p> | 0.000 | 73.652 | 31.340 |
| <p>Title: SpODC Development</p> <p>Description: Development of the Space Operations Development Center (SpODC) modeling and simulation infrastructure</p> <p>FY 2018 Plans:</p> | - | - | 40.000 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i> | Project (Number/Name) 670004 / <i>Other STRATCOM Activities</i> |

| | | | |
|---|----------------|----------------|----------------|
| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
| Build hardware and software applications to create capability to perform future space experimentation, technology maturation, and operating training. | | | |
| Accomplishments/Planned Programs Subtotals | 0.000 | 73.652 | 71.340 |

| | | | | | | | | | | | |
|--|----------------|----------------|---------------------|--------------------|----------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| • N/A: N/A | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - |

Remarks

D. Acquisition Strategy

The Accelerated Space BMC2 JEON (ST-0006) is led by AFRL/RV and will utilize existing contracts (e.g. Space Security and Defense Program (SSDP) and SMC/SY) and provide funds to other AF/DoD organizations to execute on their contracts. Additionally, AFRL/RV will initiate and utilize commercial consortiums to deliver capabilities.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i> | Project (Number/Name) 670004 / <i>Other STRATCOM Activities</i> |
|--|---|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 ENGINEERING AND INTEGRATION | Various | VARIOUS : COLORADO SPRINGS, CO | - | 0.000 | | 3.425 | Oct 2016 | 6.425 | Oct 2017 | 0.000 | | 6.425 | Continuing | Continuing | - |
| SPACE OPERATIONAL DEVELOPMENT CENTER DESIGN AND EXPERIMENTATION | Various | VARIOUS : COLORADO SPRINGS, CO | - | 0.000 | | 64.652 | Oct 2016 | 34.590 | Oct 2017 | 0.000 | | 34.590 | Continuing | Continuing | - |
| COMMUNICATIONS ARCHITECTURE DESIGN AND DEVELOPMENT | Various | VARIOUS : COLORADO SPRINGS, CO | - | 0.000 | | 3.575 | Oct 2016 | 4.575 | Oct 2017 | 0.000 | | 4.575 | Continuing | Continuing | - |
| APPLICATION DEVELOPMENT | Various | VARIOUS : COLORADO SPRINGS, CO | - | 0.000 | | 0.000 | | 22.750 | Oct 2017 | 0.000 | | 22.750 | Continuing | Continuing | - |
| Subtotal | | | - | 0.000 | | 71.652 | | 68.340 | | 0.000 | | 68.340 | - | - | - |

Remarks
FY17 includes \$58.8M Request for Additional Appropriations for emergency warfighting readiness requirements.

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i> | Project (Number/Name) 670004 / <i>Other STRATCOM Activities</i> |

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|---------------------------------|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| NSDC Infrastructure Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NSDC Experimentation | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NSDC Capabiity Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SpODC Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i> | Project (Number/Name) 670004 / <i>Other STRATCOM Activities</i> |

Schedule Details

| Events | Start | | End | |
|---------------------------------|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| NSDC Infrastructure Development | 1 | 2017 | 4 | 2022 |
| NSDC Experimentation | 1 | 2017 | 4 | 2022 |
| NSDC Capabiity Development | 1 | 2017 | 4 | 2022 |
| SpODC Development | 1 | 2017 | 4 | 2022 |

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|---|--------------------|----------------|----------------|---------------------|---|----------------------|----------------|----------------|---|-----------------------|-------------------------|-------------------|
| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i> | | | | Project (Number/Name) 67A017 / <i>Sensor Service Life Extension Program</i> | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 67A017: <i>Sensor Service Life Extension Program</i> | - | 23.416 | 20.150 | 28.644 | 0.000 | 28.644 | 19.719 | 20.467 | 20.845 | 19.893 | 0.000 | 153.134 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

Space Situational Awareness (SSA) is knowledge of all aspects of space related to operations. As the foundation for space control, SSA encompasses surveillance of all space objects and activities; detailed reconnaissance of specific space assets; monitoring space environmental conditions; monitoring cooperative space assets; gathering intelligence on adversary space operations; and conducting integrated command, control, communications, processing, analysis, dissemination, and archiving activities. SSA also encompasses the integration, exploitation and delivery of data sources to facilitate the battle management and command and control of space forces. This program element fields, upgrades, modifies, modernizes, operationalizes, operates and maintains Air Force sensors and information integration capabilities within the SSA Space Surveillance network (SSN) while companion program element 1206425F, Space Situational Awareness Systems, develops new network sensors and improved information integration capabilities across the network. Activities funded in this program element (1203940F) focus on surveillance of objects in earth orbit to aid tasks including satellite tracking; space object identification; tracking and cataloging; satellite attack warning; notification of satellite flyovers to U.S. forces; space treaty monitoring; and technical intelligence gathering.

The 67A017 project funds efforts to upgrade, operationalize and extend the life of operational SSA sensors, as needed. Through Service Life Extension Programs (SLEPs) the following types of activities are performed, but is not limited to, programs that extend the serviceable life of assets and maintain critical capability by replacing aging and increasingly unsustainable components with modern and sustainable equipment. In addition, the SLEP itself may be designed to increase capabilities not currently realized. As the need arises in the execution year, funds in this project may be used to begin SLEPs on additional efforts.

