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**Department of Defense  
Fiscal Year (FY) 2022 Budget Estimates**

May 2021



**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 2022 • RDT&E Program

**Volume 3b Table of Contents**

**Comptroller Exhibit R-1..... Volume 3b - iii**  
**Master Program Element Table of Contents (by Budget Activity then Line Item Number)..... Volume 3b - xxi**  
**Master Program Element Table of Contents (Alphabetically by Program Element Title)..... Volume 3b - xli**  
**Book Split Statement..... Volume 3b - Ivii**  
**Exhibit R-2s..... Volume 3b - 1**

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Department of Defense  
 FY 2022 President's Budget  
 Exhibit R-1 FY 2022 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

05 May 2021

Summary Recap of Budget Activities -----	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request
Basic Research	517,217	536,314	490,706
Applied Research	1,687,989	1,777,710	1,488,286
Advanced Technology Development	956,409	1,000,257	810,639
Advanced Component Development & Prototypes	8,137,663	8,794,661	10,516,657
System Development & Demonstration	6,521,351	6,197,754	5,909,640
Management Support	3,911,806	3,153,492	3,371,430
Operational Systems Development	24,069,528	25,290,981	27,290,550
Software and Digital Technology Pilot Programs		149,742	572,807
Total Research, Development, Test & Evaluation	45,801,963	46,900,911	50,450,715
Summary Recap of FYDP Programs -----			
Strategic Forces	783,840	1,000,079	1,173,877
General Purpose Forces	3,638,050	3,811,478	4,488,007
Intelligence and Communications	1,187,219	1,127,255	1,013,665
Mobility Forces	883,396	1,010,820	844,787
Research and Development	15,377,077	14,184,508	15,653,055
Central Supply and Maintenance	35,898	113,472	86,648
Training Medical and Other	8,302	7,061	10,944
Administration and Associated Activities	87,640	69,398	35,212
Support of Other Nations	3,922	3,592	2,420

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Department of Defense  
 FY 2022 President's Budget  
 Exhibit R-1 FY 2022 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

05 May 2021

	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request
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Space	6,114,555	6,892,677	6,798,318
Classified Programs	17,682,064	18,680,571	20,343,782
Total Research, Development, Test & Evaluation	45,801,963	46,900,911	50,450,715

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Department of the Air Force  
 FY 2022 President's Budget  
 Exhibit R-1 FY 2022 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

05 May 2021

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

Line No	Program Element Number	Item	Act	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request	Se
1	0601102F	Defense Research Sciences	01	331,102	324,755	328,303	U
2	0601103F	University Research Initiatives	01	172,379	196,502	162,403	U
3	0601108F	High Energy Laser Research Initiatives	01	13,736	15,057		U
		Basic Research		517,217	536,314	490,706	
4	0602020F	Future AF Capabilities Applied Research	02		79,854	79,901	U
5	0602102F	Materials	02	212,551	237,847	113,460	U
6	0602201F	Aerospace Vehicle Technologies	02	148,176	164,426	163,032	U
7	0602202F	Human Effectiveness Applied Research	02	128,434	133,877	136,273	U
8	0602203F	Aerospace Propulsion	02	214,814	201,048	174,683	U
9	0602204F	Aerospace Sensors	02	210,940	232,876	193,514	U
10	0602212F	Defense Laboratories R&D Projects (10 U.S.C, Sec 2358)	02	100,519			U
11	0602298F	Science and Technology Management - Major Headquarters Activities	02	8,346	8,910	8,891	U
12	0602602F	Conventional Munitions	02	132,090	127,193	151,757	U
13	0602605F	Directed Energy Technology	02	114,297	130,375	121,869	U
14	0602788F	Dominant Information Sciences and Methods	02	214,376	215,275	169,110	U
15	0602890F	High Energy Laser Research	02	47,462	29,155		U
16	1206601F	Space Technology	02	155,984			U
		Applied Research		1,687,989	1,560,836	1,312,490	
17	0603032F	Future AF Integrated Technology Demos	03		147,350	131,643	U
18	0603112F	Advanced Materials for Weapon Systems	03	58,657	60,059	31,905	U
19	0603199F	Sustainment Science and Technology (S&T)	03	14,376	16,902	21,057	U

R-122BAS: FY 2022 President's Budget (Total Base Published Version), as of May 5, 2021 at 14:49:13

UNCLASSIFIED

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 FY 2022 President's Budget  
 Exhibit R-1 FY 2022 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

05 May 2021

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20	0603203F	Advanced Aerospace Sensors	03	40,116	35,274	44,730	U
21	0603211F	Aerospace Technology Dev/Demo	03	95,730	62,117	70,486	U
22	0603216F	Aerospace Propulsion and Power Technology	03	161,352	144,229	75,273	U
23	0603270F	Electronic Combat Technology	03	45,882	35,841	46,591	U
24	0603401F	Advanced Spacecraft Technology	03	75,405	87,608		U
25	0603444F	Maui Space Surveillance System (MSSS)	03	11,343	12,068		U
26	0603456F	Human Effectiveness Advanced Technology Development	03	32,827	31,667	24,589	U
27	0603601F	Conventional Weapons Technology	03	202,048	133,900	157,423	U
28	0603605F	Advanced Weapons Technology	03	32,578	31,388	28,258	U
29	0603680F	Manufacturing Technology Program	03	133,059	138,748	45,259	U
30	0603788F	Battlespace Knowledge Development and Demonstration	03	53,036	63,106	56,772	U
		Advanced Technology Development		956,409	1,000,257	733,986	
31	0603260F	Intelligence Advanced Development	04	5,672	4,312	5,795	U
32	0603742F	Combat Identification Technology	04	31,367	26,348	21,939	U
33	0603790F	NATO Research and Development	04	4,774	3,640	4,114	U
34	0603851F	Intercontinental Ballistic Missile - Dem/Val	04	29,881	32,899	49,621	U
35	0603859F	Pollution Prevention - Dem/Val	04	2,890			U
36	0604001F	NC3 Advanced Concepts	04			6,900	U
37	0604002F	Air Force Weather Services Research	04	747	2,234	986	U
38	0604003F	Advanced Battle Management System (ABMS)	04	139,203	158,492	203,849	U
39	0604004F	Advanced Engine Development	04	647,850	665,280	123,712	U

R-122BAS: FY 2022 President's Budget (Total Base Published Version), as of May 5, 2021 at 14:49:13

UNCLASSIFIED

Department of the Air Force  
 FY 2022 President's Budget  
 Exhibit R-1 FY 2022 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

05 May 2021

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

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40	0604006F	Architecture Initiatives	04			82,438	U
41	0604015F	Long Range Strike - Bomber	04	2,878,798	2,843,214	2,872,624	U
42	0604032F	Directed Energy Prototyping	04	42,390	19,429	10,820	U
43	0604033F	Hypersonics Prototyping	04	566,935	386,157	438,378	U
44	0604201F	PNT Resiliency, Mods, and Improvements	04	120,267		39,742	U
45	0604257F	Advanced Technology and Sensors	04	23,145	24,702	23,745	U
46	0604288F	Survivable Airborne Operations Center	04	12,205	59,390	133,253	U
47	0604317F	Technology Transfer	04	37,269	16,980	15,768	U
48	0604327F	Hard and Deeply Buried Target Defeat System (HDBTDS) Program	04	111,506	52,825	15,886	U
49	0604414F	Cyber Resiliency of Weapon Systems-ACS	04	54,676	69,656	71,229	U
50	0604776F	Deployment & Distribution Enterprise R&D	04	27,618	25,788	40,103	U
51	0604858F	Tech Transition Program	04	322,793	305,943	343,545	U
52	0605230F	Ground Based Strategic Deterrent	04	538,643	1,447,113	2,553,541	U
53	0207100F	Light Attack Armed Reconnaissance (LAAR) Squadrons	04	1,982			U
54	0207110F	Next Generation Air Dominance	04	872,539	902,440	1,524,667	U
55	0207455F	Three Dimensional Long-Range Radar (3DELRR)	04	22,469	19,321		U
56	0207522F	Airbase Air Defense Systems (ABADS)	04		8,721	10,905	U
57	0208030F	War Reserve Materiel - Ammunition	04			3,943	U
58	0208099F	Unified Platform (UP)	04	9,634	5,979		U
59	0305236F	Common Data Link Executive Agent (CDL EA)	04	36,893	39,221	43,881	U
60	0305251F	Cyberspace Operations Forces and Force Support	04		20,000		U

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UNCLASSIFIED

Department of the Air Force  
 FY 2022 President's Budget  
 Exhibit R-1 FY 2022 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

05 May 2021

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

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61	0305601F	Mission Partner Environments	04	8,237	11,409	16,420	U
62	0306250F	Cyber Operations Technology Support	04	194,958	234,395	242,499	U
63	0306415F	Enabled Cyber Activities	04	16,024	10,541	16,578	U
64	0401310F	C-32 Executive Transport Recapitalization	04		6,197		U
65	0708051F	Rapid Sustainment Modernization (RSM)	04	5,802	19,964		U
66	0901410F	Contracting Information Technology System	04	22,266	5,662	20,343	U
67	1203164F	NAVSTAR Global Positioning System (User Equipment) (SPACE)	04	308,215			U
68	1203710F	EO/IR Weather Systems	04	121,723			U
69	1206422F	Weather System Follow-on	04	195,495			U
70	1206425F	Space Situation Awareness Systems	04	29,013			U
71	1206427F	Space Systems Prototype Transitions (SSPT)	04	137,470			U
72	1206438F	Space Control Technology	04	56,270			U
73	1206730F	Space Security and Defense Program	04	56,385			U
74	1206760F	Protected Tactical Enterprise Service (PTES)	04	101,583			U
75	1206761F	Protected Tactical Service (PTS)	04	154,237			U
76	1206855F	Evolved Strategic SATCOM (ESS)	04	161,882			U
77	1206857F	Space Rapid Capabilities Office	04	25,957			U
		Advanced Component Development & Prototypes		8,137,663	7,428,252	8,937,224	
78	0604200F	Future Advanced Weapon Analysis & Programs	05	4,993	22,894	23,499	U
79	0604201F	PNT Resiliency, Mods, and Improvements	05	202,354	38,494	167,520	U
80	0604222F	Nuclear Weapons Support	05	4,249	26,057	30,050	U

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 FY 2022 President's Budget  
 Exhibit R-1 FY 2022 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

05 May 2021

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

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81	0604270F	Electronic Warfare Development	05	1,994	2,094	2,110	U
82	0604281F	Tactical Data Networks Enterprise	05	182,691	121,188	169,836	U
83	0604287F	Physical Security Equipment	05	11,122	6,740	8,469	U
84	0604329F	Small Diameter Bomb (SDB) - EMD	05	44,530			U
85	0604602F	Armament/Ordnance Development	05	29,505	23,034	9,047	U
86	0604604F	Submunitions	05	3,043	3,085	2,954	U
87	0604617F	Agile Combat Support	05	31,133	18,980	16,603	U
88	0604618F	Joint Direct Attack Munition	05		6,806		U
89	0604706F	Life Support Systems	05	14,137	28,608	25,437	U
90	0604735F	Combat Training Ranges	05	52,678	23,854	23,980	U
91	0604800F	F-35 - EMD	05	7,420	5,413		U
92	0604932F	Long Range Standoff Weapon	05	701,866	384,727	609,042	U
93	0604933F	ICBM Fuze Modernization	05	155,476	156,693	129,709	U
94	0605030F	Joint Tactical Network Center (JTNC)	05	2,326			U
95	0605056F	Open Architecture Management	05	28,902	30,491	37,109	U
96	0605221F	KC-46	05	52,623		1	U
97	0605223F	Advanced Pilot Training	05	328,414	248,216	188,898	U
98	0605229F	HH-60W	05	238,457	63,054	66,355	U
99	0605931F	B-2 Defensive Management System	05	224,358			U
100	0101125F	Nuclear Weapons Modernization	05	10,157	9,665		U
101	0207171F	F-15 EPAWSS	05	46,040	170,368	112,012	U

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Department of the Air Force  
 FY 2022 President's Budget  
 Exhibit R-1 FY 2022 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

05 May 2021

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

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102	0207328F	Stand In Attack Weapon	05	151,534	150,371	166,570	U
103	0207701F	Full Combat Mission Training	05	11,238	9,405	7,064	U
104	0305176F	Combat Survivor Evader Locator	05		971		U
105	0401221F	KC-46A Tanker Squadrons	05		76,023	73,458	U
106	0401310F	C-32 Executive Transport Recapitalization	05	62			U
107	0401319F	VC-25B	05	730,183	799,429	680,665	U
108	0701212F	Automated Test Systems	05	2,685	10,654	15,445	U
109	0804772F	Training Developments	05		4,471	4,482	U
110	0901299F	AF A1 Systems	05		7,453		U
111	1203176F	Combat Survivor Evader Locator	05	1,949			U
112	1203269F	GPS III Follow-On (GPS IIIF)	05	427,210			U
113	1203940F	Space Situation Awareness Operations	05	51,749			U
114	1206421F	Counterspace Systems	05	26,246			U
115	1206422F	Weather System Follow-on	05	2,155			U
116	1206425F	Space Situation Awareness Systems	05	349,612			U
117	1206431F	Advanced EHF MILSATCOM (SPACE)	05	111,023			U
118	1206432F	Polar MILSATCOM (SPACE)	05	385,665			U
119	1206433F	Wideband Global SATCOM (SPACE)	05	1,855			U
120	1206441F	Space Based Infrared System (SBIRS) High EMD	05	1			U
121	1206442F	Next Generation OPIR	05	1,470,278			U
122	1206445F	Commercial SATCOM (COMSATCOM) Integration	05	4,817			U

R-122BAS: FY 2022 President's Budget (Total Base Published Version), as of May 5, 2021 at 14:49:13

UNCLASSIFIED



UNCLASSIFIED

Department of the Air Force  
 FY 2022 President's Budget  
 Exhibit R-1 FY 2022 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

05 May 2021

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

Line No	Element Number	Program Item	Act	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request	Se
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123	1206853F	National Security Space Launch Program (SPACE) - EMD	05	414,621			U
		System Development & Demonstration		6,521,351	2,449,238	2,570,315	
124	0604256F	Threat Simulator Development	06	58,906	57,620	41,909	U
125	0604759F	Major T&E Investment	06	106,014	208,299	130,766	U
126	0605101F	RAND Project Air Force	06	33,968	35,738	36,017	U
127	0605502F	Small Business Innovation Research	06	884,237			U
128	0605712F	Initial Operational Test & Evaluation	06	13,288	13,532	12,582	U
129	0605807F	Test and Evaluation Support	06	795,626	761,307	811,032	U
130	0605826F	Acq Workforce- Global Power	06	256,906	270,781		U
131	0605827F	Acq Workforce- Global Vig & Combat Sys	06	264,506	254,768	243,796	U
132	0605828F	Acq Workforce- Global Reach	06	159,011	157,964	435,930	U
133	0605829F	Acq Workforce- Cyber, Network, & Bus Sys	06	241,623	254,838	435,274	U
134	0605830F	Acq Workforce- Global Battle Mgmt	06	166,552	177,811		U
135	0605831F	Acq Workforce- Capability Integration	06	239,728	219,467	243,806	U
136	0605832F	Acq Workforce- Advanced Prgm Technology	06	38,517	58,477	103,041	U
137	0605833F	Acq Workforce- Nuclear Systems	06	135,770	179,318	226,055	U
138	0605898F	Management HQ - R&D	06	5,932	5,724	4,079	U
139	0605976F	Facilities Restoration and Modernization - Test and Evaluation Support	06	88,445	70,856	70,788	U
140	0605978F	Facilities Sustainment - Test and Evaluation Support	06	29,424	29,826	30,057	U
141	0606017F	Requirements Analysis and Maturation	06	81,734	68,256	85,799	U
142	0606398F	Management HQ - T&E	06	6,213	5,774	6,163	U

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 Exhibit R-1 FY 2022 President's Budget  
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05 May 2021

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143	0303166F	Support to Information Operations (IO) Capabilities	06			537	U
144	0303255F	Command, Control, Communication, and Computers (C4) - STRATCOM	06		21,525	25,340	U
145	0308602F	ENTEPRISE INFORMATION SERVICES (EIS)	06	10,239	9,865	28,720	U
146	0702806F	Acquisition and Management Support	06	5,696	13,384	37,211	U
147	0804731F	General Skill Training	06	6,238	1,260	1,506	U
148	0804772F	Training Developments	06			2,957	U
149	0909999F	Financing for Cancelled Account Adjustments	06	4,703			U
150	1001004F	International Activities	06	3,922	3,592	2,420	U
151	1206116F	Space Test and Training Range Development	06	14,515			U
152	1206392F	ACQ Workforce - Space & Missile Systems	06	187,110			U
153	1206398F	Space & Missile Systems Center - MHA	06	10,170			U
154	1206860F	Rocket Systems Launch Program (SPACE)	06	15,613			U
155	1206862F	Tactically Responsive Launch	06	21,965			U
156	1206864F	Space Test Program (STP)	06	25,235		3	U
		Management Support		3,911,806	2,879,982	3,015,788	
157	0604233F	Specialized Undergraduate Flight Training	07	2,492	11,556	5,509	U
158	0604445F	Wide Area Surveillance	07	19,268		2,760	U
159	0604776F	Deployment & Distribution Enterprise R&D	07	870	499		U
160	0604840F	F-35 C2D2	07	624,973	695,869	985,404	U
161	0605018F	AF Integrated Personnel and Pay System (AF-IPPS)	07	39,275	26,986	22,010	U
162	0605024F	Anti-Tamper Technology Executive Agency	07	46,934	47,107	51,492	U

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163	0605117F	Foreign Materiel Acquisition and Exploitation	07	68,397	71,099	71,391	U
164	0605278F	HC/MC-130 Recap RDT&E	07	16,523	19,491	46,796	U
165	0606018F	NC3 Integration	07	25,414	26,308	26,532	U
166	0606942F	Assessments and Evaluations Cyber Vulnerabilities	07		3,000		U
167	0101113F	B-52 Squadrons	07	308,048	482,741	715,811	U
168	0101122F	Air-Launched Cruise Missile (ALCM)	07	10,116	1,430	453	U
169	0101126F	B-1B Squadrons	07	1,000	15,737	29,127	U
170	0101127F	B-2 Squadrons	07	85,742	181,068	144,047	U
171	0101213F	Minuteman Squadrons	07	90,595	89,306	113,622	U
172	0101316F	Worldwide Joint Strategic Communications	07	25,312	31,166	15,202	U
173	0101324F	Integrated Strategic Planning & Analysis Network	07	23,542	24,227		U
174	0101328F	ICBM Reentry Vehicles	07	63,484	112,547	96,313	U
176	0102110F	UH-1N Replacement Program	07	165,844	41,388	16,132	U
177	0102326F	Region/Sector Operation Control Center Modernization Program	07		10,704	771	U
178	0102412F	North Warning System (NWS)	07		100	99	U
179	0102417F	Over-the-Horizon Backscatter Radar	07			42,300	U
180	0202834F	Vehicles and Support Equipment - General	07			5,889	U
181	0205219F	MQ-9 UAV	07	122,919	106,885	85,135	U
182	0205671F	Joint Counter RCIED Electronic Warfare	07	3,854	4,080	3,111	U
183	0207040F	Multi-Platform Electronic Warfare Equipment	07			36,607	U
184	0207131F	A-10 Squadrons	07	25,533	24,490	39,224	U

R-122BAS: FY 2022 President's Budget (Total Base Published Version), as of May 5, 2021 at 14:49:13

## UNCLASSIFIED

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 Total Obligational Authority  
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185	0207133F	F-16 Squadrons	07	179,655	202,498	224,573	U
186	0207134F	F-15E Squadrons	07	640,124	288,381	239,616	U
187	0207136F	Manned Destructive Suppression	07	15,044	14,933	15,855	U
188	0207138F	F-22A Squadrons	07	537,232	663,825	647,296	U
189	0207142F	F-35 Squadrons	07	94,731	114,621	69,365	U
190	0207146F	F-15EX	07		159,470	118,126	U
191	0207161F	Tactical AIM Missiles	07	10,012	19,382	32,974	U
192	0207163F	Advanced Medium Range Air-to-Air Missile (AMRAAM)	07	53,681	51,705	51,288	U
193	0207227F	Combat Rescue - Pararescue	07	281	668	852	U
194	0207247F	AF TENCAP	07	22,115	18,820	23,685	U
195	0207249F	Precision Attack Systems Procurement	07	10,395	9,244	12,083	U
196	0207253F	Compass Call	07	30,687	15,825	91,266	U
197	0207268F	Aircraft Engine Component Improvement Program	07	108,446	125,666	103,715	U
198	0207325F	Joint Air-to-Surface Standoff Missile (JASSM)	07	73,510	70,663	117,325	U
199	0207327F	Small Diameter Bomb (SDB)	07		20,780	27,109	U
200	0207410F	Air & Space Operations Center (AOC)	07	110,651	51,094	3	U
201	0207412F	Control and Reporting Center (CRC)	07	6,642	16,012	9,875	U
202	0207417F	Airborne Warning and Control System (AWACS)	07	67,341	123,925	171,014	U
203	0207418F	AFSPECWAR - TACP	07	2,372	4,215	4,598	U
205	0207431F	Combat Air Intelligence System Activities	07	13,547	16,534	21,863	U
206	0207438F	Theater Battle Management (TBM) C4I	07		7,844	7,905	U

R-122BAS: FY 2022 President's Budget (Total Base Published Version), as of May 5, 2021 at 14:49:13

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Department of the Air Force  
 FY 2022 President's Budget  
 Exhibit R-1 FY 2022 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

05 May 2021

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

Line No	Program Element Number	Item	Act	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request	Se
---	-----	----	---	-----	-----	-----	c
207	0207439F	Electronic Warfare Integrated Reprogramming (EWIR)	07			15,000	U
208	0207444F	Tactical Air Control Party-Mod	07	4,019	12,882	13,081	U
209	0207452F	DCAPES	07	19,180	14,789	4,305	U
210	0207521F	Air Force Calibration Programs	07		1,966	1,984	U
211	0207522F	Airbase Air Defense Systems (ABADS)	07			7,392	U
212	0207573F	National Technical Nuclear Forensics	07	1,723	395	1,971	U
213	0207590F	Seek Eagle	07	28,175	29,626	30,539	U
214	0207601F	USAF Modeling and Simulation	07	15,243	17,634	17,110	U
215	0207605F	Wargaming and Simulation Centers	07	4,158	6,341	7,535	U
216	0207610F	Battlefield Abn Comm Node (BACN)	07	25,960	6,815	32,008	U
217	0207697F	Distributed Training and Exercises	07	4,146	3,384	4,007	U
218	0208006F	Mission Planning Systems	07	69,232	91,601	92,557	U
219	0208007F	Tactical Deception	07	7,173		489	U
220	0208064F	OPERATIONAL HQ - CYBER	07	7,335	5,493	2,115	U
221	0208087F	Distributed Cyber Warfare Operations	07	67,725	68,154	72,487	U
222	0208088F	AF Defensive Cyberspace Operations	07	37,309	30,108	18,449	U
223	0208097F	Joint Cyber Command and Control (JCC2)	07	11,306	38,410	79,079	U
224	0208099F	Unified Platform (UP)	07	90,002	84,491	101,893	U
228	0208288F	Intel Data Applications	07	1,156	1,224	493	U
229	0301025F	GeoBase	07	2,623	2,762	2,782	U
230	0301112F	Nuclear Planning and Execution System (NPES)	07	42,719	32,699		U

R-122BAS: FY 2022 President's Budget (Total Base Published Version), as of May 5, 2021 at 14:49:13

UNCLASSIFIED

Department of the Air Force  
 FY 2022 President's Budget  
 Exhibit R-1 FY 2022 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

05 May 2021

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

Line No	Program Element Number	Item	Act	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request	Se
--	-----	----	---	-----	-----	-----	c
231	0301113F	Cyber Security Intelligence Support	07			5,224	U
238	0301401F	Air Force Space and Cyber Non-Traditional ISR for Battlespace Awareness	07	3,575	1,382	2,463	U
239	0302015F	E-4B National Airborne Operations Center (NAOC)	07	58,059	3,462	26,331	U
240	0303131F	Minimum Essential Emergency Communications Network (MEECN)	07	13,132	44,640	20,700	U
241	0303133F	High Frequency Radio Systems	07	15,689			U
242	0303140F	Information Systems Security Program	07	26,732	10,351	8,032	U
243	0303142F	Global Force Management - Data Initiative	07	2,129	1,344	452	U
244	0303248F	All Domain Common Platform	07			64,000	U
246	0304260F	Airborne SIGINT Enterprise	07	85,157	127,876	97,546	U
247	0304310F	Commercial Economic Analysis	07	3,305	4,035	3,770	U
250	0305015F	C2 Air Operations Suite - C2 Info Services	07	9,022			U
251	0305020F	CCMD Intelligence Information Technology	07	1,121	1,646	1,663	U
252	0305022F	ISR Modernization & Automation Dvmt (IMAD)	07	19,000	19,230	18,888	U
253	0305099F	Global Air Traffic Management (GATM)	07	4,404	4,637	4,672	U
254	0305103F	Cyber Security Initiative	07		383	290	U
255	0305111F	Weather Service	07	34,292	36,573	26,228	U
256	0305114F	Air Traffic Control, Approach, and Landing System (ATCAL)	07	8,394	6,541	8,749	U
257	0305116F	Aerial Targets	07	8,761	448	1,528	U
260	0305128F	Security and Investigative Activities	07	409	431	223	U
261	0305145F	Arms Control Implementation	07	40,177			U
262	0305146F	Defense Joint Counterintelligence Activities	07	6,858	4,881	8,733	U

R-122BAS: FY 2022 President's Budget (Total Base Published Version), as of May 5, 2021 at 14:49:13

UNCLASSIFIED

Department of the Air Force  
 FY 2022 President's Budget  
 Exhibit R-1 FY 2022 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

05 May 2021

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

Line No	Program Element Number	Item	Act	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request	Se
--	-----	----	---	-----	-----	-----	c
264	0305179F	Integrated Broadcast Service (IBS)	07	8,728	8,848	21,335	U
265	0305202F	Dragon U-2	07	36,389	36,593	17,146	U
266	0305205F	Endurance Unmanned Aerial Vehicles	07	15,000			U
267	0305206F	Airborne Reconnaissance Systems	07	137,157	123,287	71,791	U
268	0305207F	Manned Reconnaissance Systems	07	11,787	14,684	14,799	U
269	0305208F	Distributed Common Ground/Surface Systems	07	25,009	14,126	24,568	U
270	0305220F	RQ-4 UAV	07	191,733	163,291	83,124	U
271	0305221F	Network-Centric Collaborative Targeting	07	10,757	15,022	17,224	U
272	0305238F	NATO AGS	07	32,567	36,664	19,473	U
273	0305240F	Support to DCGS Enterprise	07	37,774	33,486	40,421	U
274	0305600F	International Intelligence Technology and Architectures	07	13,515	17,283	14,473	U
275	0305881F	Rapid Cyber Acquisition	07	4,223	4,254	4,326	U
276	0305984F	Personnel Recovery Command & Ctrl (PRC2)	07	2,057	2,203	2,567	U
277	0307577F	Intelligence Mission Data (IMD)	07	8,614	6,266	6,169	U
278	0401115F	C-130 Airlift Squadron	07	89,532	41,896	9,752	U
279	0401119F	C-5 Airlift Squadrons (IF)	07	9,883	30,560	17,507	U
280	0401130F	C-17 Aircraft (IF)	07	20,653	9,935	16,360	U
281	0401132F	C-130J Program	07	6,919	10,656	14,112	U
282	0401134F	Large Aircraft IR Countermeasures (LAIRCM)	07	5,247	5,497	5,540	U
283	0401218F	KC-135s	07		4,583	3,564	U
284	0401219F	KC-10s	07	19			U

R-122BAS: FY 2022 President's Budget (Total Base Published Version), as of May 5, 2021 at 14:49:13

UNCLASSIFIED

Department of the Air Force  
 FY 2022 President's Budget  
 Exhibit R-1 FY 2022 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

05 May 2021

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

Line No	Program Element Number	Item	Act	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request	Se
--	-----	----	---	-----	-----	-----	c
285	0401318F	CV-22	07	17,355	18,385	17,189	U
286	0408011F	Special Tactics / Combat Control	07	3,543	7,659	6,640	U
287	0702207F	Depot Maintenance (Non-IF)	07	1,821			U
288	0708055F	Maintenance, Repair & Overhaul System	07	9,239	24,468	26,921	U
289	0708610F	Logistics Information Technology (LOGIT)	07	10,133	33,186	7,071	U
290	0708611F	Support Systems Development	07	522	11,816		U
291	0804743F	Other Flight Training	07	2,054	1,330	1,999	U
292	0808716F	Other Personnel Activities	07	10			U
293	0901202F	Joint Personnel Recovery Agency	07	1,985	2,088	1,841	U
294	0901218F	Civilian Compensation Program	07	3,809	3,862	3,560	U
295	0901220F	Personnel Administration	07	4,265	1,581	3,368	U
296	0901226F	Air Force Studies and Analysis Agency	07	1,390	1,195	1,248	U
297	0901538F	Financial Management Information Systems Development	07	8,983	6,993	4,852	U
298	0901554F	Defense Enterprise Acntng and Mgt Sys (DEAMS)	07	40,239	40,564		U
299	1201017F	Global Sensor Integrated on Network (GSIN)	07	3,532			U
300	1201921F	Service Support to STRATCOM - Space Activities	07	952	991		U
301	1202140F	Service Support to SPACECOM Activities	07	11,429	8,983	6,737	U
302	1203001F	Family of Advanced BLoS Terminals (FAB-T)	07	173,903			U
303	1203110F	Satellite Control Network (SPACE)	07	54,850			U
305	1203173F	Space and Missile Test and Evaluation Center	07	5,322			U
306	1203174F	Space Innovation, Integration and Rapid Technology Development	07	36,890			U

R-122BAS: FY 2022 President's Budget (Total Base Published Version), as of May 5, 2021 at 14:49:13



UNCLASSIFIED

Department of the Air Force  
 FY 2022 President's Budget  
 Exhibit R-1 FY 2022 President's Budget  
 Total Obligational Authority  
 (Dollars in Thousands)

05 May 2021

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

Line No	Program Element Number	Item	Act	FY 2020 Actual*	FY 2021 Enacted**	FY 2022 Request	Se
---	-----	----	---	-----	-----	-----	c
307	1203182F	Spacelift Range System (SPACE)	07	20,128			U
308	1203265F	GPS III Space Segment	07	47,178			U
309	1203400F	Space Superiority Intelligence	07	14,428			U
310	1203614F	JSpOC Mission System	07	82,044			U
311	1203620F	National Space Defense Center	07	2,649			U
312	1203873F	Ballistic Missile Defense Radars	07	15,335			U
313	1203913F	NUDET Detection System (SPACE)	07	49,300			U
314	1203940F	Space Situation Awareness Operations	07	16,228			U
315	1206423F	Global Positioning System III - Operational Control Segment	07	439,560			U
316	1206770F	Enterprise Ground Services	07	114,824			U
9999	9999999999	Classified Programs		17,682,064	15,023,205	15,868,973	U
		Operational Systems Development		24,069,528	20,505,963	21,705,541	
317	0608158F	Strategic Mission Planning and Execution System - Software Pilot Program	08			96,100	U
318	0608410F	Air & Space Operations Center (AOC) - Software Pilot Program	08			186,915	U
319	0608920F	Defense Enterprise Accounting and Management System (DEAMS) - Software Pilot Pro	08			135,263	U
		Software and Digital Technology Pilot Programs				418,278	
Total Research, Development, Test & Eval, AF				45,801,963	36,360,842	39,184,328	

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Air Force • Budget Estimates FY 2022 • RDT&E Program

**Master Program Element Table of Contents (by Budget Activity then Line Item Number)**

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

---

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
1	01	0601102F	Defense Research Sciences.....	Volume 1 - 1
2	01	0601103F	University Research Initiatives.....	Volume 1 - 15
3	01	0601108F	High Energy Laser Research Initiatives.....	Volume 1 - 21

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

---

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
4	02	0602020F	Future AF Capabilities Applied Research.....	Volume 1 - 25
5	02	0602102F	Materials.....	Volume 1 - 29
6	02	0602201F	Aerospace Vehicle Technologies.....	Volume 1 - 47
7	02	0602202F	Human Effectiveness Applied Research.....	Volume 1 - 67
8	02	0602203F	Aerospace Propulsion.....	Volume 1 - 85
9	02	0602204F	Aerospace Sensors.....	Volume 1 - 113
10	02	0602212F	Defense Laboratories R&D Projects (10 U.S.C, Sec 2358).....	Volume 1 - 141

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

---

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
11	02	0602298F	Science and Technology Management - Major Headquarters Activities.....	Volume 1 - 145
12	02	0602602F	Conventional Munitions.....	Volume 1 - 147
13	02	0602605F	Directed Energy Technology.....	Volume 1 - 157
14	02	0602788F	Dominant Information Sciences and Methods.....	Volume 1 - 169
15	02	0602890F	High Energy Laser Research.....	Volume 1 - 189
16	02	1206601F	Space Technology.....	Volume 1 - 197

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

---

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
17	03	0603032F	Future AF Integrated Technology Demos.....	Volume 1 - 211
18	03	0603112F	Advanced Materials for Weapon Systems.....	Volume 1 - 217
19	03	0603199F	Sustainment Science and Technology (S&T).....	Volume 1 - 231
20	03	0603203F	Advanced Aerospace Sensors.....	Volume 1 - 237
21	03	0603211F	Aerospace Technology Dev/Demo.....	Volume 1 - 251
22	03	0603216F	Aerospace Propulsion and Power Technology.....	Volume 1 - 261
23	03	0603270F	Electronic Combat Technology.....	Volume 1 - 283

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

---

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
24	03	0603401F	Advanced Spacecraft Technology.....	Volume 1 - 301
25	03	0603444F	Maui Space Surveillance System (MSSS).....	Volume 1 - 315
26	03	0603456F	Human Effectiveness Advanced Technology Development.....	Volume 1 - 319
27	03	0603601F	Conventional Weapons Technology.....	Volume 1 - 335
28	03	0603605F	Advanced Weapons Technology.....	Volume 1 - 343
29	03	0603680F	Manufacturing Technology Program.....	Volume 1 - 349
30	03	0603788F	Battlespace Knowledge Development and Demonstration.....	Volume 1 - 357

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

---

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
31	04	0603260F	Intelligence Advanced Development.....	Volume 2 - 1
32	04	0603742F	Combat Identification Technology.....	Volume 2 - 15
33	04	0603790F	NATO Research and Development.....	Volume 2 - 37
34	04	0603851F	Intercontinental Ballistic Missile - Dem/Val.....	Volume 2 - 45
35	04	0603859F	Pollution Prevention - Dem/Val.....	Volume 2 - 73
36	04	0604001F	NC3 Advanced Concepts.....	Volume 2 - 79