Global Sensor Watch Program provides an integrated SSA Tip and Cue capability that implements a survivable architecture which provides overlapping, assured, and viable surveillance options for executing event response (demonstrated by the SSA Ops Demo), multiple level security processing of SSA data and automated cross-sensor tipping and cueing around the globe. Other efforts to support Battle Management Command & Control (BMC2) in space include developing & deploying advanced software algorithms to identify, acquire, characterize, and maintain custody of deep space (S)High Inclination Orbits(HIO); optimizing intelligence community & Missile Defense Agency (MDA) sensors to better support BMC2; developing & executing Joint Functional Component Command (JFCC) for Space exercises such as Joint Space Operations Center (JSPOC) Experimentation, Test and Training Initiative (JETTI) to test & optimize Space Control capabilities, concept of operations (CONOPS) development to increase probability of survival for blue assets, and refining requirements across space enterprise; enhancing sensor performance to close the solar exclusion gap leveraging technologies such as optical daylight tracking; and improving legacy communication paths to support bi-directional machine-to-machine sensor communications enabling a more complete BMC2 capability.

Ground Based Radar Upgrades improve the sensitivity, search capabilities and CONOPS of existing SSA sensors to better support custody and fire control timelines.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i> | Project (Number/Name) 67A017 / <i>Sensor Service Life Extension Program</i> | | |
| B. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>Title: Global Sensor Watch Program</p> <p>Description: Global Sensor Watch Program provides an integrated SSA Tip and Cue capability that implements a survivable architecture which provides overlapping, assured, and viable surveillance options for executing event response (demonstrated by the SSA Ops Demo), multiple level security processing of SSA data and automated cross-sensor tipping and cueing around the globe. Other efforts to support Battle Management Command & Control (BMC2) in space include developing & deploying advanced software algorithms to identify, acquire, characterize, and maintain custody of deep space (S)HIOs; optimizing intelligence community & MDA sensors to better support BMC2; developing & executing JFCC Space exercises such as JETTI to test & optimize Space Control capabilities, CONOPS development to increase probability of survival for blue assets, and refining requirements across space enterprise; enhancing sensor performance to close the solar exclusion gap leveraging technologies such as optical daylight tracking; and improving legacy communication paths to support bi-directional machine-to-machine sensor communications enabling a more complete BMC2 capability.</p> <p>FY 2016 Accomplishments: Developed tip and cue software upgrades and began preparations for follow-on test/demonstration.</p> <p>FY 2017 Plans: Continue to develop tip and cue software upgrades and conduct follow-on test/demonstration.</p> <p>FY 2018 Plans: Provide findings from SSA Operations Demonstration to the Office of the Secretary of Defense/Cost Assessment and Program Evaluation Office (OSD/CAPE), refine processing algorithms, address communications network findings, refine CONOPS/TTPs with operational community, and deliver final report.</p> | | 9.360 | 10.350 | 18.616 |
| <p>Title: GEODSS SLEP</p> <p>Description: The GEODSS effort extends the operational life of the Ground Based Electro-Optical Deep Space Surveillance System (GEODSS). It replaces the aging Sensor Controller Group (SCG), Data Processing Group (DPG), Data Communications Group (DCG), and other unsupported subsystems as required to maintain Space Surveillance Network (SSN) tracking capabilities for objects in deep space and geosynchronous orbits.</p> <p>FY 2016 Accomplishments: Conducted Preliminary Design Review (PDR) and obtained milestone B decision to enter Engineering and Manufacturing Development (EMD). Began EMD, conduct Critical Design Review (CDR), purchased hardware, conducted software development and began integration.</p> | | 14.056 | - | - |
| <p>Title: Ground Radar Upgrades</p> | | - | 9.800 | 10.028 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i> | Project (Number/Name) 67A017 / <i>Sensor Service Life Extension Program</i> |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| <p>Description: This effort improves the sensitivity, search capability and CONOPS of existing SSA sensors to better support fire control timelines</p> <p>FY 2017 Plans: Begin prototyping L-Band solid-state transmitter, operationalize UHF transmitter/receiver upgrade and field a COTS-based L-band high voltage power supply.</p> <p>FY 2018 Plans: Field capability improvements for existing SSA sensors and system tactics to improve custody of resident space objects (RSOs). Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.</p> | | | |
| Accomplishments/Planned Programs Subtotals | 23.416 | 20.150 | 28.644 |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|--|----------------|----------------|-------------------------------|------------------------------|--------------------------------|----------------|----------------|----------------|----------------|-------------------------|-------------------|
| <u>Line Item</u> | <u>FY 2016</u> | <u>FY 2017</u> | <u>FY 2018</u> <u>Base</u> | <u>FY 2018</u> <u>OCO</u> | <u>FY 2018</u> <u>Total</u> | <u>FY 2019</u> | <u>FY 2020</u> | <u>FY 2021</u> | <u>FY 2022</u> | <u>Cost To Complete</u> | <u>Total Cost</u> |
| • N/A: N/A | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | - | - |

Remarks

D. Acquisition Strategy
The GEODSS SLEP was awarded as an Engineering Change Proposal on the SENSOR contract. The GEODSS SLEP uses a phased development and deployment strategy to reduce risk.

The acquisition strategies for SSA Operations Demo and Ground Based Radar Upgrades include a mix of modifications to existing Air Force contracts and directing funds to other AF or DoD organizations for contract support.

E. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

| | | |
|--|---|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i> | Project (Number/Name) 67A017 / <i>Sensor Service Life Extension Program</i> |
|--|---|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| GEODSS design, development and life extension | C/CPIF | Exelis/TBD : Colorado Springs, CO | - | 12.848 | Feb 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 12.848 | - |
| Global Sensor Watch Program | C/TBD | Exelis/TBD : Colorado Springs, CO | - | 7.196 | May 2016 | 7.935 | Mar 2017 | 16.370 | Oct 2017 | 0.000 | | 16.370 | Continuing | Continuing | - |
| Global Sensor Watch Enterprise Systems Engineering and Integration | Various | MITRE : Various | - | 0.000 | | 0.700 | Oct 2016 | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Enterprise Systems Engineering and Integration | Various | MITRE : Various | - | 0.350 | Jan 2016 | 0.000 | | 0.000 | | 0.000 | | 0.000 | Continuing | Continuing | - |
| Ground Radar Upgrades - L-Band | Various | MIT/LL : Various, MA | - | 0.000 | | 3.383 | Oct 2016 | 3.300 | Oct 2017 | 0.000 | | 3.300 | Continuing | Continuing | - |
| Ground Radar Upgrades - UHF Radar Transmitter/ Receiver | C/TBD | Exelis/TBD : Colorado Springs, CO | - | 0.000 | | 6.000 | Oct 2016 | 5.836 | Oct 2017 | 0.000 | | 5.836 | Continuing | Continuing | - |
| Subtotal | | | - | 20.394 | | 18.018 | | 25.506 | | 0.000 | | 25.506 | - | - | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

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| Exhibit R-4, RDT&E Schedule Profile: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i> | Project (Number/Name) 67A017 / <i>Sensor Service Life Extension Program</i> |

| | FY 2016 | | | | FY 2017 | | | | FY 2018 | | | | FY 2019 | | | | FY 2020 | | | | FY 2021 | | | | FY 2022 | | | |
|-----------------------------|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|---------|---|---|---|
| | 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 |
| GEODSS Phase II Development | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Global Sensor Watch Program | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Ground Radar Upgrades | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force **Date:** May 2017

| | | |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1203940F / <i>Space Situation Awareness Operations</i> | Project (Number/Name) 67A017 / <i>Sensor Service Life Extension Program</i> |
|--|---|---|

Schedule Details

| Events | Start | | End | |
|-----------------------------|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| GEOSS Phase II Development | 1 | 2016 | 4 | 2016 |
| Global Sensor Watch Program | 2 | 2016 | 2 | 2022 |
| Ground Radar Upgrades | 2 | 2017 | 4 | 2019 |

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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i> |
|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|--|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| Total Program Element | 2,804.399 | 344.226 | 513.268 | 510.938 | 0.000 | 510.938 | 441.609 | 342.573 | 239.099 | 156.088 | 173.300 | 5,525.500 |
| 67A021: OCX | 2,517.555 | 283.170 | 451.362 | 447.382 | 0.000 | 447.382 | 377.236 | 277.124 | 171.790 | 90.698 | 107.300 | 4,723.617 |
| 67A025: <i>GPS Enterprise Integrator</i> | 286.844 | 61.056 | 61.906 | 63.556 | 0.000 | 63.556 | 64.373 | 65.449 | 67.309 | 65.390 | 66.000 | 801.883 |

Program MDAP/MAIS Code: 456

Note

In FY2018, PE 0603423F, Global Positioning System III - Operational Control Segment efforts were transferred to PE 1206423F, Global Positioning System III - Operational Control Segment due to the creation of a new Major Force Program for Space. FY2016 and FY2017 funding is now documented in the exhibits for PE 1206423F.

A. Mission Description and Budget Item Justification

The Global Positioning System (GPS) is a space based positioning, navigation and timing distribution system which operates through all weather. GPS supports both civil and military users in air, space, sea and land operations. GPS is a satellite-based radio navigation system that serves military and civil users worldwide. GPS users process satellite signals to determine accurate position, velocity and time. GPS must comply with 10 United States Code (USC) sec 2281 which requires that the Secretary of Defense ensures the continued sustainment and operation of GPS for military and civilian purposes and 51 USC sec 50112, which requires that GPS complies with certain standards and facilitates international cooperation.

This Program Element (PE) funds the Research & Development (R&D) for the GPS next generation operational control system (OCX) and the GPS Enterprise Integrator (EI). This includes advanced concept development, systems analysis, modernized control segment development, mission planning development, training simulators, integrated logistics support products, test resources, systems engineering required to meet the government's obligations to the international, military and civil communities, and system requirements verification. OCX acquisition was established to 1) provide command and control of legacy and GPS III satellites, 2) incorporate situational awareness to support Navigation Warfare (NAVWAR) and signal monitoring, 3) enable mission capability upgrades to support a warfighter effects-based approach to operations and 4) integrate DoD information assurance and cybersecurity controls and capabilities. GPS Enterprise Integrator is responsible for architecture and system definition (the analysis and definition, management, maintenance, and evolution of the GPS Enterprise requirements and interface technical documents) as well as for the planning, execution, and fielding of the GPS Enterprise.

OCX funds will support efforts such as engineering studies and analyses, architectural engineering studies, trade studies, technology needs forecasting, modernization initiatives, systems engineering, system development, test and evaluation efforts and mission operations. These activities support upgrades and product improvements for military and civil applications necessary to enable efforts to protect U.S. military and Allies' use of GPS. Additionally, funds will ensure OCX efforts meet current and future Joint Requirements Oversight Council-approved required capabilities.