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
37	04	0604002F	Air Force Weather Services Research.....	Volume 2 - 85
38	04	0604003F	Advanced Battle Management System (ABMS).....	Volume 2 - 93
39	04	0604004F	Advanced Engine Development.....	Volume 2 - 105
40	04	0604006F	Department of the Air Force Technical Architecture Design, Integration, and Evaluation	Volume 2 - 113
41	04	0604015F	Long Range Strike - Bomber.....	Volume 2 - 125
42	04	0604032F	Directed Energy Prototyping.....	Volume 2 - 131
43	04	0604033F	Hypersonics Prototyping.....	Volume 2 - 139
44	04	0604201F	PNT Resiliency, Mods, and Improvements.....	Volume 2 - 159
45	04	0604257F	Advanced Technology and Sensors.....	Volume 2 - 169
46	04	0604288F	Survivable Airborne Operations Center.....	Volume 2 - 183
47	04	0604317F	Technology Transfer.....	Volume 2 - 191
48	04	0604327F	Hard and Deeply Buried Target Defeat System (HDBTDS) Program.....	Volume 2 - 203
49	04	0604414F	Cyber Resiliency of Weapon Systems-ACS.....	Volume 2 - 211
50	04	0604776F	Deployment & Distribution Enterprise R&D.....	Volume 2 - 241
51	04	0604858F	Tech Transition Program.....	Volume 2 - 275
52	04	0605230F	Ground Based Strategic Deterrent.....	Volume 2 - 313
53	04	0207100F	Light Attack Armed Reconnaissance (LAAR) Squadrons.....	Volume 2 - 329
54	04	0207110F	Next Generation Air Dominance.....	Volume 2 - 335

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
55	04	0207455F	Three Dimensional Long-Range Radar (3DELRR).....	Volume 2 - 343
56	04	0207522F	Airbase Air Defense Systems (ABADS).....	Volume 2 - 353
57	04	0208030F	War Reserve Materiel - Ammunition.....	Volume 2 - 361
58	04	0208099F	Unified Platform (UP).....	Volume 2 - 369
59	04	0305236F	Common Data Link Executive Agent (CDL EA).....	Volume 2 - 383
60	04	0305251F	Cyberspace Operations Forces and Force Support.....	Volume 2 - 397
61	04	0305601F	Mission Partner Environments.....	Volume 2 - 405
62	04	0306250F	Cyber Operations Technology Support.....	Volume 2 - 411
63	04	0306415F	Enabled Cyber Activities.....	Volume 2 - 421
64	04	0401310F	C-32 Executive Transport Recapitalization.....	Volume 2 - 427
65	04	0708051F	Rapid Sustainment Modernization (RSM).....	Volume 2 - 433
66	04	0901410F	Contracting Information Technology System.....	Volume 2 - 439
67	04	1203164F	NAVSTAR Global Positioning System (User Equipment) (SPACE).....	Volume 2 - 447
68	04	1203710F	EO/IR Weather Systems.....	Volume 2 - 455
69	04	1206422F	Weather System Follow-on.....	Volume 2 - 463
70	04	1206425F	Space Situation Awareness Systems.....	Volume 2 - 473
71	04	1206427F	Space Systems Prototype Transitions (SSPT).....	Volume 2 - 481
72	04	1206438F	Space Control Technology.....	Volume 2 - 491

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

---

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
73	04	1206730F	Space Security and Defense Program.....	Volume 2 - 499
74	04	1206760F	Protected Tactical Enterprise Service (PTES).....	Volume 2 - 507
75	04	1206761F	Protected Tactical Service (PTS).....	Volume 2 - 515
76	04	1206855F	Evolved Strategic SATCOM (ESS).....	Volume 2 - 523
77	04	1206857F	Space Rapid Capabilities Office.....	Volume 2 - 531

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

---

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
78	05	0604200F	Future Advanced Weapon Analysis & Programs.....	Volume 2 - 537
79	05	0604201F	PNT Resiliency, Mods, and Improvements.....	Volume 2 - 547
80	05	0604222F	Nuclear Weapons Support.....	Volume 2 - 557
81	05	0604270F	Electronic Warfare Development.....	Volume 2 - 579
82	05	0604281F	Tactical Data Networks Enterprise.....	Volume 2 - 587
83	05	0604287F	Physical Security Equipment.....	Volume 2 - 609
84	05	0604329F	Small Diameter Bomb (SDB) - EMD.....	Volume 2 - 617
85	05	0604602F	Armament/Ordnance Development.....	Volume 2 - 627

**UNCLASSIFIED**



**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
86	05	0604604F	Submunitions.....	Volume 2 - 645
87	05	0604617F	Agile Combat Support.....	Volume 2 - 653
88	05	0604618F	Joint Direct Attack Munition.....	Volume 2 - 673
89	05	0604706F	Life Support Systems.....	Volume 2 - 679
90	05	0604735F	Combat Training Ranges.....	Volume 2 - 689
91	05	0604800F	F-35 - EMD.....	Volume 2 - 705
92	05	0604932F	Long Range Standoff Weapon.....	Volume 2 - 717
93	05	0604933F	ICBM Fuze Modernization.....	Volume 2 - 725
94	05	0605030F	Joint Tactical Network Center (JTNC).....	Volume 2 - 735
95	05	0605056F	Open Architecture Management.....	Volume 2 - 743
96	05	0605221F	KC-46.....	Volume 2 - 751
97	05	0605223F	Advanced Pilot Training.....	Volume 2 - 763
98	05	0605229F	HH-60W.....	Volume 2 - 771
99	05	0605931F	B-2 Defensive Management System.....	Volume 2 - 781
100	05	0101125F	Nuclear Weapons Modernization.....	Volume 2 - 789
101	05	0207171F	F-15 EPAWSS.....	Volume 2 - 797
102	05	0207328F	Stand In Attack Weapon.....	Volume 2 - 805
103	05	0207701F	Full Combat Mission Training.....	Volume 2 - 815

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
104	05	0305176F	Combat Survivor Evader Locator.....	Volume 2 - 827
105	05	0401221F	KC-46A Tanker Squadrons.....	Volume 2 - 829
106	05	0401310F	C-32 Executive Transport Recapitalization.....	Volume 2 - 847
107	05	0401319F	VC-25B.....	Volume 2 - 853
108	05	0701212F	Automated Test Systems.....	Volume 2 - 861
109	05	0804772F	Training Developments.....	Volume 2 - 869
110	05	0901299F	AF A1 Systems.....	Volume 2 - 875
111	05	1203176F	Combat Survivor Evader Locator.....	Volume 2 - 881
112	05	1203269F	GPS III Follow-On (GPS IIIF).....	Volume 2 - 887
113	05	1203940F	Space Situation Awareness Operations.....	Volume 2 - 895
114	05	1206421F	Counterspace Systems.....	Volume 2 - 901
115	05	1206422F	Weather System Follow-on.....	Volume 2 - 917
116	05	1206425F	Space Situation Awareness Systems.....	Volume 2 - 923
117	05	1206431F	Advanced EHF MILSATCOM (SPACE).....	Volume 2 - 929
118	05	1206432F	Polar MILSATCOM (SPACE).....	Volume 2 - 937
119	05	1206433F	Wideband Global SATCOM (SPACE).....	Volume 2 - 945
120	05	1206441F	Space Based Infrared System (SBIRS) High EMD.....	Volume 2 - 951
121	05	1206442F	Next Generation OPIR.....	Volume 2 - 959

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
122	05	1206445F	Commercial SATCOM (COMSATCOM) Integration.....	Volume 2 - 985
123	05	1206853F	National Security Space Launch Program (SPACE) - EMD.....	Volume 2 - 991

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
124	06	0604256F	Threat Simulator Development.....	Volume 2 - 999
125	06	0604759F	Major T&E Investment.....	Volume 2 - 1009
126	06	0605101F	RAND Project Air Force.....	Volume 2 - 1015
127	06	0605502F	Small Business Innovation Research.....	Volume 2 - 1019
128	06	0605712F	Initial Operational Test & Evaluation.....	Volume 2 - 1023
129	06	0605807F	Test and Evaluation Support.....	Volume 2 - 1029
130	06	0605826F	Acq Workforce- Global Power.....	Volume 2 - 1037
131	06	0605827F	Acq Workforce- Global Vig & Combat Sys.....	Volume 2 - 1041
132	06	0605828F	Acq Workforce- Global Reach.....	Volume 2 - 1047
133	06	0605829F	Acq Workforce- Cyber, Network, & Bus Sys.....	Volume 2 - 1055
134	06	0605830F	Acq Workforce- Global Battle Mgmt.....	Volume 2 - 1065

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
135	06	0605831F	Acq Workforce- Capability Integration.....	Volume 2 - 1069
136	06	0605832F	Acq Workforce- Advanced Prgm Technology.....	Volume 2 - 1077
137	06	0605833F	Acq Workforce- Nuclear Systems.....	Volume 2 - 1083
138	06	0605898F	Management HQ - R&D.....	Volume 2 - 1089
139	06	0605976F	Facilities Restoration and Modernization - Test and Evaluation Support.....	Volume 2 - 1095
140	06	0605978F	Facilities Sustainment - Test and Evaluation Support.....	Volume 2 - 1099
141	06	0606017F	Requirements Analysis and Maturation.....	Volume 2 - 1103
142	06	0606398F	Management HQ - T&E.....	Volume 2 - 1113
143	06	0303166F	Support to Information Operations (IO) Capabilities.....	Volume 2 - 1115
144	06	0303255F	Command, Control, Communication, and Computers (C4) - STRATCOM.....	Volume 2 - 1119
145	06	0308602F	ENTEPRISE INFORMATION SERVICES (EIS).....	Volume 2 - 1125
146	06	0702806F	Acquisition and Management Support.....	Volume 2 - 1129
147	06	0804731F	General Skill Training.....	Volume 2 - 1137
148	06	0804772F	Training Developments.....	Volume 2 - 1139
149	06	0909999F	Financing for Cancelled Account Adjustments.....	Volume 2 - 1141
150	06	1001004F	International Activities.....	Volume 2 - 1143
151	06	1206116F	Space Test and Training Range Development.....	Volume 2 - 1149
152	06	1206392F	ACQ Workforce - Space & Missile Systems.....	Volume 2 - 1151

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

---

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
153	06	1206398F	Space & Missile Systems Center - MHA.....	Volume 2 - 1155
154	06	1206860F	Rocket Systems Launch Program (SPACE).....	Volume 2 - 1157
155	06	1206862F	Tactically Responsive Launch.....	Volume 2 - 1161
156	06	1206864F	Space Test Program (STP).....	Volume 2 - 1165

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

---

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
157	07	0604233F	Specialized Undergraduate Flight Training.....	Volume 3a - 1
158	07	0604445F	Wide Area Surveillance.....	Volume 3a - 21
159	07	0604776F	Deployment & Distribution Enterprise R&D.....	Volume 3a - 29
160	07	0604840F	F-35 C2D2.....	Volume 3a - 35
161	07	0605018F	AF Integrated Personnel and Pay System (AF-IPPS).....	Volume 3a - 119
162	07	0605024F	Anti-Tamper Technology Executive Agency.....	Volume 3a - 129
163	07	0605117F	Foreign Materiel Acquisition and Exploitation.....	Volume 3a - 137
164	07	0605278F	HC/MC-130 Recap RDT&E.....	Volume 3a - 145
165	07	0606018F	NC3 Integration.....	Volume 3a - 161

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
166	07	0606942F	Assessments and Evaluations Cyber Vulnerabilities.....	Volume 3a - 169
167	07	0101113F	B-52 Squadrons.....	Volume 3a - 175
168	07	0101122F	Air-Launched Cruise Missile (ALCM).....	Volume 3a - 247
169	07	0101126F	B-1B Squadrons.....	Volume 3a - 255
170	07	0101127F	B-2 Squadrons.....	Volume 3a - 269
171	07	0101213F	Minuteman Squadrons.....	Volume 3a - 289
172	07	0101316F	Worldwide Joint Strategic Communications.....	Volume 3a - 317
173	07	0101324F	Integrated Strategic Planning & Analysis Network.....	Volume 3a - 327
174	07	0101328F	ICBM Reentry Vehicles.....	Volume 3a - 335
176	07	0102110F	UH-1N Replacement Program.....	Volume 3a - 343
177	07	0102326F	Region/Sector Operation Control Center Modernization Program.....	Volume 3a - 351
178	07	0102412F	North Warning System (NWS).....	Volume 3a - 359
179	07	0102417F	Over-the-Horizon Backscatter Radar.....	Volume 3a - 365
180	07	0202834F	Vehicles and Support Equipment - General.....	Volume 3a - 373
181	07	0205219F	MQ-9 UAV.....	Volume 3a - 381
182	07	0205671F	Joint Counter RCIED Electronic Warfare.....	Volume 3a - 415
183	07	0207040F	Multi-Platform Electronic Warfare Equipment.....	Volume 3a - 421
184	07	0207131F	A-10 Squadrons.....	Volume 3a - 427

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
185	07	0207133F	F-16 Squadrons.....	Volume 3a - 437
186	07	0207134F	F-15E Squadrons.....	Volume 3a - 451
187	07	0207136F	Manned Destructive Suppression.....	Volume 3a - 471
188	07	0207138F	F-22A Squadrons.....	Volume 3a - 479
189	07	0207142F	F-35 Squadrons.....	Volume 3a - 499
190	07	0207146F	F-15EX.....	Volume 3a - 523
191	07	0207161F	Tactical AIM Missiles.....	Volume 3a - 529
192	07	0207163F	Advanced Medium Range Air-to-Air Missile (AMRAAM).....	Volume 3a - 537
193	07	0207227F	Combat Rescue - Pararescue.....	Volume 3a - 547
194	07	0207247F	AF TENCAP.....	Volume 3a - 555
195	07	0207249F	Precision Attack Systems Procurement.....	Volume 3a - 565
196	07	0207253F	Compass Call.....	Volume 3a - 571
197	07	0207268F	Aircraft Engine Component Improvement Program.....	Volume 3a - 581
198	07	0207325F	Joint Air-to-Surface Standoff Missile (JASSM).....	Volume 3a - 599
199	07	0207327F	Small Diameter Bomb (SDB).....	Volume 3a - 609
200	07	0207410F	Air & Space Operations Center (AOC).....	Volume 3a - 621
201	07	0207412F	Control and Reporting Center (CRC).....	Volume 3a - 629
202	07	0207417F	Airborne Warning and Control System (AWACS).....	Volume 3a - 637

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
203	07	0207418F	AFSPECWAR - TACP.....	Volume 3a - 653
205	07	0207431F	Combat Air Intelligence System Activities.....	Volume 3a - 661
206	07	0207438F	Theater Battle Management (TBM) C4I.....	Volume 3a - 675
207	07	0207439F	Electronic Warfare Integrated Reprogramming (EWIR).....	Volume 3a - 681
208	07	0207444F	Tactical Air Control Party-Mod.....	Volume 3a - 689
209	07	0207452F	DCAPES.....	Volume 3a - 701
210	07	0207521F	Air Force Calibration Programs.....	Volume 3a - 711
211	07	0207522F	Airbase Air Defense Systems (ABADS).....	Volume 3a - 717
212	07	0207573F	National Technical Nuclear Forensics.....	Volume 3a - 723
213	07	0207590F	Seek Eagle.....	Volume 3a - 729
214	07	0207601F	USAF Modeling and Simulation.....	Volume 3a - 739
215	07	0207605F	Wargaming and Simulation Centers.....	Volume 3a - 755
216	07	0207610F	Battlefield Abn Comm Node (BACN).....	Volume 3a - 765
217	07	0207697F	Distributed Training and Exercises.....	Volume 3a - 773
218	07	0208006F	Mission Planning Systems.....	Volume 3a - 785
219	07	0208007F	Tactical Deception.....	Volume 3a - 807
220	07	0208064F	OPERATIONAL HQ - CYBER.....	Volume 3a - 813
221	07	0208087F	Distributed Cyber Warfare Operations.....	Volume 3a - 819

**UNCLASSIFIED**



**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
222	07	0208088F	AF Defensive Cyberspace Operations.....	Volume 3a - 849
223	07	0208097F	Joint Cyber Command and Control (JCC2).....	Volume 3a - 877
224	07	0208099F	Unified Platform (UP).....	Volume 3a - 885
228	07	0208288F	Intel Data Applications.....	Volume 3a - 895
229	07	0301025F	GeoBase.....	Volume 3b - 1
230	07	0301112F	Nuclear Planning and Execution System (NPES).....	Volume 3b - 7
231	07	0301113F	Cyber Security Intelligence Support.....	Volume 3b - 21
238	07	0301401F	Air Force Space and Cyber Non-Traditional ISR for Battlespace Awareness.....	Volume 3b - 27
239	07	0302015F	E-4B National Airborne Operations Center (NAOC).....	Volume 3b - 33
240	07	0303131F	Minimum Essential Emergency Communications Network (MEECN).....	Volume 3b - 43
241	07	0303133F	High Frequency Radio Systems.....	Volume 3b - 65
242	07	0303140F	Information Systems Security Program.....	Volume 3b - 71
243	07	0303142F	Global Force Management - Data Initiative.....	Volume 3b - 83
244	07	0303248F	All Domain Common Platform.....	Volume 3b - 91
246	07	0304260F	Airborne SIGINT Enterprise.....	Volume 3b - 97
247	07	0304310F	Commercial Economic Analysis.....	Volume 3b - 121
250	07	0305015F	C2 Air Operations Suite - C2 Info Services.....	Volume 3b - 127
251	07	0305020F	CCMD Intelligence Information Technology.....	Volume 3b - 139

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
252	07	0305022F	ISR Modernization & Automation Dvmt (IMAD).....	Volume 3b - 147
253	07	0305099F	Global Air Traffic Management (GATM).....	Volume 3b - 159
254	07	0305103F	Cyber Security Initiative.....	Volume 3b - 169
255	07	0305111F	Weather Service.....	Volume 3b - 175
256	07	0305114F	Air Traffic Control, Approach, and Landing System (ATCAL).....	Volume 3b - 189
257	07	0305116F	Aerial Targets.....	Volume 3b - 201
260	07	0305128F	Security and Investigative Activities.....	Volume 3b - 215
261	07	0305145F	Arms Control Implementation.....	Volume 3b - 221
262	07	0305146F	Defense Joint Counterintelligence Activities.....	Volume 3b - 231
264	07	0305179F	Integrated Broadcast Service (IBS).....	Volume 3b - 237
265	07	0305202F	Dragon U-2.....	Volume 3b - 247
266	07	0305205F	Endurance Unmanned Aerial Vehicles.....	Volume 3b - 255
267	07	0305206F	Airborne Reconnaissance Systems.....	Volume 3b - 261
268	07	0305207F	Manned Reconnaissance Systems.....	Volume 3b - 313
269	07	0305208F	Distributed Common Ground/Surface Systems.....	Volume 3b - 323
270	07	0305220F	RQ-4 UAV.....	Volume 3b - 335
271	07	0305221F	Network-Centric Collaborative Targeting.....	Volume 3b - 359
272	07	0305238F	NATO AGS.....	Volume 3b - 365

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
273	07	0305240F	Support to DCGS Enterprise.....	Volume 3b - 373
274	07	0305600F	International Intelligence Technology and Architectures.....	Volume 3b - 385
275	07	0305881F	Rapid Cyber Acquisition.....	Volume 3b - 391
276	07	0305984F	Personnel Recovery Command & Ctrl (PRC2).....	Volume 3b - 399
277	07	0307577F	Intelligence Mission Data (IMD).....	Volume 3b - 405
278	07	0401115F	C-130 Airlift Squadron.....	Volume 3b - 417
279	07	0401119F	C-5 Airlift Squadrons (IF).....	Volume 3b - 431
280	07	0401130F	C-17 Aircraft (IF).....	Volume 3b - 439
281	07	0401132F	C-130J Program.....	Volume 3b - 447
282	07	0401134F	Large Aircraft IR Countermeasures (LAIRCM).....	Volume 3b - 463
283	07	0401218F	KC-135s.....	Volume 3b - 471
284	07	0401219F	KC-10s.....	Volume 3b - 477
285	07	0401318F	CV-22.....	Volume 3b - 483
286	07	0408011F	Special Tactics / Combat Control.....	Volume 3b - 491
287	07	0702207F	Depot Maintenance (Non-IF).....	Volume 3b - 499
288	07	0708055F	Maintenance, Repair & Overhaul System.....	Volume 3b - 505
289	07	0708610F	Logistics Information Technology (LOGIT).....	Volume 3b - 515
290	07	0708611F	Support Systems Development.....	Volume 3b - 531

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

***Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

<b>Line #</b>	<b>Budget Activity</b>	<b>Program Element Number</b>	<b>Program Element Title</b>	<b>Page</b>
291	07	0804743F	Other Flight Training.....	Volume 3b - 539
292	07	0808716F	Other Personnel Activities.....	Volume 3b - 547
293	07	0901202F	Joint Personnel Recovery Agency.....	Volume 3b - 553
294	07	0901218F	Civilian Compensation Program.....	Volume 3b - 559
295	07	0901220F	Personnel Administration.....	Volume 3b - 565
296	07	0901226F	Air Force Studies and Analysis Agency.....	Volume 3b - 575
297	07	0901538F	Financial Management Information Systems Development.....	Volume 3b - 581
298	07	0901554F	Defense Enterprise Acntng and Mgt Sys (DEAMS).....	Volume 3b - 597
299	07	1201017F	Global Sensor Integrated on Network (GSIN).....	Volume 3b - 617
300	07	1201921F	Service Support to STRATCOM - Space Activities.....	Volume 3b - 625
301	07	1202140F	Service Support to SPACECOM Activities.....	Volume 3b - 637
302	07	1203001F	Family of Advanced BLoS Terminals (FAB-T).....	Volume 3b - 651
303	07	1203110F	Satellite Control Network (SPACE).....	Volume 3b - 673
305	07	1203173F	Space and Missile Test and Evaluation Center.....	Volume 3b - 683
306	07	1203174F	Space Innovation, Integration and Rapid Technology Development.....	Volume 3b - 693
307	07	1203182F	Spacelift Range System (SPACE).....	Volume 3b - 701
308	07	1203265F	GPS III Space Segment.....	Volume 3b - 709
309	07	1203400F	Space Superiority Intelligence.....	Volume 3b - 719

**UNCLASSIFIED**

UNCLASSIFIED

Air Force • Budget Estimates FY 2022 • RDT&E Program

**Appropriation 3600: Research, Development, Test & Evaluation, Air Force**

---

Line #	Budget Activity	Program Element Number	Program Element Title	Page
310	07	1203614F	JSpOC Mission System.....	Volume 3b - 725
311	07	1203620F	National Space Defense Center.....	Volume 3b - 733
312	07	1203873F	Ballistic Missile Defense Radars.....	Volume 3b - 739
313	07	1203913F	NUDET Detection System (SPACE).....	Volume 3b - 745
314	07	1203940F	Space Situation Awareness Operations.....	Volume 3b - 753
315	07	1206423F	Global Positioning System III - Operational Control Segment.....	Volume 3b - 759
316	07	1206770F	Enterprise Ground Services.....	Volume 3b - 777

**Appropriation 3600: Research, Development, Test & Evaluation, Air Force**

---

Line #	Budget Activity	Program Element Number	Program Element Title	Page
317	08	0608158F	Strategic Mission Planning and Execution System - Software Pilot Program.....	Volume 3b - 783
318	08	0608410F	Air & Space Operations Center (AOC) - Software Pilot Program.....	Volume 3b - 795
319	08	0608920F	Defense Enterprise Accounting and Management System (DEAMS) - Software Pilot Pro.....	Volume 3b - 805

UNCLASSIFIED

UNCLASSIFIED

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Air Force • Budget Estimates FY 2022 • RDT&E Program

**Master Program Element Table of Contents (Alphabetically by Program Element Title)**

<b>Program Element Title</b>	<b>Program Element Number</b>	<b>Line #</b>	<b>BA</b>	<b>Page</b>
A-10 Squadrons	0207131F	184	07.....	Volume 3a - 427
ACQ Workforce - Space & Missile Systems	1206392F	152	06.....	Volume 2 - 1151
AF A1 Systems	0901299F	110	05.....	Volume 2 - 875
AF Defensive Cyberspace Operations	0208088F	222	07.....	Volume 3a - 849
AF Integrated Personnel and Pay System (AF-IPPS)	0605018F	161	07.....	Volume 3a - 119
AF TENCAP	0207247F	194	07.....	Volume 3a - 555
AFSPECWAR - TACP	0207418F	203	07.....	Volume 3a - 653
Acq Workforce- Advanced Prgm Technology	0605832F	136	06.....	Volume 2 - 1077
Acq Workforce- Capability Integration	0605831F	135	06.....	Volume 2 - 1069
Acq Workforce- Cyber, Network, & Bus Sys	0605829F	133	06.....	Volume 2 - 1055
Acq Workforce- Global Battle Mgmt	0605830F	134	06.....	Volume 2 - 1065
Acq Workforce- Global Power	0605826F	130	06.....	Volume 2 - 1037
Acq Workforce- Global Reach	0605828F	132	06.....	Volume 2 - 1047
Acq Workforce- Global Vig & Combat Sys	0605827F	131	06.....	Volume 2 - 1041
Acq Workforce- Nuclear Systems	0605833F	137	06.....	Volume 2 - 1083
Acquisition and Management Support	0702806F	146	06.....	Volume 2 - 1129
Advanced Aerospace Sensors	0603203F	20	03.....	Volume 1 - 237

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

<b>Program Element Title</b>	<b>Program Element Number</b>	<b>Line #</b>	<b>BA</b>	<b>Page</b>
Advanced Battle Management System (ABMS)	0604003F	38	04.....	Volume 2 - 93
Advanced EHF MILSATCOM (SPACE)	1206431F	117	05.....	Volume 2 - 929
Advanced Engine Development	0604004F	39	04.....	Volume 2 - 105
Advanced Materials for Weapon Systems	0603112F	18	03.....	Volume 1 - 217
Advanced Medium Range Air-to-Air Missile (AMRAAM)	0207163F	192	07.....	Volume 3a - 537
Advanced Pilot Training	0605223F	97	05.....	Volume 2 - 763
Advanced Spacecraft Technology	0603401F	24	03.....	Volume 1 - 301
Advanced Technology and Sensors	0604257F	45	04.....	Volume 2 - 169
Advanced Weapons Technology	0603605F	28	03.....	Volume 1 - 343
Aerial Targets	0305116F	257	07.....	Volume 3b - 201
Aerospace Propulsion	0602203F	8	02.....	Volume 1 - 85
Aerospace Propulsion and Power Technology	0603216F	22	03.....	Volume 1 - 261
Aerospace Sensors	0602204F	9	02.....	Volume 1 - 113
Aerospace Technology Dev/Demo	0603211F	21	03.....	Volume 1 - 251
Aerospace Vehicle Technologies	0602201F	6	02.....	Volume 1 - 47
Agile Combat Support	0604617F	87	05.....	Volume 2 - 653
Air & Space Operations Center (AOC)	0207410F	200	07.....	Volume 3a - 621
Air & Space Operations Center (AOC) - Software Pilot Program	0608410F	318	08.....	Volume 3b - 795
Air Force Calibration Programs	0207521F	210	07.....	Volume 3a - 711

**UNCLASSIFIED**



**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

<b>Program Element Title</b>	<b>Program Element Number</b>	<b>Line #</b>	<b>BA</b>	<b>Page</b>
Air Force Space and Cyber Non-Traditional ISR for Battlespace Awareness	0301401F	238	07.....	Volume 3b - 27
Air Force Studies and Analysis Agency	0901226F	296	07.....	Volume 3b - 575
Air Force Weather Services Research	0604002F	37	04.....	Volume 2 - 85
Air Traffic Control, Approach, and Landing System (ATCAL)	0305114F	256	07.....	Volume 3b - 189
Air-Launched Cruise Missile (ALCM)	0101122F	168	07.....	Volume 3a - 247
Airbase Air Defense Systems (ABADS)	0207522F	56	04.....	Volume 2 - 353
Airbase Air Defense Systems (ABADS)	0207522F	211	07.....	Volume 3a - 717
Airborne Reconnaissance Systems	0305206F	267	07.....	Volume 3b - 261
Airborne SIGINT Enterprise	0304260F	246	07.....	Volume 3b - 97
Airborne Warning and Control System (AWACS)	0207417F	202	07.....	Volume 3a - 637
Aircraft Engine Component Improvement Program	0207268F	197	07.....	Volume 3a - 581
All Domain Common Platform	0303248F	244	07.....	Volume 3b - 91
Anti-Tamper Technology Executive Agency	0605024F	162	07.....	Volume 3a - 129
Armament/Ordnance Development	0604602F	85	05.....	Volume 2 - 627
Arms Control Implementation	0305145F	261	07.....	Volume 3b - 221
Assessments and Evaluations Cyber Vulnerabilities	0606942F	166	07.....	Volume 3a - 169
Automated Test Systems	0701212F	108	05.....	Volume 2 - 861
B-1B Squadrons	0101126F	169	07.....	Volume 3a - 255
B-2 Defensive Management System	0605931F	99	05.....	Volume 2 - 781

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

<b>Program Element Title</b>	<b>Program Element Number</b>	<b>Line #</b>	<b>BA</b>	<b>Page</b>
B-2 Squadrons	0101127F	170	07.....	Volume 3a - 269
B-52 Squadrons	0101113F	167	07.....	Volume 3a - 175
Ballistic Missile Defense Radars	1203873F	312	07.....	Volume 3b - 739
Battlefield Abn Comm Node (BACN)	0207610F	216	07.....	Volume 3a - 765
Battlespace Knowledge Development and Demonstration	0603788F	30	03.....	Volume 1 - 357
C-130 Airlift Squadron	0401115F	278	07.....	Volume 3b - 417
C-130J Program	0401132F	281	07.....	Volume 3b - 447
C-17 Aircraft (IF)	0401130F	280	07.....	Volume 3b - 439
C-32 Executive Transport Recapitalization	0401310F	64	04.....	Volume 2 - 427
C-32 Executive Transport Recapitalization	0401310F	106	05.....	Volume 2 - 847
C-5 Airlift Squadrons (IF)	0401119F	279	07.....	Volume 3b - 431
C2 Air Operations Suite - C2 Info Services	0305015F	250	07.....	Volume 3b - 127
CCMD Intelligence Information Technology	0305020F	251	07.....	Volume 3b - 139
CV-22	0401318F	285	07.....	Volume 3b - 483
Civilian Compensation Program	0901218F	294	07.....	Volume 3b - 559
Combat Air Intelligence System Activities	0207431F	205	07.....	Volume 3a - 661
Combat Identification Technology	0603742F	32	04.....	Volume 2 - 15
Combat Rescue - Pararescue	0207227F	193	07.....	Volume 3a - 547
Combat Survivor Evader Locator	0305176F	104	05.....	Volume 2 - 827

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

<b>Program Element Title</b>	<b>Program Element Number</b>	<b>Line #</b>	<b>BA</b>	<b>Page</b>
Combat Survivor Evader Locator	1203176F	111	05.....	Volume 2 - 881
Combat Training Ranges	0604735F	90	05.....	Volume 2 - 689
Command, Control, Communication, and Computers (C4) - STRATCOM	0303255F	144	06.....	Volume 2 - 1119
Commercial Economic Analysis	0304310F	247	07.....	Volume 3b - 121
Commercial SATCOM (COMSATCOM) Integration	1206445F	122	05.....	Volume 2 - 985
Common Data Link Executive Agent (CDL EA)	0305236F	59	04.....	Volume 2 - 383
Compass Call	0207253F	196	07.....	Volume 3a - 571
Contracting Information Technology System	0901410F	66	04.....	Volume 2 - 439
Control and Reporting Center (CRC)	0207412F	201	07.....	Volume 3a - 629
Conventional Munitions	0602602F	12	02.....	Volume 1 - 147
Conventional Weapons Technology	0603601F	27	03.....	Volume 1 - 335
Counterspace Systems	1206421F	114	05.....	Volume 2 - 901
Cyber Operations Technology Support	0306250F	62	04.....	Volume 2 - 411
Cyber Resiliency of Weapon Systems-ACS	0604414F	49	04.....	Volume 2 - 211
Cyber Security Initiative	0305103F	254	07.....	Volume 3b - 169
Cyber Security Intelligence Support	0301113F	231	07.....	Volume 3b - 21
Cyberspace Operations Forces and Force Support	0305251F	60	04.....	Volume 2 - 397
DCAPES	0207452F	209	07.....	Volume 3a - 701
Defense Enterprise Accounting and Management System (DEAMS) - Software Pilot Pro	0608920F	319	08.....	Volume 3b - 805

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

<b>Program Element Title</b>	<b>Program Element Number</b>	<b>Line #</b>	<b>BA</b>	<b>Page</b>
Defense Enterprise Acntng and Mgt Sys (DEAMS)	0901554F	298	07.....	Volume 3b - 597
Defense Joint Counterintelligence Activities	0305146F	262	07.....	Volume 3b - 231
Defense Laboratories R&D Projects (10 U.S.C, Sec 2358)	0602212F	10	02.....	Volume 1 - 141
Defense Research Sciences	0601102F	1	01.....	Volume 1 - 1
Department of the Air Force Technical Architecture Design, Integration, and Evaluation	0604006F	40	04.....	Volume 2 - 113
Deployment & Distribution Enterprise R&D	0604776F	50	04.....	Volume 2 - 241
Deployment & Distribution Enterprise R&D	0604776F	159	07.....	Volume 3a - 29
Depot Maintenance (Non-IF)	0702207F	287	07.....	Volume 3b - 499
Directed Energy Prototyping	0604032F	42	04.....	Volume 2 - 131
Directed Energy Technology	0602605F	13	02.....	Volume 1 - 157
Distributed Common Ground/Surface Systems	0305208F	269	07.....	Volume 3b - 323
Distributed Cyber Warfare Operations	0208087F	221	07.....	Volume 3a - 819
Distributed Training and Exercises	0207697F	217	07.....	Volume 3a - 773
Dominant Information Sciences and Methods	0602788F	14	02.....	Volume 1 - 169
Dragon U-2	0305202F	265	07.....	Volume 3b - 247
E-4B National Airborne Operations Center (NAOC)	0302015F	239	07.....	Volume 3b - 33
ENTEPRISE INFORMATION SERVICES (EIS)	0308602F	145	06.....	Volume 2 - 1125
EO/IR Weather Systems	1203710F	68	04.....	Volume 2 - 455
Electronic Combat Technology	0603270F	23	03.....	Volume 1 - 283

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

<b>Program Element Title</b>	<b>Program Element Number</b>	<b>Line #</b>	<b>BA</b>	<b>Page</b>
Electronic Warfare Development	0604270F	81	05.....	Volume 2 - 579
Electronic Warfare Integrated Reprogramming (EWIR)	0207439F	207	07.....	Volume 3a - 681
Enabled Cyber Activities	0306415F	63	04.....	Volume 2 - 421
Endurance Unmanned Aerial Vehicles	0305205F	266	07.....	Volume 3b - 255
Enterprise Ground Services	1206770F	316	07.....	Volume 3b - 777
Evolved Strategic SATCOM (ESS)	1206855F	76	04.....	Volume 2 - 523
F-15 EPAWSS	0207171F	101	05.....	Volume 2 - 797
F-15E Squadrons	0207134F	186	07.....	Volume 3a - 451
F-15EX	0207146F	190	07.....	Volume 3a - 523
F-16 Squadrons	0207133F	185	07.....	Volume 3a - 437
F-22A Squadrons	0207138F	188	07.....	Volume 3a - 479
F-35 - EMD	0604800F	91	05.....	Volume 2 - 705
F-35 C2D2	0604840F	160	07.....	Volume 3a - 35
F-35 Squadrons	0207142F	189	07.....	Volume 3a - 499
Facilities Restoration and Modernization - Test and Evaluation Support	0605976F	139	06.....	Volume 2 - 1095
Facilities Sustainment - Test and Evaluation Support	0605978F	140	06.....	Volume 2 - 1099
Family of Advanced BLoS Terminals (FAB-T)	1203001F	302	07.....	Volume 3b - 651
Financial Management Information Systems Development	0901538F	297	07.....	Volume 3b - 581
Financing for Cancelled Account Adjustments	0909999F	149	06.....	Volume 2 - 1141