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i> | |
| <p>The GPS Enterprise consists of Space, Ground Control, Nuclear Detonation (NUDET) Detection System (NDS) and User Equipment Segments. The government is responsible for the integration of the GPS Segments such that they provide worldwide GPS capability to support the warfighter and over a billion national security, civil, Allied, and commercial GPS users.</p> <p>The GPS Enterprise Integrator project includes the efforts associated with the Government's prime contract tasks necessary to accomplish this critical integrating function with the entire GPS user community. The Enterprise Integrator maintains the GPS current architecture and system definition, controls and validates interfaces, ensures compatibility of Generation II and III systems, and develops/manages plans for execution and fielding of the GPS Enterprise. Further, the Enterprise Integrator provides modeling, simulation and technical analyses of impacts for Government-directed enterprise-level trades among the GPS segments leading to definition, management, maintenance, and evolution of the GPS Enterprise requirements and interface technical documents to build and ensure the integrity of the enterprise technical baseline, and perform system requirements verification.</p> <p>In addition, the GPS Enterprise Integrator project funds the technical evolution, risk reduction, enterprise-level testing and delivery of all GPS Enterprise capabilities. Examples for Generation II include electronic protection and additional civil signals; for Generation III, additional anti-jamming protection. To accomplish this, the GPS Enterprise Integrator delivers Test and Verification capabilities, Requirements and Interface Management, and Systems Integration support across the Space, Control, and User Segments. In this capacity, the Enterprise Integrator is responsible for managing this cross-program work to provide these and other capabilities.</p> <p>GPS Enterprise Integrator's analyses guide government decisions to ensure efficient and effective synchronization and execution across all Generation II and III GPS programs. For Enterprise-wide integration to be successful, the Integrator: works with the GPS and NDS prime contractor teams to develop plans for early risk reduction System Integration Demonstrations to ensure system interfaces and functionality meet user and system requirements; ensures all equipment and documentation is ready when needed; integrates and analyzes enterprise schedules; and conducts formal test and verification, including Requirement Verification Plans and System Test Plans and Procedures. GPS Enterprise Integrator performs all these efforts across all GPS programs in all acquisition phases. The government owns the Enterprise system requirements and integration, and highly leverages the Enterprise Integrator team to eliminate the need to fund a development prime contractor to perform these functions. This enhances government control, oversight and program accountability.</p> <p>This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that were fielded or received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.</p> | | |

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| Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i> | R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i> |
|--|--|

| B. Program Change Summary (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total |
|---|----------------|----------------|---------------------|--------------------|----------------------|
| Previous President's Budget | 349.181 | 393.268 | 252.530 | 0.000 | 252.530 |
| Current President's Budget | 344.226 | 513.268 | 510.938 | 0.000 | 510.938 |
| Total Adjustments | -4.955 | 120.000 | 258.408 | 0.000 | 258.408 |
| • 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 | -14.954 | 0.000 | | | |
| • Other Adjustments | 0.000 | 120.000 | 258.408 | 0.000 | 258.408 |

Change Summary Explanation

FY2016: +\$9.999M to fund OCX to cost estimate

FY2017: +\$120.000M FY17 Request for Additional Appropriation (RAA) to fund OCX to cost estimate

FY2018: +\$258.408 to fund OCX to cost estimate (Nunn-McCurdy Certification)

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i> | Project (Number/Name) 67A021 / OCX |
|--|--|--|

| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|----------------------------|-------------|---------|---------|--------------|-------------|---------------|---------|---------|---------|---------|------------------|------------|
| 67A021: OCX | 2,517.555 | 283.170 | 451.362 | 447.382 | 0.000 | 447.382 | 377.236 | 277.124 | 171.790 | 90.698 | 107.300 | 4,723.617 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The Global Positioning System (GPS) is a space based positioning, navigation and timing distribution system which operates through all weather. This project funds the research and development for the GPS next generation operational control system (OCX). This includes, but is not limited to, advanced concept development, systems engineering and analysis, modernized control segment and mission planning, development, training simulators, integrated logistics support products, and test resources.

OCX acquisition was established to: 1) provide command and control of legacy and GPS III satellites; 2) incorporate situational awareness to support Navigation Warfare (NAVWAR) and signal monitoring; 3) enable mission capability upgrades to support a warfighter effects-based approach to operations; and 4) integrate DoD information assurance and cybersecurity controls and capabilities. OCX funds will support efforts such as engineering studies and analyses, architectural engineering studies, trade studies, technology needs forecasting, technology development, systems engineering, system development, test and evaluation efforts and mission operations in support of upgrades and product improvements for military and civil applications necessary to support efforts to protect U.S. military and Allies' use of GPS. Additionally, funds will ensure efforts to meet current and future Joint Requirements Oversight Council (JROC) approved required capabilities.

OCX Block 0 (through Iteration 1.5) is the Launch and Control System (LCS) intended to conduct Launch and Early Orbit (LEO) operations and the on-orbit checkout of all GPS III satellites. OCX Block 0 is a subset of OCX Block 1.

OCX Block 1 (adds Iterations 1.6, 1.7 and 2.1 to Block 0) fields the operational capability to control all legacy satellites and civil signals (L1C/A), military signals (L1P(Y), L2P(Y)) as well as the GPS III satellites and the modernized civil signal (L2C) and the aviation safety-of-flight signal (L5). In addition, Block 1 will field the basic operational capability to control the modernized military signals (L1M and L2M (M-Code)), and the globally compatible signal (L1C). It also fully meets information assurance/cyber defense requirements.

OCX Block 2 (adds Iteration 2.2 to Block 1) fields the advanced operational capability to control the advanced features of the modernized military signals (L1M and L2M (M-Code)).