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

<b>Program Element Title</b>	<b>Program Element Number</b>	<b>Line #</b>	<b>BA</b>	<b>Page</b>
Foreign Materiel Acquisition and Exploitation	0605117F	163	07.....	Volume 3a - 137
Full Combat Mission Training	0207701F	103	05.....	Volume 2 - 815
Future AF Capabilities Applied Research	0602020F	4	02.....	Volume 1 - 25
Future AF Integrated Technology Demos	0603032F	17	03.....	Volume 1 - 211
Future Advanced Weapon Analysis & Programs	0604200F	78	05.....	Volume 2 - 537
GPS III Follow-On (GPS IIIF)	1203269F	112	05.....	Volume 2 - 887
GPS III Space Segment	1203265F	308	07.....	Volume 3b - 709
General Skill Training	0804731F	147	06.....	Volume 2 - 1137
GeoBase	0301025F	229	07.....	Volume 3b - 1
Global Air Traffic Management (GATM)	0305099F	253	07.....	Volume 3b - 159
Global Force Management - Data Initiative	0303142F	243	07.....	Volume 3b - 83
Global Positioning System III - Operational Control Segment	1206423F	315	07.....	Volume 3b - 759
Global Sensor Integrated on Network (GSIN)	1201017F	299	07.....	Volume 3b - 617
Ground Based Strategic Deterrent	0605230F	52	04.....	Volume 2 - 313
HC/MC-130 Recap RDT&E	0605278F	164	07.....	Volume 3a - 145
HH-60W	0605229F	98	05.....	Volume 2 - 771
Hard and Deeply Buried Target Defeat System (HDBTDS) Program	0604327F	48	04.....	Volume 2 - 203
High Energy Laser Research	0602890F	15	02.....	Volume 1 - 189
High Energy Laser Research Initiatives	0601108F	3	01.....	Volume 1 - 21

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

<b>Program Element Title</b>	<b>Program Element Number</b>	<b>Line #</b>	<b>BA</b>	<b>Page</b>
High Frequency Radio Systems	0303133F	241	07.....	Volume 3b - 65
Human Effectiveness Advanced Technology Development	0603456F	26	03.....	Volume 1 - 319
Human Effectiveness Applied Research	0602202F	7	02.....	Volume 1 - 67
Hypersonics Prototyping	0604033F	43	04.....	Volume 2 - 139
ICBM Fuze Modernization	0604933F	93	05.....	Volume 2 - 725
ICBM Reentry Vehicles	0101328F	174	07.....	Volume 3a - 335
ISR Modernization & Automation Dvmt (IMAD)	0305022F	252	07.....	Volume 3b - 147
Information Systems Security Program	0303140F	242	07.....	Volume 3b - 71
Initial Operational Test & Evaluation	0605712F	128	06.....	Volume 2 - 1023
Integrated Broadcast Service (IBS)	0305179F	264	07.....	Volume 3b - 237
Integrated Strategic Planning & Analysis Network	0101324F	173	07.....	Volume 3a - 327
Intel Data Applications	0208288F	228	07.....	Volume 3a - 895
Intelligence Advanced Development	0603260F	31	04.....	Volume 2 - 1
Intelligence Mission Data (IMD)	0307577F	277	07.....	Volume 3b - 405
Intercontinental Ballistic Missile - Dem/Val	0603851F	34	04.....	Volume 2 - 45
International Activities	1001004F	150	06.....	Volume 2 - 1143
International Intelligence Technology and Architectures	0305600F	274	07.....	Volume 3b - 385
JSpOC Mission System	1203614F	310	07.....	Volume 3b - 725
Joint Air-to-Surface Standoff Missile (JASSM)	0207325F	198	07.....	Volume 3a - 599

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

<b>Program Element Title</b>	<b>Program Element Number</b>	<b>Line #</b>	<b>BA</b>	<b>Page</b>
Joint Counter RCIED Electronic Warfare	0205671F	182	07.....	Volume 3a - 415
Joint Cyber Command and Control (JCC2)	0208097F	223	07.....	Volume 3a - 877
Joint Direct Attack Munition	0604618F	88	05.....	Volume 2 - 673
Joint Personnel Recovery Agency	0901202F	293	07.....	Volume 3b - 553
Joint Tactical Network Center (JTNC)	0605030F	94	05.....	Volume 2 - 735
KC-10s	0401219F	284	07.....	Volume 3b - 477
KC-135s	0401218F	283	07.....	Volume 3b - 471
KC-46	0605221F	96	05.....	Volume 2 - 751
KC-46A Tanker Squadrons	0401221F	105	05.....	Volume 2 - 829
Large Aircraft IR Countermeasures (LAIRCM)	0401134F	282	07.....	Volume 3b - 463
Life Support Systems	0604706F	89	05.....	Volume 2 - 679
Light Attack Armed Reconnaissance (LAAR) Squadrons	0207100F	53	04.....	Volume 2 - 329
Logistics Information Technology (LOGIT)	0708610F	289	07.....	Volume 3b - 515
Long Range Standoff Weapon	0604932F	92	05.....	Volume 2 - 717
Long Range Strike - Bomber	0604015F	41	04.....	Volume 2 - 125
MQ-9 UAV	0205219F	181	07.....	Volume 3a - 381
Maintenance, Repair & Overhaul System	0708055F	288	07.....	Volume 3b - 505
Major T&E Investment	0604759F	125	06.....	Volume 2 - 1009
Management HQ - R&D	0605898F	138	06.....	Volume 2 - 1089

**UNCLASSIFIED**



**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

<b>Program Element Title</b>	<b>Program Element Number</b>	<b>Line #</b>	<b>BA</b>	<b>Page</b>
Management HQ - T&E	0606398F	142	06.....	Volume 2 - 1113
Manned Destructive Suppression	0207136F	187	07.....	Volume 3a - 471
Manned Reconnaissance Systems	0305207F	268	07.....	Volume 3b - 313
Manufacturing Technology Program	0603680F	29	03.....	Volume 1 - 349
Materials	0602102F	5	02.....	Volume 1 - 29
Maui Space Surveillance System (MSSS)	0603444F	25	03.....	Volume 1 - 315
Minimum Essential Emergency Communications Network (MEECN)	0303131F	240	07.....	Volume 3b - 43
Minuteman Squadrons	0101213F	171	07.....	Volume 3a - 289
Mission Partner Environments	0305601F	61	04.....	Volume 2 - 405
Mission Planning Systems	0208006F	218	07.....	Volume 3a - 785
Multi-Platform Electronic Warfare Equipment	0207040F	183	07.....	Volume 3a - 421
NATO AGS	0305238F	272	07.....	Volume 3b - 365
NATO Research and Development	0603790F	33	04.....	Volume 2 - 37
NAVSTAR Global Positioning System (User Equipment) (SPACE)	1203164F	67	04.....	Volume 2 - 447
NC3 Advanced Concepts	0604001F	36	04.....	Volume 2 - 79
NC3 Integration	0606018F	165	07.....	Volume 3a - 161
NUDET Detection System (SPACE)	1203913F	313	07.....	Volume 3b - 745
National Security Space Launch Program (SPACE) - EMD	1206853F	123	05.....	Volume 2 - 991
National Space Defense Center	1203620F	311	07.....	Volume 3b - 733

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

<b>Program Element Title</b>	<b>Program Element Number</b>	<b>Line #</b>	<b>BA</b>	<b>Page</b>
National Technical Nuclear Forensics	0207573F	212	07.....	Volume 3a - 723
Network-Centric Collaborative Targeting	0305221F	271	07.....	Volume 3b - 359
Next Generation Air Dominance	0207110F	54	04.....	Volume 2 - 335
Next Generation OPIR	1206442F	121	05.....	Volume 2 - 959
North Warning System (NWS)	0102412F	178	07.....	Volume 3a - 359
Nuclear Planning and Execution System (NPES)	0301112F	230	07.....	Volume 3b - 7
Nuclear Weapons Modernization	0101125F	100	05.....	Volume 2 - 789
Nuclear Weapons Support	0604222F	80	05.....	Volume 2 - 557
OPERATIONAL HQ - CYBER	0208064F	220	07.....	Volume 3a - 813
Open Architecture Management	0605056F	95	05.....	Volume 2 - 743
Other Flight Training	0804743F	291	07.....	Volume 3b - 539
Other Personnel Activities	0808716F	292	07.....	Volume 3b - 547
Over-the-Horizon Backscatter Radar	0102417F	179	07.....	Volume 3a - 365
PNT Resiliency, Mods, and Improvements	0604201F	44	04.....	Volume 2 - 159
PNT Resiliency, Mods, and Improvements	0604201F	79	05.....	Volume 2 - 547
Personnel Administration	0901220F	295	07.....	Volume 3b - 565
Personnel Recovery Command & Ctrl (PRC2)	0305984F	276	07.....	Volume 3b - 399
Physical Security Equipment	0604287F	83	05.....	Volume 2 - 609
Polar MILSATCOM (SPACE)	1206432F	118	05.....	Volume 2 - 937

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

<b>Program Element Title</b>	<b>Program Element Number</b>	<b>Line #</b>	<b>BA</b>	<b>Page</b>
Pollution Prevention - Dem/Val	0603859F	35	04.....	Volume 2 - 73
Precision Attack Systems Procurement	0207249F	195	07.....	Volume 3a - 565
Protected Tactical Enterprise Service (PTES)	1206760F	74	04.....	Volume 2 - 507
Protected Tactical Service (PTS)	1206761F	75	04.....	Volume 2 - 515
RAND Project Air Force	0605101F	126	06.....	Volume 2 - 1015
RQ-4 UAV	0305220F	270	07.....	Volume 3b - 335
Rapid Cyber Acquisition	0305881F	275	07.....	Volume 3b - 391
Rapid Sustainment Modernization (RSM)	0708051F	65	04.....	Volume 2 - 433
Region/Sector Operation Control Center Modernization Program	0102326F	177	07.....	Volume 3a - 351
Requirements Analysis and Maturation	0606017F	141	06.....	Volume 2 - 1103
Rocket Systems Launch Program (SPACE)	1206860F	154	06.....	Volume 2 - 1157
Satellite Control Network (SPACE)	1203110F	303	07.....	Volume 3b - 673
Science and Technology Management - Major Headquarters Activities	0602298F	11	02.....	Volume 1 - 145
Security and Investigative Activities	0305128F	260	07.....	Volume 3b - 215
Seek Eagle	0207590F	213	07.....	Volume 3a - 729
Service Support to SPACECOM Activities	1202140F	301	07.....	Volume 3b - 637
Service Support to STRATCOM - Space Activities	1201921F	300	07.....	Volume 3b - 625
Small Business Innovation Research	0605502F	127	06.....	Volume 2 - 1019
Small Diameter Bomb (SDB)	0207327F	199	07.....	Volume 3a - 609

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

<b>Program Element Title</b>	<b>Program Element Number</b>	<b>Line #</b>	<b>BA</b>	<b>Page</b>
Small Diameter Bomb (SDB) - EMD	0604329F	84	05.....	Volume 2 - 617
Space & Missile Systems Center - MHA	1206398F	153	06.....	Volume 2 - 1155
Space Based Infrared System (SBIRS) High EMD	1206441F	120	05.....	Volume 2 - 951
Space Control Technology	1206438F	72	04.....	Volume 2 - 491
Space Innovation, Integration and Rapid Technology Development	1203174F	306	07.....	Volume 3b - 693
Space Rapid Capabilities Office	1206857F	77	04.....	Volume 2 - 531
Space Security and Defense Program	1206730F	73	04.....	Volume 2 - 499
Space Situation Awareness Operations	1203940F	113	05.....	Volume 2 - 895
Space Situation Awareness Operations	1203940F	314	07.....	Volume 3b - 753
Space Situation Awareness Systems	1206425F	70	04.....	Volume 2 - 473
Space Situation Awareness Systems	1206425F	116	05.....	Volume 2 - 923
Space Superiority Intelligence	1203400F	309	07.....	Volume 3b - 719
Space Systems Prototype Transitions (SSPT)	1206427F	71	04.....	Volume 2 - 481
Space Technology	1206601F	16	02.....	Volume 1 - 197
Space Test Program (STP)	1206864F	156	06.....	Volume 2 - 1165
Space Test and Training Range Development	1206116F	151	06.....	Volume 2 - 1149
Space and Missile Test and Evaluation Center	1203173F	305	07.....	Volume 3b - 683
Spacelift Range System (SPACE)	1203182F	307	07.....	Volume 3b - 701
Special Tactics / Combat Control	0408011F	286	07.....	Volume 3b - 491

**UNCLASSIFIED**

**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

<b>Program Element Title</b>	<b>Program Element Number</b>	<b>Line #</b>	<b>BA</b>	<b>Page</b>
Specialized Undergraduate Flight Training	0604233F	157	07.....	Volume 3a - 1
Stand In Attack Weapon	0207328F	102	05.....	Volume 2 - 805
Strategic Mission Planning and Execution System - Software Pilot Program	0608158F	317	08.....	Volume 3b - 783
Submunitions	0604604F	86	05.....	Volume 2 - 645
Support Systems Development	0708611F	290	07.....	Volume 3b - 531
Support to DCGS Enterprise	0305240F	273	07.....	Volume 3b - 373
Support to Information Operations (IO) Capabilities	0303166F	143	06.....	Volume 2 - 1115
Survivable Airborne Operations Center	0604288F	46	04.....	Volume 2 - 183
Sustainment Science and Technology (S&T)	0603199F	19	03.....	Volume 1 - 231
Tactical AIM Missiles	0207161F	191	07.....	Volume 3a - 529
Tactical Air Control Party-Mod	0207444F	208	07.....	Volume 3a - 689
Tactical Data Networks Enterprise	0604281F	82	05.....	Volume 2 - 587
Tactical Deception	0208007F	219	07.....	Volume 3a - 807
Tactically Responsive Launch	1206862F	155	06.....	Volume 2 - 1161
Tech Transition Program	0604858F	51	04.....	Volume 2 - 275
Technology Transfer	0604317F	47	04.....	Volume 2 - 191
Test and Evaluation Support	0605807F	129	06.....	Volume 2 - 1029
Theater Battle Management (TBM) C4I	0207438F	206	07.....	Volume 3a - 675
Threat Simulator Development	0604256F	124	06.....	Volume 2 - 999

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**UNCLASSIFIED**

Air Force • Budget Estimates FY 2022 • RDT&E Program

<b>Program Element Title</b>	<b>Program Element Number</b>	<b>Line #</b>	<b>BA</b>	<b>Page</b>
Three Dimensional Long-Range Radar (3DELRR)	0207455F	55	04.....	Volume 2 - 343
Training Developments	0804772F	109	05.....	Volume 2 - 869
Training Developments	0804772F	148	06.....	Volume 2 - 1139
UH-1N Replacement Program	0102110F	176	07.....	Volume 3a - 343
USAF Modeling and Simulation	0207601F	214	07.....	Volume 3a - 739
Unified Platform (UP)	0208099F	58	04.....	Volume 2 - 369
Unified Platform (UP)	0208099F	224	07.....	Volume 3a - 885
University Research Initiatives	0601103F	2	01.....	Volume 1 - 15
VC-25B	0401319F	107	05.....	Volume 2 - 853
Vehicles and Support Equipment - General	0202834F	180	07.....	Volume 3a - 373
War Reserve Materiel - Ammunition	0208030F	57	04.....	Volume 2 - 361
Wargaming and Simulation Centers	0207605F	215	07.....	Volume 3a - 755
Weather Service	0305111F	255	07.....	Volume 3b - 175
Weather System Follow-on	1206422F	69	04.....	Volume 2 - 463
Weather System Follow-on	1206422F	115	05.....	Volume 2 - 917
Wide Area Surveillance	0604445F	158	07.....	Volume 3a - 21
Wideband Global SATCOM (SPACE)	1206433F	119	05.....	Volume 2 - 945
Worldwide Joint Strategic Communications	0101316F	172	07.....	Volume 3a - 317

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**Fiscal Year (FY) 2022 Budget Estimates**

**RDT&E Exhibits in Budget Activity 7**

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**Vol-III Part 1**

**Vol-III Part 2**

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0301025F / <i>GeoBase</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	2.623	2.762	2.782	0.000	2.782	-	-	-	-	-	-
673280: <i>Ceit01</i>	-	2.623	2.762	2.782	0.000	2.782	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**Note**  
 This program, BA 7, PE 0301025F, project 673280, NexGen IT Development, is a new start.

FY20-21 funding was returned to the AF. The funds could not be used for NexGen IT Development since the description was for GeoBase RDT&E efforts. The FY22 funding will allow the AF to modernize NexGen IT and develop interfaces with other CE data systems.

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

Funds the research and development of AF Civil Engineer (CE) NexGen IT systems for all Total Force installations. The purpose for the funds are to develop/modernize NexGen IT, a Commercial-Off-The-Shelf (COTS) system; specifically to develop a Space Management/Utilization capability as well as new interfaces with other Civil Engineer data systems (i.e. Builder SMS). NexGen IT provides an integrated asset management system for the CE community with the capability to support cost accounting, Operations (Work Management and Material Control), Real Property, Project Management, and Energy Management. NexGen IT replaces several Legacy IT systems that lack the capability to meet present and future mission requirements and the ability to be compliant with Congressionally-mandated Financial Audit Improvement Readiness (FIAR).

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

This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver NexGen IT development/modernization for emergent or unanticipated weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0207479F.

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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0301025F / <i>GeoBase</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	2.723	2.767	2.823	0.000	2.823
Current President's Budget	2.623	2.762	2.782	0.000	2.782
Total Adjustments	-0.100	-0.005	-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	-0.100	-0.005	-0.041	0.000	-0.041

**Change Summary Explanation**

FY20-21 funding was returned to the AF. The funds could not be used for NexGen IT Development since the description was for GeoBase RDT&E efforts. The FY22 funding will allow the AF to modernize NexGen IT and develop interfaces with other CE data systems.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<b>Title:</b> NexGen IT Development	2.623	2.762	2.782	0.000	2.782
<b>Description:</b> Develop a Space Management/Space Utilization capability within NexGen IT; develop interfaces between NexGen IT and other CE data systems (a COTS program).					
<b>FY 2021 Plans:</b> FY20-21 funding was returned to the AF. The funds could not be used for NexGen IT Development since the description was for GeoBase RDT&E efforts. The FY22 funding will allow the AF to modernize NexGen IT and develop interfaces with other CE data systems.					
<b>FY 2022 Base Plans:</b> Develop a Space Management/Space Utilization capability within NexGen IT; develop interfaces between NexGen IT and other CE data systems (a COTS program).					
<b>FY 2022 OCO Plans:</b> Not applicable					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b>					

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0301025F / <i>GeoBase</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Increase in funding from FY21 to FY22 due to standard inflation.					
<b>Accomplishments/Planned Programs Subtotals</b>	2.623	2.762	2.782	0.000	2.782

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

N/A

**Remarks**

**E. Acquisition Strategy**

The requirement will be executed thru the Air Force Life Cycle Management Center Enterprise Information Systems Directorate (AFLCMC/HIM) on an existing contract vehicle.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0301025F / GeoBase	<b>Project (Number/Name)</b> 673280 / Ceit01
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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 CE NexGen IT	C/CPFF	Not specified. : TBD	-	-		-		2.782	Nov 2021	-		2.782	-	-	-
<b>Subtotal</b>			-	-		-		2.782		-		2.782	-	-	N/A

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SAF REPROGRAMMING	Allot	Not specified. : TBD	-	2.623		2.762		-		-		-	-	-	-
<b>Subtotal</b>			-	2.623		2.762		-		-		-	-	-	N/A

			Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			-	2.623	2.762	2.782	-	2.782	-	-	N/A

**Remarks**  
 FY20-21 funding was returned to the AF. The funds could not be used for NexGen IT Development since the description was for GeoBase RDT&E efforts. The FY22 funding will allow the AF to modernize NexGen IT and develop interfaces with other CE data systems.



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**Exhibit R-4A, RDT&E Schedule Details:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0301025F / <i>GeoBase</i>	<b>Project (Number/Name)</b> 673280 / <i>Ceit01</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Develop Civil Engineer NexGen IT</i></b>				
Develop Civil Engineer NexGen IT	1	2022	4	2026

**UNCLASSIFIED**

**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0301112F / <i>Nuclear Planning and Execution System (NPES)</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	42.719	32.699	0.000	0.000	0.000	-	-	-	-	-	-
673768: <i>Nuclear Planning and Execution System (NPES)</i>	0.000	33.539	29.595	0.000	0.000	0.000	-	-	-	-	-	-
674212: <i>NLCC Decision Support System</i>	0.000	9.180	3.104	0.000	0.000	0.000	-	-	-	-	-	-

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

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 recapitalization 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. NPES will exploit AFLCMC/HBC agile software development economies of scale to enable developers to build and integrate software at the Top Secret level vice paying to build duplicate capabilities at other government or contractor facilities.

Funds agile software development activities and a secure software development environment, located in existing space at Offutt AFB. Software development environment will meet classification/security regulations/criteria, which will promote competition.

This is a Section 804 Alpha Phase rapid software prototyping effort. This effort includes decomposing system, functional and non-functional requirements in order to design, build, and field a new NPES application software baseline via agile, development operations (DevOps), and user-centered design principles. Further, the effort includes developing written artifacts to document system / software engineering elements appropriate for an Agile/DevOps software development effort.

No FY 2022 funding requested; FY 2022 project efforts are detailed in PE 0608158F BA-08, Strategic Mission Planning and Execution System (SMPES).

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0301112F / <i>Nuclear Planning and Execution System (NPES)</i>
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 0.000M was expended for civilian pay expenses in this program element, and in FY21 0.000M is forecasted for civilian pay expenses in this program element.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	44.190	32.759	12.940	0.000	12.940
Current President's Budget	42.719	32.699	0.000	0.000	0.000
Total Adjustments	-1.471	-0.060	-12.940	0.000	-12.940
• 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	-1.471	-0.060	-12.940	0.000	-12.940



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0301112F / <i>Nuclear Planning and Execution System (NPES)</i>				<b>Project (Number/Name)</b> 673768 / <i>Nuclear Planning and Execution System (NPES)</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
673768: <i>Nuclear Planning and Execution System (NPES)</i>	0.000	33.539	29.595	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

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 recapitalization 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. NPES will exploit AFLCMC/HBC agile software development economies of scale to enable developers to build and integrate software at the Top Secret level vice paying to build duplicate capabilities at other government or contractor facilities.

Funds agile software development activities and a secure software development environment, located in existing space at Offutt AFB. Software development environment will meet classification/security regulations/criteria, which will promote competition.

This is a Section 804 Alpha Phase rapid software prototyping effort. This effort includes decomposing system, functional and non-functional requirements in order to design, build, and field a new NPES application software baseline via agile, development operations (DevOps), and user-centered design principles. Further, the effort includes developing written artifacts to document system / software engineering elements appropriate for an Agile/DevOps software development effort.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver NPES weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605833F, 0605832F, and 0605898F.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 030112F / <i>Nuclear Planning and Execution System (NPES)</i>	<b>Project (Number/Name)</b> 673768 / <i>Nuclear Planning and Execution System (NPES)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<p><b>Title:</b> Nuclear Planning and Execution System (NPES) Modernization</p> <p><b>Description:</b> - 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.</p> <ul style="list-style-type: none"> <li>- It will update and/or replace existing system software and improve reliability and sustainability.</li> <li>- It will also seek to reduce total ownership cost.</li> </ul> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>-FY21 the NPES Recap developer will produce sufficient new software capability to enable the user representatives to conduct operational testing &amp; evaluation.</li> <li>-FY21 will be the third year of SW development with plans to reduce the NPES Recap SW developer teams.</li> <li>-FY21 NPES Recap will fund AFLCMC/HBC in-house software development resources to promote competition, a secure developmental environment, and enable developers to build and integrate software at the Top Secret level as part of the agile software development effort.</li> </ul> <p><b>FY 2022 Base Plans:</b></p> <ul style="list-style-type: none"> <li>-FY22 the NPES Recap developer will produce sufficient new software capability to enable the user representatives to conduct operational testing &amp; evaluation.</li> <li>-FY22 will be the fourth year of SW development with plans to reduce the NPES Recap SW developer teams.</li> <li>-FY22 NPES Recap will fund AFLCMC/HBC in house software development resources to promote competition, a secure developmental environment, and enable developers to build and integrate software at the Top Secret level as part of the agile software development effort.</li> </ul> <p><b>FY 2022 OCO Plans:</b></p> <p>No OCO requested.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b></p> <p>\$2.180M increase from FY21PB is due to a technical adjustment of program OPAF to RDT&amp;E to meet development requirements.</p>	33.539	29.595	0.000	0.000	0.000
<b>Accomplishments/Planned Programs Subtotals</b>	33.539	29.595	0.000	0.000	0.000

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0301112F / <i>Nuclear Planning and Execution System (NPES)</i>	<b>Project (Number/Name)</b> 673768 / <i>Nuclear Planning and Execution System (NPES)</i>

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

Line Item	FY 2020	FY 2021	FY 2022	FY 2022	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Cost To	
			Base	OCO	Total					Complete	Total Cost
• OPAF 03 Line Item 833140: <i>Strategic Command and Control</i>	2.266	2.358	2.401	-	2.401	-	-	-	-	-	-

**Remarks**

In FY18, PE 0303255F, Service Support to STRATCOM-C4, Project 833140, partial funding was transferred to PE 0301112F, Nuclear Planning and Execution (NPES), for better transparency.

**D. Acquisition Strategy**

NPES will develop, test, and field a renewed Nuclear Command and Control (NC2) capability for combatant commanders using an evolutionary 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. NPES will exploit AFLCMC/HBC agile software development economies of scale to enable developers to build and integrate software at the Top Secret level vice paying to build duplicate capabilities at other government or contractor facilities.

This is a Section 804 Alpha Phase rapid software prototyping effort. This effort includes decomposing system, functional and non-functional requirements in order to design, build, and field a new NPES application software baseline via agile, development operations (DevOps), and user-centered design principles. Further, the effort includes developing written artifacts to document system / software engineering elements appropriate for an Agile/DevOps software development effort.

Funds agile software development activities and a secure software development environment. Software development environment will meet classification/security regulations/criteria, which will promote competition.

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.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force												Date: May 2021				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 7				PE 0301112F / Nuclear Planning and Execution System (NPES)				673768 / Nuclear Planning and Execution System (NPES)								
<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
Primary Development	Various	NG : Offutt AFB, NE	0.000	27.859	Nov 2019	25.655	Nov 2020	-		-		-	-	-	-	
Development Suites & Infrastructure	C/TBD	NG : Offutt AFB, NE	0.000	1.251		-		-		-		-	-	-	-	
<b>Subtotal</b>			0.000	29.110		25.655		-		-		-	-	-	N/A	
<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
DevOps Support	Various	Various : Offutt AFB, NE	0.000	2.064	Feb 2020	1.791	Feb 2021	-		-		-	-	-	-	
Technical Engineering Services	Various	Various : Offutt AFB, NE	0.000	1.862	Nov 2019	1.701	Nov 2020	-		-		-	-	-	-	
<b>Subtotal</b>			0.000	3.926		3.492		-		-		-	-	-	N/A	
<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
T&E	Various	Various : Offutt AFB, NE	0.000	0.503	Feb 2020	0.448	Feb 2021	-		-		-	-	-	-	
<b>Subtotal</b>			0.000	0.503		0.448		-		-		-	-	-	N/A	
<b>Project Cost Totals</b>			0.000	33.539		29.595		-		-		-	-	-	N/A	
<b>Remarks</b>																

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0301112F / <i>Nuclear Planning and Execution System (NPES)</i>	<b>Project (Number/Name)</b> 673768 / <i>Nuclear Planning and Execution System (NPES)</i>

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>NPES</b>	
Alpha Phase - Rapid Prototyping	
Beta Phase Rapid Fielding	
Delta Phase - Continuous Product Improvement	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0301112F / <i>Nuclear Planning and Execution System (NPES)</i>	<b>Project (Number/Name)</b> 673768 / <i>Nuclear Planning and Execution System (NPES)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>NPES</b>				
Alpha Phase - Rapid Prototyping	1	2020	2	2021
Beta Phase Rapid Fielding	2	2021	4	2022
Delta Phase - Continuous Product Improvement	4	2022	4	2026

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0301112F / Nuclear Planning and Execution System (NPES)				<b>Project (Number/Name)</b> 674212 / NLCC Decision Support System			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
674212: NLCC Decision Support System	0.000	9.180	3.104	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

Decision Support Service (DSS) directly supports the senior leader decision making calculus. Numerous studies, reviews, and practical experience identified the need to create a decision making aid. These identified needs culminated in an Initial Capabilities Document (ICD) that have been validated by the Joint Requirements Oversight Council (JROC). DSS will improve situational awareness, aggregate strategic-level information, provide a common visual display, be resilient, and mobile. Several attempts to provide a DSS-like capability have been attempted over the years. These ad hoc attempts failed due to the lack of community buy-in and a structured acquisition methodology. Today, DSS has complete community buy-in and folding it under AFLCMC ensure rigorous acquisition processes will be followed. The program will use the accelerated acquisition process known as Section 804. USSTRATCOM is the logical home for DSS. Additionally, DSS accomplishes agile software development activities and a secure software development environment, located in existing space at Offutt AFB. Software development environment will meet classification/security regulations/criteria, which will promote competition. DSS is supported by WHMO, OSD, NLCC, and CJCS. The Service provider is the United States Air Force and the Functional Manager is Air Force Global Strike Command (AFGSC).

No FY 2022 funding requested; FY 2022 project efforts are detailed in PE 0608158F BA-08, Strategic Mission Planning and Execution System (SMPES).

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<b>Title:</b> DSS Development	9.180	3.104	0.000	0.000	0.000
<b>Description:</b> Product Development					
<b>FY 2021 Plans:</b>					
- Validate and integrate information from Strategic Study					
- Deploy three Minimal Viable Products (MVP) for user assessment					
- Provide periodic developmental updates IAW Agile development principles					
- Continue back-end development and data integration					
- Build and integrate required IT Infrastructure					
- Refine and Implement cybersecurity requirements IAW cybersecurity plan					
- Finalize and approve Rapid Fielding Requirements Document					
<b>FY 2022 Base Plans:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0301112F / <i>Nuclear Planning and Execution System (NPES)</i>	<b>Project (Number/Name)</b> 674212 / <i>NLCC Decision Support System</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<ul style="list-style-type: none"> <li>- Complete development of prototype</li> <li>- Begin rapid fielding</li> <li>- Continue development updates IAW Agile developmental principles</li> <li>- Continue Back-end development and data integration</li> <li>- Continue integration with required IT infrastructure</li> <li>- Refine and Implement cybersecurity requirements IAW cybersecurity plan</li> </ul> <p><b><i>FY 2022 OCO Plans:</i></b> No OCO requested.</p> <p><b><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i></b> Air Force planned adjustments to program funding portfolio as program gets closer to delivery. Natural ramp down of RDT&amp;E required in acquisition life-cycle.</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	9.180	3.104	0.000	0.000	0.000

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

N/A

**Remarks**

**D. Acquisition Strategy**

DSS will develop, test, and field a decision support system capability for use from the combatant commander and above. DSS will use agile development to rapidly prototype, develop software, and field the solutions. DSS will use existing government contract vehicles when advantageous or create development contracts that are negotiated and awarded in a competitive environment. Funds agile software development activities and a secure software development environment, located in existing space at Offutt AFB. Software development environment will meet classification/security regulations/criteria, which will promote competition. This program will be using the Section 804 acquisitions process to accelerate delivery of a finished product. Section 804 outlines authority granted to DoD in the FY2016 National Defense Acquisitions Act to rapidly prototype/field capabilities distinct from the traditional DoD 5000 acquisition system.





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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0301112F / <i>Nuclear Planning and Execution System (NPES)</i>	<b>Project (Number/Name)</b> 674212 / <i>NLCC Decision Support System</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>DSS Development</b>																												
DSS Strategic Study																												
Senior Leader Visualization (SLV) Prototype Evaluation																												
Prototype Development																												
Disconnected Intermittent Low-Bandwidth (DIL) prototype evaluation																												
DSS IT Infrastructure and Cybersecurity																												
Data Integration																												
Minimal Viable Product Delivery 1																												
Minimal Viable Product Delivery 2																												
Minimal Viable Product Delivery 3																												
Prototype Continuous Software Delivery																												
Limited Operational Capability (LOC)																												
Rapid Fielding																												
Rapid Fielding Continuous Software Delivery																												
IOC																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0301112F / <i>Nuclear Planning and Execution System (NPES)</i>	<b>Project (Number/Name)</b> 674212 / <i>NLCC Decision Support System</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>DSS Development</i></b>				
DSS Strategic Study	3	2020	1	2021
Senior Leader Visualization (SLV) Prototype Evaluation	3	2020	3	2020
Prototype Development	4	2020	1	2022
Disconnected Intermittent Low-Bandwidth (DIL) prototype evaluation	3	2020	1	2021
DSS IT Infrastructure and Cybersecurity	2	2020	4	2022
Data Integration	4	2020	4	2022
Minimal Viable Product Delivery 1	1	2021	1	2021
Minimal Viable Product Delivery 2	3	2021	3	2021
Minimal Viable Product Delivery 3	4	2021	4	2021
Prototype Continuous Software Delivery	4	2020	1	2022
Limited Operational Capability (LOC)	1	2022	1	2022
Rapid Fielding	2	2022	4	2024
Rapid Fielding Continuous Software Delivery	2	2022	4	2024
IOC	4	2024	4	2024

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0301113F / <i>Cyber Security Intelligence Support</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	5.224	0.000	5.224	-	-	-	-	-	-
671931: <i>TECH SURVEIL COUNTER MEAS EQPT</i>	-	0.000	0.000	5.224	0.000	5.224	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

Mission Description: Provides funding to the Air Force owned DoD Cyber Crime Center to fund continued development and modifications of cybersecurity tools and activities to support DoD-wide military intelligence efforts to include CADO-IS (formerly CI-PED) and STORMSYSTEM. Activities include but are not limited to development of software/hardware systems, integration and transition of lab-developed cyber capabilities, developmental testing, operational evaluation, manpower, studies, analysis, pilots, demonstrations, and risk reduction efforts to improve protection of critical technologies.