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

| | FY 2016 | FY 2017 | FY 2018 |
|---|---------|---------|---------|
| Title: OCX Development | 259.056 | 415.610 | 410.251 |
| Description: Development of the GPS next generation operational control system to launch GPS III, operate a mixed GPS II and GPS III constellation, and provide for a robust Information Assurance system. | | | |
| FY 2016 Accomplishments: | | | |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i> | Project (Number/Name) 67A021 / OCX | | |
| B. Accomplishments/Planned Programs (\$ in Millions) | | FY 2016 | FY 2017 | FY 2018 |
| <p>Conducted Block 0 factory qualification testing and continued security certification activities leading to Authority to Operate (ATO). Completed Iteration 1.5 (Block 1) risk reduction testing and continued Iteration 1.6 (Block 1) software development and integration activities. Conducted qualification testing and production for OCX Monitor Station Receiver Element (OMSRE). Continued development of the remaining modernized civil and military signals. SECAF declared Nunn-McCurdy breach on 30 Jun 16. The program is targeting June 2017 for a Defense Acquisition Board and Milestone B recertification.</p> <p>FY 2017 Plans: Complete Block 0 site acceptance testing, receive approval to operate and connect, and certify and accept Block 0 for launch and checkout operations of GPS III satellites. Begin Iteration 1.6 software coding, integration and testing, and begin Iteration 1.7 and 2.1 software development and integration activities. Begin qualification testing for system simulator and begin accreditation process. Begin shipping, installation, and receive interim authority to test and integrate the monitoring stations equipment and OMSRE. Begin Iteration 2.2 (Block 2) systems engineering. Continue security certification activities leading to ATO. The program is targeting 22 Jun 2017 for a Defense Acquisition Board and Milestone B re-certification. Nunn-McCurdy re-certification was approved on 12 Oct 16, to include program re-plan/restructure.</p> <p>FY 2018 Plans: Continue Iteration 1.7 and 2.1 software development and integration activities. Continue system simulator accreditation process. Continue installation and integration of the monitoring stations equipment and OMSRE. Continue testing and integration activities for Iteration 1.6. Continue security certification activities leading to ATO. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.</p> | | | | |
| <p>Title: Technical Support</p> <p>Description: Development of the Standardized Space Trainer (SST) to provide GPS III operator training. Development of Enterprise Mission Planning Systems. Facilities upgrades for Control Stations and associated equipment and servers. Systems engineering including Technical Mission Analysis, Modernization SE and Technical Support, and Test and Evaluation.</p> <p>FY 2016 Accomplishments: Continued work on the SST and developed demonstration capabilities; continued development of Enterprise Mission Planning Systems. Continued work and began fielding to facilities to include the Mission Control Station (MCS), Alternate Mission Control Station (AMCS), sustainment assets and remote monitor station sites. Continued FFRDC direct support for development activities.</p> <p>FY 2017 Plans:</p> | | 24.114 | 35.752 | 37.131 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i> | Project (Number/Name) 67A021 / <i>OCX</i> |

| B. Accomplishments/Planned Programs (\$ in Millions) | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| Continue work on the SST and develop demonstration capabilities; continue development of Enterprise Mission Planning Systems. Continue work on the facility upgrades to include the MCS, AMCS, and remote monitor station sites. Continue FFRDC direct support for development activities. | | | |
| <i>FY 2018 Plans:</i> Continue work on the SST and develop demonstration capabilities; continue development of Enterprise Mission Planning Systems. Continue work on the facility upgrades to include the MCS, AMCS, and remote monitor station sites. | | | |
| Accomplishments/Planned Programs Subtotals | 283.170 | 451.362 | 447.382 |

| C. Other Program Funding Summary (\$ in Millions) | | | | | | | | | | | |
|---|----------------|----------------|-------------------------|------------------------|--------------------------|----------------|----------------|----------------|----------------|-----------------------------|-------------------|
| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| • RDTE: BA07: PE 1205265F: <i>GPS III Space Segment</i> | 147.398 | 179.188 | 243.435 | 0.000 | 243.435 | 127.699 | 44.129 | 12.254 | 8.771 | 40.618 | 803.492 |
| • SPAF: BA01: Line Item # <i>GPSIII: GPS III Space Segment</i> | 198.370 | 34.059 | 85.894 | 0.000 | 85.894 | 783.805 | 796.375 | 779.683 | 1,131.497 | 7,395.744 | 11,205.427 |
| • DOT: <i>DOT (FAA) Civil Funding</i> | 0.000 | 13.300 | 11.400 | 0.000 | 11.400 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 24.700 |

Remarks
DOT (FAA) funding in FY 2016 \$13.3M - \$11.4M expected in FY2017/FY2018.

D. Acquisition Strategy
The Air Force is pursuing a "Block" approach to the next generation GPS control segment (OCX) to respond to warfighter capability requirements. The strategy calls for capability (e.g., better signal maintainability, Unified S-Band (USB), Search and Rescue (SAR) GPS, and near-real time C2) on-ramps for the follow-on contract for GPS III SVs (starting no earlier than SV11) which will require updates to the OCX ground segment. Enterprise studies will ensure GPS Enterprise synchronization across space and ground segments.

E. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i> | Project (Number/Name) 67A021 / OCX |
|--|--|--|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| GPS OCX Phase B OCX Block 1 & 2 Development | C/CPAF | Raytheon : Aurora, CO | 1,871.003 | 242.584 | Dec 2015 | 389.226 | Dec 2016 | 382.642 | Dec 2017 | 0.000 | | 382.642 | 812.783 | 3,698.238 | 2,911.600 |
| GPS OCX Technical Mission Analysis | MIPR | Various : Various | 3.063 | 13.734 | Oct 2015 | 15.619 | Dec 2016 | 16.860 | Dec 2017 | 0.000 | | 16.860 | 69.940 | 119.216 | - |
| GPS OCX Enterprise SE&I | C/CPAF | TASC : El Segundo, CA | 45.049 | 4.391 | Dec 2015 | 4.063 | Dec 2016 | 3.029 | Dec 2017 | 0.000 | | 3.029 | 15.116 | 71.648 | - |
| GPS OCX Modernization/ SE & Technical Support | Various | Various : Various | 58.147 | 4.280 | Jan 2016 | 2.233 | Dec 2016 | 0.450 | Dec 2017 | 0.000 | | 0.450 | 22.485 | 87.595 | - |
| GPS OCX AMCS Facility Dev | Various | Various : Various | 0.372 | 0.300 | Mar 2016 | 0.100 | Mar 2017 | 0.000 | | 0.000 | | 0.000 | 0.000 | 0.772 | - |
| GPS OCX Standard Space Trainer (SST) | C/CPAF | Sonalyt, Inc : Waterford, CT | 11.500 | 5.000 | Jan 2016 | 2.500 | Dec 2016 | 5.000 | Dec 2017 | 0.000 | | 5.000 | 15.000 | 39.000 | - |
| GPS OCX Enterprise Mission Planning | C/CPIF | Booz Allen Hamilton Eng Services : El Segundo, CA | 10.000 | 0.000 | | 6.300 | Jan 2017 | 5.800 | Jan 2018 | 0.000 | | 5.800 | 3.700 | 25.800 | - |
| GPS OCX Phase A Development | Various | Various : Various | 289.000 | 0.000 | | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 289.000 | - |
| Subtotal | | | 2,288.134 | 270.289 | | 420.041 | | 413.781 | | 0.000 | | 413.781 | 939.024 | 4,331.269 | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| GPS OCX T&E | C/CPAF | Various : Various | 1.600 | 0.800 | Mar 2016 | 9.000 | Mar 2017 | 9.021 | Mar 2018 | 0.000 | | 9.021 | 0.000 | 20.421 | - |
| Subtotal | | | 1.600 | 0.800 | | 9.000 | | 9.021 | | 0.000 | | 9.021 | 0.000 | 20.421 | - |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i> | Project (Number/Name) 67A021 / OCX |

Schedule Details

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| Program Replan | 2 | 2016 | 2 | 2017 |
| Software Iteration 1.7 Incremental CDR (Include Iteration 1.6 CDR and update dates) | 1 | 2018 | 1 | 2018 |
| Software Iteration 2.1 Incremental CDR | 1 | 2018 | 1 | 2018 |
| SV01 Launch (LCS support) | 3 | 2018 | 3 | 2018 |
| Monitor Station /Legacy Ground Antenna Installs | 3 | 2018 | 2 | 2019 |
| GPS System Simulator (GSYS) Product Test | 3 | 2017 | 1 | 2018 |
| GSYS Factory Qualification Test (FQT) | 1 | 2018 | 4 | 2018 |
| GSYS Accreditation | 3 | 2018 | 3 | 2018 |
| Iteration 1.7/2.1 FQT TRR | 3 | 2019 | 3 | 2019 |
| OCX MS C | 1 | 2021 | 1 | 2021 |
| OCX Block 1 RTO | 1 | 2022 | 1 | 2022 |

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | | | | | | | | | | Date: May 2017 | | |
| Appropriation/Budget Activity 3600 / 7 | | | | | R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i> | | | | Project (Number/Name) 67A025 / <i>GPS Enterprise Integrator</i> | | | |
| COST (\$ in Millions) | Prior Years | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
| 67A025: <i>GPS Enterprise Integrator</i> | 286.844 | 61.056 | 61.906 | 63.556 | 0.000 | 63.556 | 64.373 | 65.449 | 67.309 | 65.390 | 66.000 | 801.883 |
| Quantity of RDT&E Articles | - | - | - | - | - | - | - | - | - | - | | |

A. Mission Description and Budget Item Justification

The Global Positioning System (GPS) Enterprise Integrator (EI) integrates, synchronizes, tests and verifies the three ACAT I Defense Acquisition Programs that constitute the GPS Enterprise to deliver reliable Positioning, Navigation, and Timing (PNT) signal capability to military operators, the civil user community, and international partners. The Government Joint Program Office owns and approves the technical baseline and is responsible for the successful fielding of all the GPS Segments (space, control, and user). To successfully execute its responsibilities, the Government relies upon the specific expertise of the GPS Enterprise Integrator to architect the enterprise, integrate segment products, and verify that overall enterprise requirements are met.

The GPS Enterprise Integrator project is responsible for the development and management of the Enterprise technical baseline reflecting the requirements of multiple stakeholder groups such as the Department of Defense (DoD), foreign governments and allies, industry, the general public (through four Interface specifications), and ensures GPS capabilities meet the needs of warfighters, civil agencies, commercial entities, international treaties, and over four billion global GPS users. The Enterprise Integrator manages the process through which the JROC validated requirements are matured and flowed down to the segments of the system consistent with clearly defined interfaces. This enables the GPS system to meet Title 10 of the U.S. Code, Section 2281, mandated GPS capabilities as well as obligations to the international community and allied nations to provide inter- operable PNT signals. The Enterprise Integrator is also responsible for all aspects of schedule and technical alignment across the segments. The Enterprise Integrator creates and manages plans that provide for early exercise of the products under development, compatibility analysis, and intersegment testing thereby reducing risk. The intersegment tests are required to prove the interoperability of the GPS next generation operational control system (OCX), GPS III satellites, and modernized user equipment. The Enterprise Integrator's test efforts also extend to validating that GPS can be used for civil aircraft navigation.