In FY 2022, PE 0305103F, Cyber Security Initiative, Project 671931, Tech Surveillance Counter Measures, efforts were transferred to PE 03031113F, Cyber Security Intelligence Support, Project 671931, Tech Surveillance Counter Measurement Equipment, in order to more appropriately categorize the funding according to purpose.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 0 was expended for civilian pay expenses in this program element, and in FY21 0 is forecasted for civilian pay expenses in this program element.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	5.224	0.000	5.224
Total Adjustments	0.000	0.000	5.224	0.000	5.224
• 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	5.224	0.000	5.224

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0301113F / <i>Cyber Security Intelligence Support</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Title:</b> Cyber Security Intelligence Support</p> <p><b>Description:</b> Provides funding to the Air Force DoD Cyber Crime Center to fund continued development and modifications of cybersecurity tools and activities to support DoD-wide military intelligence efforts to include CADO-IS (formerly CI-PED) and STORMSYSTEM. Activities include but are not limited to development of software/hardware systems, integration and transition of lab-developed cyber capabilities, developmental testing, operational evaluation, manpower, studies, analysis, pilots, demonstrations, and risk reduction efforts to improve protection of critical technologies.</p> <p><b>FY 2021 Plans:</b> N/A</p> <p><b>FY 2022 Plans:</b></p> <ul style="list-style-type: none"> <li>- Provide professional and technical subject matter expertise to the development and modification of cybersecurity tools and activities to support DoD-wide military intelligence efforts.</li> <li>- Design and maintain enhanced ability to support research, prototyping, development, and testing of cybersecurity tools to synchronize collection, focus operational activity, and rapidly share intelligence to support DoD-wide military intelligence efforts.</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Efforts transferred from PE 0305103F</p>	0.000	0.000	5.224
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	0.000	5.224

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

**Remarks**

**E. Acquisition Strategy**  
Utilize a tailorable acquisition strategy that facilitates the rapid update and delivery of material and nonmaterial solutions to operational military intelligence efforts. This approach allows flexibility for solutions to enter the acquisitions process at any phase of the acquisition life cycle. Cyber Security Intelligence Support provides the rapid development environment and DevOps capacity to meet urgent operational needs/requirements in the protection of critical technologies.



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0301113F / <i>Cyber Security Intelligence Support</i>	<b>Project (Number/Name)</b> 671931 / <i>TECH SURVEIL COUNTER MEAS EQPT</i>

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b><i>Cyber Security Intelligence Support</i></b>	
Design and Maintain Enhanced Research, Prototyping, Development and Testing of Cybersecurity Tools	██████████
Research, Prototype, Develop, and Test Cybersecurity Tools to Synchronize Collection, Focus Operational Activity, and Rapidly Share Intelligence	██████████



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0301113F / <i>Cyber Security Intelligence Support</i>	<b>Project (Number/Name)</b> 671931 / <i>TECH SURVEIL COUNTER MEAS EQPT</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Cyber Security Intelligence Support</i></b>				
Design and Maintain Enhanced Research, Prototyping, Development and Testing of Cybersecurity Tools	1	2022	4	2022
Research, Prototype, Develop, and Test Cybersecurity Tools to Synchronize Collection, Focus Operational Activity, and Rapidly Share Intelligence	1	2022	4	2022

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0301401F / <i>Air Force Space and Cyber Non-Traditional ISR for Battlespace Awareness</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	3.575	1.382	2.463	0.000	2.463	-	-	-	-	-	-
67A051: <i>Space Superiority - Advanced Intelligence Systems</i>	-	3.575	1.382	2.463	0.000	2.463	-	-	-	-	-	-
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 element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0M was expended for civilian pay expenses in this program element, and in FY21 \$0M is forecasted for civilian pay expenses in this program element.

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><u>B. Program Change Summary (\$ in Millions)</u></b>	<b><u>FY 2020</u></b>	<b><u>FY 2021</u></b>	<b><u>FY 2022 Base</u></b>	<b><u>FY 2022 OCO</u></b>	<b><u>FY 2022 Total</u></b>
Previous President's Budget	3.575	2.904	3.180	0.000	3.180
Current President's Budget	3.575	1.382	2.463	0.000	2.463
Total Adjustments	0.000	-1.522	-0.717	0.000	-0.717
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-1.522			
• 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	-0.717	0.000	-0.717

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0301401F / <i>Air Force Space and Cyber Non-Traditional ISR for Battlespace Awareness</i>
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**Change Summary Explanation**

Undistributed Reduction - Excess to need.

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

	FY 2020	FY 2021	FY 2022
<b>Title:</b> TAC OPIR Processing	3.575	1.382	2.463
<b>Description:</b> Develop tactical OPIR processing comprised of software development, controlled multi-level security interface that provides data access and processing services for a robust and flexible network architecture.			
<b>FY 2021 Plans:</b> Tactical OPIR processing			
<b>FY 2022 Plans:</b> Tactical OPIR processing			
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Increased development activities			
<b>Accomplishments/Planned Programs Subtotals</b>	3.575	1.382	2.463

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

N/A

**Remarks**

**E. Acquisition Strategy**

All contracts funded in this program will be awarded using competitive procedures to the maximum extent possible.



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0301401F / Air Force Space and Cyber Non-Traditional ISR for Battlespace Awareness	<b>Project (Number/Name)</b> 67A051 / Space Superiority - Advanced Intelligence Systems

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b><i>Cross Domain OPIR</i></b>																												
Algorithm Development																												
<b><i>Tactical OPIR Processing</i></b>																												
Hardware Purchases, Software Development																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0301401F / Air Force Space and Cyber Non-Traditional ISR for Battlespace Awareness	<b>Project (Number/Name)</b> 67A051 / Space Superiority - Advanced Intelligence Systems

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Cross Domain OPIR</b>				
Algorithm Development	1	2020	4	2026
<b>Tactical OPIR Processing</b>				
Hardware Purchases, Software Development	1	2020	4	2026

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development	<b>R-1 Program Element (Number/Name)</b> PE 0302015F I E-4B National Airborne Operations Center (NAOC)
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	58.059	3.462	26.331	0.000	26.331	-	-	-	-	-	-
674777: E-4B Aircraft Modernization	-	58.059	3.462	26.331	0.000	26.331	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**Note**  
 This program, BA 7, PE 0302015F, project 674777, E-4B Mobile User Objective System (MUOS), is a new start.  
 This program, BA 7, PE 0302015F, project 674777, E-4B Full Motion Flight Deck Simulator, is a new start.  
 This program, BA 7, PE 0302015F, project 674777, Low Frequency Transmit System (LFTS), is a new start.

**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), Flight deck simulator, and Systems Integration Lab. 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. This budget supports the following developmental modifications and studies/projects currently underway or planned for accomplishment:

- 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. FY20 was the last year of funding for this program.
- The Mobile User Objective System (MUOS) program upgrades the E-4B's Ultra-High Frequency (UHF) Radio transmitters to be MUOS capable to meet E-4B Capability Development Document (CDD) and CJCSI 6250.01F requirements. MUOS provides securable data and full duplex voice communications while simultaneously monitoring a second frequency. The MUOS upgrade will provide interoperability with MUOS waveforms for voice and data communications and with other nuclear and national C2 centers and aircraft by replacing the legacy USC-42 UHF SATCOM radios with a MUOS capable radio. FY22 is the last year of funding for this program.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0302015F / <i>E-4B National Airborne Operations Center (NAOC)</i>	
<p>- Survivable Super High Frequency (SSHF) will upgrade and replace portions of the E-4B's Jam-Resistant Secure Communications (JRSC) system to meet existing Presidential Policy Directive (PPD)-35 and National Security Presidential Directive (NSPD)-51/Homeland Security Presidential Directive (HSPD)-20 requirements and to ensure continued connectivity and interoperability as satellite and communications infrastructure evolves. Expected modifications include, but are not limited to, component and sub-system upgrades and replacement of portions of the current SHF system that are obsolete or near end of service life. A replacement to the SHF system is required as secure, survivable communications capability transitions from the Defense Satellite Communications System (DSCS). A risk-reduction study was completed in FY19 to further define the acquisition strategy of the SSHF program. The program will be acquired in 2 increments: Increment 1 will include technical solutions such as upgrading the existing modems, systems integration lab, and Ka-band system. Increment 2 will include new modem technology, new Ku-band system, common workstation, and upgrades to the X-band system.</p> <p>- E-4B Full Motion Flight Deck Simulator program will develop an E-4B full motion 747-200 flight crew simulator, configured to represent the E-4B cockpit configuration for the pilot and flight engineer stations and be representative of day and night aerial refueling with simulation of fuel on-load characteristics. This capability will fill a critical training gap for pilots and flight engineers once the already limited current training options are decommissioned (Sep 24). This training capability shortfall will directly impact E-4B flight operations and aircraft availability as use of the aircraft for this purpose reduces already limited aircraft availability required for operational missions resulting in insufficient flight time for pilots to maintain certifications. FY20 new start approved in Sep 20. FY22 is last year of funding for this program.</p> <p>The Low Frequency Transmit System (LFTS) program 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. 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. The LFTS System requires a trainer to allow the users to become proficient in operating the system and to certify all operators.</p> <p>This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver E-4B weapon system capability for emergent or unanticipated weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F.</p> <p>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.</p>		

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0302015F / <i>E-4B National Airborne Operations Center (NAOC)</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	60.173	3.468	0.000	0.000	0.000
Current President's Budget	58.059	3.462	26.331	0.000	26.331
Total Adjustments	-2.114	-0.006	26.331	0.000	26.331
• Congressional General Reductions	0.000	-0.006			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-2.114	0.000			
• Other Adjustments	0.000	0.000	26.331	0.000	26.331

**Change Summary Explanation**

FY22 funding increased to fix E4B SSHF funding.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
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<b>Title:</b> Advanced Extremely High Frequency (AEHF) Compatible Terminal/Presidential National Voice Capability (PNVC)	14.476	0.000	0.000
<b>Description:</b> Integrate AEHF Compatible Terminal/PNVC capability onto the E-4B NAOC platform to replace the existing MILSTAR/SECN system.			
<b>FY 2021 Plans:</b> N/A			
<b>FY 2022 Plans:</b> Anticipate program completion.			
<b>Title:</b> E-4B Mobile User Objective System (MUOS)	9.010	0.000	0.050
<b>Description:</b> The MUOS program upgrades E-4B Ultra-High Frequency (UHF) Radio transmitters to be MUOS capable to meet the E-4B CDD and CJCSI 6250.01F. MUOS provides securable data and full duplex voice communications while simultaneously monitoring a second frequency. The MUOS upgrade will provide interoperability with MUOS waveforms for voice and data communications and with other nuclear and national C2 centers and aircraft by replacing the legacy USC-42 UHF Satellite Communication (SATCOM) radio system.			
<b>FY 2021 Plans:</b>			

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 0302015F / <i>E-4B National Airborne Operations Center (NAOC)</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
N/A				
<b>FY 2022 Plans:</b> Includes PMA/Travel. Complete development and test efforts in support of first prototype installation.				
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Additional funds required to support program through completion of development effort.				
<b>Title:</b> Survivable SHF		24.583	3.462	25.581
<b>Description:</b> Survivable Super High Frequency (SSHF) will upgrade and replace portions of the E-4B's Jam-Resistant Secure Communications (JRSC) system to meet existing Presidential Policy Directive (PPD)-35 and National Security Presidential Directive (NSPD)-51/Homeland Security Presidential Directive (HSPD)-20 requirements and to ensure continued connectivity and interoperability as satellite and communications infrastructure evolves. Expected modifications include, but are not limited to, component and sub-system upgrades and replacement of portions of the current SHF system that are obsolete or near end of service life. A replacement to the SHF system is required as secure, survivable communications capability transitions from the Defense Satellite Communications System (DSCS). A risk-reduction study was completed in FY19 to further define the acquisition strategy of the SSHF program. The program will be acquired in 2 increments: Increment 1 will include technical solutions such as upgrading the existing modems, systems integration lab, and Ka-band system. Increment 2 will include new modem technology, new Ku-band system, common workstation, and upgrades to the X-band system.				
<b>FY 2021 Plans:</b> - Complete SSHF Increment 1 development, prototyping, integration, and test activities. - Complete systems integration lab development and installation. - Complete upgrade to existing modems and Ka-band system airworthiness. - Start Increment 2 development activities.				
<b>FY 2022 Plans:</b> - Continue Increment 2 development activities. - Begin design of new Ku-band system and common workstation. - Initiate development of new modem technology. - Start development and design of X-band system upgrades.				
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> FY21 is the end of Increment 1 activities and most of the cost of Increment 1 is in FY20. FY21 begins activities for Increment 2.				
<b>Title:</b> E-4B Full Motion Flight Deck Simulator		9.990	0.000	0.450

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 0302015F / <i>E-4B National Airborne Operations Center (NAOC)</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Description:</b> E-4B Full Motion Flight Deck Simulator program will develop an E-4B full motion 747-200 flight crew simulator, configured to represent the E-4B cockpit configuration for the pilot and flight engineer stations and be representative of day and night aerial refueling with simulation of fuel on-load characteristics. The Simulator is necessary to meet operational flight training requirements and fill a critical training gap for pilots and flight engineers once the already limited current training options are decommissioned. This training capability shortfall will directly impact E-4B flight operations and aircraft availability as use of the aircraft for this purpose reduces already limited aircraft availability required for operational missions resulting in insufficient flight time for pilots to maintain certifications.</p> <p><b>FY 2021 Plans:</b> N/A</p> <p><b>FY 2022 Plans:</b> Delivery of Flight Simulator</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Additional funds required to support program through completion.</p>				
<p><b>Title:</b> Low Frequency Transmit System (LFTS)</p> <p><b>Description:</b> 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><b>FY 2021 Plans:</b> N/A</p> <p><b>FY 2022 Plans:</b> -Complete data analysis of LFTS High-altitude Electromagnetic Plus (HEMP) testing/certification to meet IOC requirement and other contract closeout actions. -Initiate design and development of LFTS Trainer.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Additional funding required for completion of delayed test activities, and initial design and development work for LFTS trainer.</p>		0.000	0.000	0.250
<b>Accomplishments/Planned Programs Subtotals</b>		58.059	3.462	26.331

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0302015F / <i>E-4B National Airborne Operations Center (NAOC)</i>
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**D. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APAF 05 Line Item E00400: <i>E-4B Nat Airborne Ops Center (NAOC)</i>	58.477	58.803	52.240	-	52.240	-	-	-	-	-	-
• APAF 06 Line Item 000999: <i>Initial Spares/Repair Parts</i>	2.365	2.704	3.050	-	3.050	-	-	-	-	-	-

**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.

The Acquisition Strategy for Survivable SHF was approved as a Section 804 Middle Tier Acquisition in April 2019.

Management Strategy: Program management for all aircraft modifications is executed by the Commercial Derivative Aircraft Division at Tinker AFB, Oklahoma. The Program Executive Officer (PEO) for Presidential and Executive Airlift, at Wright Patterson, Ohio provides management oversight.

Contracting Strategy: The 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.

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2022 Air Force</b>											<b>Date: May 2021</b>				
<b>Appropriation/Budget Activity</b> 3600 / 7						<b>R-1 Program Element (Number/Name)</b> PE 0302015F / E-4B National Airborne Operations Center (NAOC)					<b>Project (Number/Name)</b> 674777 / E-4B Aircraft Modernization				

<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
AEHF/PNVC Integration	C/CPFF	Raytheon : Largo, FL	-	14.476	Apr 2020	-		-		-		-	-	-	44.471
MUOS	SS/CPIF	Raytheon : Largo, FL	-	9.010	Nov 2019	-		0.050	Sep 2022	-		0.050	-	-	13.000
E-4B Full Motion Flight Deck Simulator	SS/FFP	CymSTAR : Broken Arrow, OK	-	9.990	Sep 2020	-		0.450	Dec 2021	-		0.450	-	-	9.450
Survivable SHF	C/CPFF	L-3 : SLC, UT	-	24.583	Oct 2020	3.462	Jun 2021	25.581	Jan 2022	-		25.581	-	-	120.000
LFTS Development	SS/CPIF	Boeing : OKC, OK	-	-		-		0.250	Mar 2022	-		0.250	-	-	0.250
<b>Subtotal</b>			-	58.059		3.462		26.331		-		26.331	-	-	N/A

<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	-	58.059	3.462	26.331	-	-	-	N/A

**Remarks**

FY20 AEHF funding incrementally funded AEHF EMD and prototype integration efforts under DMEA contract.

FY20 MUOS funding supported integration and test of prototype MUOS system under Raytheon IDIQ contract.

FY20, FY21 & FY22 SSHF funding supports development, integration, and test of prototype SSHF system under L-3 IDIQ contract.

FY20 E-4B Full Motion Flight Deck Simulator funding supports development of simulator under CymSTAR contract.

FY22 LFTS funding supports contract closeout of integration and test of prototype LFTS system under Boeing's ESS contract.