The Enterprise Integrator activity supports the Government Joint Program Office's GPS spectrum protection at international forums such as the International Telecommunications Union, assisting the United States when negotiating with foreign partners. In addition, the Enterprise Integrator provides technical expertise and continuity for maintaining relationships with other U.S. government agencies to include the FAA, NGA, NASA, as well as the Departments of State, Transportation, Homeland Security, and Commerce. Spectrum expertise from the Enterprise Integrator ensures GPS priority over eight essential spectrum signals such as the safety of life signal, L5, which is required for civil air navigation. Spectrum Protection prevents encroachment from commercial or foreign entities, which preserves reliable signals to warfighters and civil users, ensuring military operations and the integrity of the global economic infrastructure. The Enterprise Integrator is the GPS enterprise expert for Cybersecurity, System Safety, and System Security, ultimately ensuring a protected GPS Signal for both the military and civil users from emerging cyber threats. The Enterprise Integrator is accountable for the development, execution, and analysis of OCX, cybersecurity and associated test cases, which are necessary to deliver a secure, operational system, protected against adversarial cyber-attacks intended to deny, disrupt, or degrade GPS operations.

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| Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force | Date: May 2017 |
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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i> | Project (Number/Name) 67A025 / <i>GPS Enterprise Integrator</i> |
|--|--|---|

The Enterprise Integrator supports the Government development and implementation of various Systems engineering documents, defines the methods of verification, conducts the analyses or tests, and assists the government in leading Integrated System Tests. The Enterprise Integrator validates the system performance in various mission threat scenarios during its development. The Enterprise Integrator provides deep, technical, highly specific expertise. The GPS EI functions enhance government control, oversight and program accountability.

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

| | FY 2016 | FY 2017 | FY 2018 |
|--|----------------|----------------|----------------|
| <p>Title: GPS Enterprise Integrator</p> <p>Description: The integration and technical baseline control of all elements of the GPS system (space/control/user) with one another in support of both military and civil users. Execute four major integration exercises, multiple mini-events, and five rehearsals between space and ground leading up to the launch of GPS III space vehicle (SV) 01.</p> <p>FY 2016 Accomplishments: Completed Integrated System Test (IST) Phase 1 Military Global Positioning System User Equipment (MGUE) verification tests. Initiated IST 3-3 Phase 2 MGUE Field Test and IST 3-3 Phase 3 Environmental Test. Conducted launch and early orbit operation rehearsals on the delivered system between ground and space segment in support of SV01 launch. Continued Launch and Checkout Capability/Launch and Checkout System (LCS) Enterprise Assessments. Supported SV01 Functional Configuration Audit/Physical Configuration Audit. Conducted multiple system integration demos. Continued developing Selective Availability Anti-Spoofing Module (SAASM) Mission Planning System (SMPS) V5 and Architecture Evolution Plan (AEP)/Modernized Navigation (MODNAV) in support of M-Code Available for Use milestone.</p> <p>FY 2017 Plans: Complete IST 3-3 Phase 2 and 3 testing. Complete planning for IST 3-3 Phase 4 MGUE tests. Initiate IST 2-5 (COps + GPSIII) and IST 2-6 (MCEU) planning. Initiate GPS III end to end testing with GPS III, LCS, and MGUE lead platform. SMPS build 5.B.1 fielding and development testing begins. Planning for SMPS 5.B.3 system integration testing begins. Cybersecurity testing for MGUE and SMPS will continue. Conduct launch and early orbit operation planning and rehearsals on the delivered system between ground and space segments in support of SV01 launch. Initiate planning for early M-Code Operational Test through AEP.</p> <p>FY 2018 Plans: Support MGUE operational test planning. Continued execution of MGUE DT (Phases 2-4). Support launch of SV01. SPMP 5.B.3 testing will execute and complete. Plan and conduct test events for SV02. Cybersecurity testing for MGUE and SMPS will continue. Continue developing M-Code monitoring for Early Use integration and Command and Control of M-Code on AEP. Continue program office and other related support activities that may include, but are not limited to studies, technical analysis, etc.</p> | 61.056 | 61.906 | 63.556 |
| Accomplishments/Planned Programs Subtotals | 61.056 | 61.906 | 63.556 |

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Air Force **Date:** May 2017

| | | |
|--|--|---|
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i> | Project (Number/Name) 67A025 / <i>GPS Enterprise Integrator</i> |
|--|--|---|

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

| Line Item | FY 2016 | FY 2017 | FY 2018 Base | FY 2018 OCO | FY 2018 Total | FY 2019 | FY 2020 | FY 2021 | FY 2022 | Cost To Complete | Total Cost |
|---|---------|---------|-----------------|----------------|------------------|---------|---------|---------|-----------|---------------------|------------|
| • RDTE: BA04: PE 1203164F: <i>NAVSTAR Global Positioning System (User Equipment) (Space)</i> | 143.118 | 278.147 | 253.939 | 0.000 | 253.939 | 195.528 | 143.666 | 130.109 | 74.803 | 260.902 | 1,480.212 |
| • RDTE: BA07: PE 1203265F: <i>GPS III Space Segment</i> | 147.398 | 179.188 | 243.435 | 0.000 | 243.435 | 127.699 | 44.129 | 12.254 | 8.771 | 40.618 | 803.492 |
| • RDTE: BA07: PE 1203913F: <i>NUDET Detection System</i> | 14.403 | 21.093 | 31.508 | 0.000 | 31.508 | 19.927 | 17.100 | 14.269 | 14.561 | Continuing | Continuing |
| • SPAF: BA01: Line Item # MGPS00: <i>Global Positioning System (Space)</i> | 64.135 | 13.171 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 77.306 |
| • SPAF: BA01: Line Item # <i>GPSIII: GPS III Space Segment</i> | 198.370 | 34.059 | 85.894 | 0.000 | 85.894 | 783.805 | 796.375 | 779.683 | 1,131.497 | 7,395.744 | 11,205.427 |

Remarks

D. Acquisition Strategy

In accordance with a "back to basics" acquisition approach and exercise of strong oversight of development contractors, the Air Force is required to exercise complete ownership of the architecture, system definition, technical baseline, and integration of the GPS space, ground, and user segments. While this complex inter-segment integration is traditionally performed by a prime contractor under a systems development contract, for GPS, this approach requires the government to be the integrator. To execute this responsibility, the government leverages systems engineering and integration expertise from both Federally Funded Research and Development Center (FFRDC) contractors and a Systems Engineering & Integration (SE&I) contractor. GPS Enterprise Integrator function of the SE&I contractor is currently funded within this Program Element (PE). The SE&I effort was originally procured in 2007 through a full and open competition, as was the new follow-on SE&I contract awarded in 2015. The SE&I follow-on strategy builds in year over year cost reductions as requirements stabilize.

E. Performance Metrics

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Air Force **Date:** May 2017

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| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i> | Project (Number/Name) 67A025 / <i>GPS Enterprise Integrator</i> |
|--|--|---|

| Product Development (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| GPS EI Enterprise SE&I | C/CPAF | TASC : El Segundo, CA | 154.559 | 22.676 | Oct 2015 | 22.048 | Jun 2017 | 22.168 | Oct 2017 | 0.000 | | 22.168 | 104.441 | 325.892 | - |
| GPS EI Technical Mission Analysis 1 | MIPR | Aerospace : El Segundo, CA | 62.155 | 11.200 | Oct 2015 | 11.200 | Jun 2017 | 11.536 | Oct 2017 | 0.000 | | 11.536 | 62.928 | 159.019 | - |
| GPS EI Technical Mission Analysis 2 | RO | MITRE : Various, MA | 61.309 | 8.975 | Jan 2016 | 10.136 | Jun 2017 | 10.440 | Oct 2017 | 0.000 | | 10.440 | 57.680 | 148.540 | - |
| GPS EI MRTA/MSTA | C/CPIF | Draper Labs : Cambridge, MA | 0.000 | 4.025 | Dec 2015 | 3.400 | May 2017 | 3.400 | Dec 2017 | 0.000 | | 3.400 | 17.000 | 27.825 | - |
| GPS EI Enterprise Mission Planning | C/CPIF | TBD : El Segundo, CA | 0.000 | 1.320 | Oct 2015 | 0.000 | | 0.000 | | 0.000 | | 0.000 | 0.000 | 1.320 | - |
| GPS EI Cybersecurity | TBD | TBD : El Segundo, CA | 0.000 | 8.084 | Oct 2015 | 8.490 | May 2017 | 8.863 | Oct 2017 | 0.000 | | 8.863 | 47.483 | 72.920 | - |
| GPS EI Additional Product Development | Various | Various : Various, CA | 1.556 | 1.300 | Oct 2015 | 1.301 | Jul 2017 | 1.378 | Oct 2017 | 0.000 | | 1.378 | 11.371 | 16.906 | - |
| Subtotal | | | 279.579 | 57.580 | | 56.575 | | 57.785 | | 0.000 | | 57.785 | 300.903 | 752.422 | - |

| Support (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| Subtotal | | | - | - | | - | | - | | - | | - | - | - | - |

| Test and Evaluation (\$ in Millions) | | | | FY 2016 | | FY 2017 | | FY 2018 Base | | FY 2018 OCO | | FY 2018 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 | | | |
| EI Integrated Systems Test | Various | Various : El Segundo, CA | 0.000 | 0.000 | | 0.000 | | 1.200 | Apr 2018 | 0.000 | | 1.200 | 5.400 | 6.600 | - |
| Subtotal | | | 0.000 | 0.000 | | 0.000 | | 1.200 | | 0.000 | | 1.200 | 5.400 | 6.600 | - |

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| Exhibit R-4A, RDT&E Schedule Details: FY 2018 Air Force | | Date: May 2017 |
| Appropriation/Budget Activity 3600 / 7 | R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i> | Project (Number/Name) 67A025 / <i>GPS Enterprise Integrator</i> |

Schedule Details

| Events | Start | | End | |
|---|---------|------|---------|------|
| | Quarter | Year | Quarter | Year |
| IST 3-3/MGUE Verification Testing (Phase II) | 4 | 2016 | 1 | 2020 |
| IST 3-3/MGUE Verification Testing (Phase III) | 4 | 2016 | 3 | 2020 |
| IST 3-3/MGUE Verification Testing (Phase IV) | 1 | 2017 | 4 | 2020 |
| GPS III SV01 Available for Launch | 4 | 2017 | 4 | 2017 |
| GPS III SV02 Available for Launch | 2 | 2018 | 2 | 2018 |
| GPS III SV03 Available for Launch | 2 | 2019 | 2 | 2019 |
| GPS III SV04 Available for Launch | 3 | 2019 | 3 | 2019 |
| GPS III SV05 Available for Launch | 1 | 2020 | 1 | 2020 |
| GPS III SV06 Available for Launch | 3 | 2020 | 3 | 2020 |
| GPS III SV07 Available for Launch | 1 | 2021 | 1 | 2021 |
| GPS III SV08 Available for Launch | 2 | 2021 | 2 | 2021 |
| M-Code Early Use | 1 | 2020 | 1 | 2020 |
| Support OCX Blocks 1 & 2 Milestone C | 1 | 2021 | 1 | 2021 |
| Support OCX Block 1 Ready to Transition to Operations (RTO) | 1 | 2022 | 1 | 2022 |

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