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0302015F / E-4B National Airborne Operations Center (NAOC)	<b>Project (Number/Name)</b> 674777 / E-4B Aircraft Modernization

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>E-4B Aircraft Modernization</b>	
AEHF Compatible Terminal/PNVC Integration and Testing	████████████████████
AEHF Compatible Terminal/PNVC Milestone Decision C	████
MUOS Modification Integration and Testing	██
MUOS Modification Milestone Decision B/C	████
Survivable SHF Risk Reduction Study	████
Survivable SHF Rapid Prototype Decision Inc 1	████
Survivable SHF Inc 1 Integration and Testing	████████████████████
Survivable SHF Inc 1 Prototype Modification Decision	████
Survivable SHF Inc 1 Rapid Fielding Decision	████
Survivable SHF Rapid Prototype Decision Inc 2	████
Survivable SHF Inc 2 Integration and Testing	██
Survivable SHF Inc 2 Prototype Modification Decision	████
Survivable SHF Inc 2 Rapid Fielding Decision	████
E-4B Full Motion Flight Deck Simulator Ready For Training	████



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0302015F / <i>E-4B National Airborne Operations Center (NAOC)</i>	<b>Project (Number/Name)</b> 674777 / <i>E-4B Aircraft Modernization</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>E-4B Aircraft Modernization</i></b>				
AEHF Compatible Terminal/PNVC Integration and Testing	2	2020	4	2021
AEHF Compatible Terminal/PNVC Milestone Decision C	2	2021	2	2021
MUOS Modification Integration and Testing	1	2020	4	2022
MUOS Modification Milestone Decision B/C	1	2022	1	2022
Survivable SHF Risk Reduction Study	1	2020	1	2020
Survivable SHF Rapid Prototype Decision Inc 1	1	2021	1	2021
Survivable SHF Inc 1 Integration and Testing	1	2021	1	2022
Survivable SHF Inc 1 Prototype Modification Decision	2	2022	2	2022
Survivable SHF Inc 1 Rapid Fielding Decision	3	2022	3	2022
Survivable SHF Rapid Prototype Decision Inc 2	3	2021	3	2021
Survivable SHF Inc 2 Integration and Testing	3	2021	2	2024
Survivable SHF Inc 2 Prototype Modification Decision	1	2024	1	2024
Survivable SHF Inc 2 Rapid Fielding Decision	3	2024	3	2024
E-4B Full Motion Flight Deck Simulator Ready For Training	3	2022	3	2022

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	13.132	44.640	20.700	0.000	20.700	-	-	-	-	-	-
672832: <i>MEECN System Improvements</i>	-	0.948	0.965	0.971	0.000	0.971	-	-	-	-	-	-
672835: <i>Common VLF/LF Receiver Inc 2</i>	-	12.067	22.284	0.000	0.000	0.000	-	-	-	-	-	-
676030: <i>Global ASNT Inc 2</i>	-	0.117	21.391	19.729	0.000	19.729	-	-	-	-	-	-

**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), United States Space Force (USSF), Air Mobility Command (AMC), Air Force Special Operations Command (AFSOC), US Strategic Command (USSTRATCOM), and the US Navy) to monitor and assess the performance of existing NC3 systems and develop recommendations for strategic and tactical architecture upgrades, 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) Program will develop and produce an open systems architecture (OSA) compliant, advanced, adaptable VLF/LF receiver for the NC3 weapon system, AN/USQ-225. The program will also lead development of the interoperable Special Mode A (SMA) waveform specification for USAF and USN implementation to VLF systems to improve reception range and accuracy while ultimately shortening required transmission time. As the USAF VLF receiver integrator, the VLF Enterprise Program Office will assume responsibility for VLF sustainment to include configuration management of the CVR Increment 1 (CVRi1) materiel solution while also providing management support to the B-52 VLF Modernization Program for its procurement and production of the directed VLF receiver. The VLF Enterprise Program Office will provide the same management support to other legacy NC3 platforms' VLF receiver requirements. The program will complete its investment in pre-EMD VLF modernization activities as directed by the VLF Enterprise Program Office to advance

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	
<p>technology maturation to be made available for incorporation into current and next generation VLF reception architectures and integrated with Joint All Domain Command and Control (JADC2). Effort unfunded in FY22.</p> <p>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 and 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.</p> <p>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.</p> <p>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. FY19 was last year of RDT&amp;E funding.</p> <p>Global ASNT Increment 2 delivers a replacement Aircrew Alerting System (AAS) consisting of personal and general area alerting as well as Ultra High Frequency (UHF) line of sight (LOS) voice communications to bomber, tanker, and reconnaissance aircraft. Increment 2 replaces aging legacy Electromagnetic Pulse Hardened Dispersal Communication (EHDC) and Aircrew Alerting Communications Electromagnetic Pulse (AACE) systems.</p> <p>This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver MEECN for emergent or unanticipated weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F and 0605833F. In FY2020 1.900M and in FY2021 2.205M was expended for civilian pay expenses in this program element.</p> <p>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.</p>		

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	13.543	61.887	58.577	0.000	58.577
Current President's Budget	13.132	44.640	20.700	0.000	20.700
Total Adjustments	-0.411	-17.247	-37.877	0.000	-37.877
• Congressional General Reductions	0.000	-0.082			
• Congressional Directed Reductions	0.000	-17.165			
• 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	-0.411	0.000			
• Other Adjustments	0.000	0.000	-37.877	0.000	-37.877

**Change Summary Explanation**

FY2021 -14.215M GASNTi2  
FY2021 -2.950M CVRi2  
FY2022 -46.600M for NDO offsets  
FY2022 +20.000M for GASNT Inc 2

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>				<b>Project (Number/Name)</b> 672832 / <i>MEECN System Improvements</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
672832: <i>MEECN System Improvements</i>	-	0.948	0.965	0.971	0.000	0.971	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

MSI is a long-range planning process with users (Air Force Global Strike Command (AFGSC), Air Combat Command (ACC), United States Space Force (USSF), Air Mobility Command (AMC), Air Force Special Operations Command (AFSOC), US Strategic Command (USSTRATCOM), and the US Navy) to monitor and assess the performance of existing NC3 systems and develop recommendations for strategic and tactical architecture upgrades, 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.

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<b>Title:</b> MEECN System Improvements	0.948	0.965	0.971	0.000	0.971
<b>Description:</b> 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 may also be used to execute test bed activities and exercise participation related to ABMS and JADC2 demonstrations and execute contracts in support of next generation NC3 systems and sub-systems					
<b>FY 2021 Plans:</b>					
- Conduct analysis of the performance/condition of NC3 platforms' VLF receiver Group A elements (e.g., antennas, power source, cabling/wiring, human machine interface (HMI), etc.)					
- Continue to refresh NC3 Architecture Roadmap					
- Continue planning and initiate integration, analysis, and testing activities for AF NC3 Weapon System					
- Complete MSI Summary Report					
- Conduct design and development engineering					
- Perform analysis of engineering issues and technology insertion					
- Develop enhanced multiuse capabilities					
- Conduct technology maturation and risk reduction activities					
- Evaluate integrated technology, representative modes, and prototype systems					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	<b>Project (Number/Name)</b> 672832 / <i>MEECN System Improvements</i>

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<ul style="list-style-type: none"> <li>- Conduct technology testing; analyze technology strategies</li> <li>- Build technology roadmaps as proactive support</li> <li>- Perform analysis, integration, and testing activities</li> <li>- Conduct NC3 Connectivity Performances updates</li> <li>- Develop messaging, waveform, mode, and system standards and documentation</li> <li>- Develop proof-of-concepts and prototypes for prediction-based system functionality, sensor systems, transmission modes and algorithms for traffic routing</li> <li>- Develop weapon system validation test environment including but not limited to the purchase of vendor radios and terminals and test equipment</li> <li>- Conduct studies, analysis, proof-of-concept, and prototyping for the assessment and modernization of the AF NC3 WS (AN/USQ-225)</li> </ul> <p><b>FY 2022 Base Plans:</b></p> <ul style="list-style-type: none"> <li>- Conduct analysis of the performance/condition of NC3 platforms' VLF receiver Group A elements (e.g., antennas, power source, cabling/wiring, human machine interface (HMI), etc.)</li> <li>- Continue to refresh NC3 Architecture Roadmap</li> <li>- Continue planning and initiate integration, analysis, and testing activities for AF NC3 Weapon System</li> <li>- Complete MSI Summary Report</li> <li>- Conduct design and development engineering</li> <li>- Perform analysis of engineering issues and technology insertion</li> <li>- Develop enhanced multiuse capabilities</li> <li>- Conduct technology maturation and risk reduction activities</li> <li>- Evaluate integrated technology, representative modes, and prototype systems</li> <li>- Conduct technology testing; analyze technology strategies</li> <li>- Build technology roadmaps as proactive support</li> <li>- Perform analysis, integration, and testing activities</li> <li>- Conduct NC3 Connectivity Performances updates</li> <li>- Develop messaging, waveform, mode, and system standards and documentation</li> <li>- Develop proof-of-concepts and prototypes for prediction-based system functionality, sensor systems, transmission modes and algorithms for traffic routing</li> <li>- Develop weapon system validation test environment including but not limited to the purchase of vendor radios and terminals and test equipment</li> </ul>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	<b>Project (Number/Name)</b> 672832 / <i>MEECN System Improvements</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
- Conduct studies, analysis, proof-of-concept, and prototyping for the assessment and modernization of the AF NC3 WS (AN/USQ-225)					
<b><i>FY 2022 OCO Plans:</i></b> N/A					
<b><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i></b> FY22 increase due to inflation of operating costs					
<b>Accomplishments/Planned Programs Subtotals</b>	0.948	0.965	0.971	0.000	0.971

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

N/A

**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. MITRE, Massachusetts Institute of Technology (MIT) Lincoln Labs, and Johns Hopkins University/Applied Physics Laboratory (JHU/APL) will continue to support NC3 Weapon System Architecture Roadmap updates.





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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	<b>Project (Number/Name)</b> 672832 / <i>MEECN System Improvements</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b><i>MEECN System Improvement</i></b>																												
MEECN System Improvement																												
MSI Summary Report - FY20																												
MSI Summary Report - FY21																												
MSI Summary Report - FY22																												
MSI Summary Report - FY23																												
MSI Summary Report - FY24																												
MSI Summary Report - FY25																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	<b>Project (Number/Name)</b> 672832 / <i>MEECN System Improvements</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>MEECN System Improvement</i></b>				
MEECN System Improvement	1	2020	4	2026
MSI Summary Report - FY20	1	2021	1	2021
MSI Summary Report - FY21	1	2022	1	2022
MSI Summary Report - FY22	1	2023	1	2023
MSI Summary Report - FY23	1	2024	1	2024
MSI Summary Report - FY24	1	2025	1	2025
MSI Summary Report - FY25	1	2026	1	2026

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>				<b>Project (Number/Name)</b> 672835 / <i>Common VLF/LF Receiver Inc 2</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
672835: <i>Common VLF/LF Receiver Inc 2</i>	-	12.067	22.284	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

Common Very Low Frequency/Low Frequency (VLF/LF) Receiver (CVR) Increment 2 (CVR Inc 2) Program will develop and produce an open systems architecture (OSA) compliant, advanced, adaptable VLF/LF receiver for the NC3 weapon system, AN/USQ-225. The program will also lead development of the interoperable Special Mode A waveform specification for USAF and USN implementation to VLF systems to improve reception range and accuracy while ultimately shortening required transmission time. As the USAF VLF receiver integrator, the VLF Enterprise Program Office will assume responsibility for VLF sustainment to include configuration management of the CVR Increment 1 (CVRi1) materiel solution while also providing management support to the B-52 VLF Modernization Program for its procurement and production of the directed VLF receiver. The VLF Enterprise Program Office will provide the same management support to other legacy NC3 platforms' VLF receiver requirements. The program will complete its investment in pre-EMD VLF modernization activities as directed by the VLF Enterprise Program Office to advance technology maturation to be made available for incorporation into current and next generation VLF reception architectures and integrated with Joint All Domain Command and Control (JADC2). Effort unfunded in FY22.

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<b>Title:</b> CVR Inc 2	12.067	22.284	0.000	0.000	0.000
<b>Description:</b> Post-MDD and progression to prototype development employing a Middle Tier Approach (MTA)					
<b>FY 2021 Plans:</b>					
- Complete OSA-compliant VLF Reference Implementation Lab (RIL) with MITRE to allow for the evaluation of backplane and chassis options for the design and operation of a prototype VLF receiver and to facilitate technical maturation of OSA-compliant architecture and requisite Radio Frequency (RF) and crypto modules					
- Establish Cooperative Research and Development Agreements (CRADAs) with industry and other agencies to experiment with and mature technologies that can contribute to optimal VLF receiver performance					
- Develop OSA Crypto Requirements, Architecture and Design					
- Approve JHU/APL EMI filter final engineering design to improve VLF reception					
- Conduct end-to end demonstration to transmit and receive SMA waveform messages in laboratory environment to prepare for live fly proof of concept					
- Coordinate and execute live fly demonstration of SMA waveform messages transmission and receipt					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	<b>Project (Number/Name)</b> 672835 / <i>Common VLF/LF Receiver Inc 2</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<ul style="list-style-type: none"> <li>- Co-lead execution of interoperability testing of SMA waveform with US Navy at Navy Information Warfare Center - Pacific (NIWC-PAC) &amp; Navy COMM PMW 770</li> <li>- Complete analysis of the performance/condition of NC3 platforms' VLF receiver Group A elements (e.g., antennas, power source, cabling/wiring, human machine interface (HMI), etc.)</li> <li>- Support higher echelon lead of VLF requirements High Performance Team (HPT) to realign target platform in accordance with MAJCOM priorities</li> <li>- Revise CVR Inc 2 Draft SRD in accordance with HPT report</li> <li>- Coordinate interface requirements with targeted NC3 platform</li> <li>- Conduct Acquisition Strategy Panel (ASP) for CVRi2 MTA acquisition approach</li> <li>- Initiate Other Transaction Authority (OTA) approach with Air Force Research Laboratory (AFRL) - Rome for CVRi2 prototype</li> <li>- Execute CVRi1 VLF receiver Transition Support Plan (TSP) and assume role as Chair of Interface Control Working Group (ICWG)</li> <li>- Complete Capability Gap Analysis and Shelf Life Extension Program (SLEP) for CVRi1 materiel solution</li> <li>- Initiate CVRi1 materiel solution receiver Logistics Requirement Determination Process (LRDP)</li> <li>- Coordinate approval of CVRi1 materiel solution Life-Cycle Sustainment Plan (LCSP)</li> <li>- Execute CVRi1 materiel solution Life-Cycle Sustainment Plan (LCSP)</li> <li>- Continue to participate as USAF lead in USSTRATCOM Configuration Control Board (CCB)for Special Mode A</li> </ul> <p><b>FY 2022 Base Plans:</b> N/A</p> <p><b>FY 2022 OCO Plans:</b> N/A</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Reduced for other AF priorities</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	12.067	22.284	0.000	0.000	0.000

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

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force		Date: May 2021
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>

**D. Acquisition Strategy**

Employing a Middle Tier Acquisition (MTA) approach, CVR Inc 2 will use an Other Transaction Authority (OTA) to negotiate agreement with member(s) of approved consortium to develop an advanced, OSA-compliant, and adaptable VLF/LF receiver prototype. Acquisition strategy approval projected 4QFY21.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	<b>Project (Number/Name)</b> 672835 / <i>Common VLF/LF Receiver Inc 2</i>
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Early Development (TMRR prototype contract FY 2020)	Various	Various : TBD	-	-		5.994	Jun 2021	-		-		-	-	-	-
MITRE (DMS)	Various	Various : Bedford, MA	-	2.018	Dec 2019	1.791	Feb 2021	-		-		-	-	-	-
Broad Agency Announcement	Various	Various : TBD	-	1.743	Jan 2020	-		-		-		-	-	-	-
NSA Certification	Various	Various : TBD	-	0.403	Apr 2020	0.400	Jun 2021	-		-		-	-	-	-
Direct Cite Civilian Pay	Various	Various : TBD	-	1.610	Nov 2019	1.105	Sep 2021	-		-		-	-	-	-
<b>Subtotal</b>			-	5.774		9.290		-		-		-	-	-	N/A

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
General Support (Eng/Acq Spt)	Various	Not specified. : TBD	-	2.152		-		-		-		-	-	-	-
GFE	Various	Various : TBD	-	0.000		-		-		-		-	-	-	-
<b>Subtotal</b>			-	2.152		-		-		-		-	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test and Evaluation	C/CPAF	Not specified. : TBD	-	0.434	Mar 2020	0.234	Aug 2021	-		-		-	-	-	-
<b>Subtotal</b>			-	0.434		0.234		-		-		-	-	-	N/A





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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	<b>Project (Number/Name)</b> 672835 / <i>Common VLF/LF Receiver Inc 2</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>CVR Inc. 2</b>																												
CVRi2 ASP followed by OTA																												
JHU Avenger Final Design																												
MITRE VLF Reference Implementation Lab (RIL)																												
SMA End-to End Lab Demonstration																												
SMA Interoperability Testing																												
CRADA																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	<b>Project (Number/Name)</b> 672835 / <i>Common VLF/LF Receiver Inc 2</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>CVR Inc. 2</b>				
CVRI2 ASP followed by OTA	4	2021	4	2026
JHU Avenger Final Design	1	2021	2	2021
MITRE VLF Reference Implementation Lab (RIL)	4	2021	3	2026
SMA End-to End Lab Demonstration	3	2021	3	2025
SMA Interoperability Testing	3	2021	3	2025
CRADA	3	2021	3	2022

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	<b>Project (Number/Name)</b> 676030 / <i>Global ASNT Inc 2</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
676030: <i>Global ASNT Inc 2</i>	-	0.117	21.391	19.729	0.000	19.729	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

Global ASNT Inc 2 replaces aging legacy strategic communications equipment at bomber, tanker and reconnaissance Wing Command Posts (WCPs), Nuclear Task Forces, Munitions Support Squadrons (MUNSS), and Mobile Support Teams (MSTs). Global ASNT Inc 2 is a ground-based system that will provide survivable, secure communication paths to disseminate Emergency Action Messages (EAMs) to bomber, tanker, and reconnaissance aircrews.

Global ASNT Inc 2 is being fielded in 3 separate capability incremental blocks; all 3 blocks are High-Altitude Electro-Magnetic Pulse (HEMP) and Radiation Hazard (RADHAZ) protected.

Global ASNT Inc 2, Block 1 delivers a replacement Aircrew Alerting System (AAS) consisting of Ultra High Frequency (UHF) personal and general alerting equipment replacing EHDC and AACE systems. Global ASNT Inc 2, Blocks 2 and 3 provide High Frequency (HF) capabilities and other enhancements.

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

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<b>Title:</b> Global ASNT Inc 2, Block 1	0.117	21.391	19.729	0.000	19.729
<b>Description:</b> Middle Tier Acquisition - Rapid Prototyping					
<b>FY 2021 Plans:</b>					
- Acquisition Strategy Panel (ASP) approved					
- Solicitation released					
- Proposal evaluations completed					
- Other Transaction Authority (OTA) Agreement award					
<b>FY 2022 Base Plans:</b>					
- Begin and complete Phase 1 (Non-HEMP) prototype development					
- Begin Phase 2 (HEMP) prototype development					
- Complete Phase 1 (Non-HEMP) site prep in support of first two fixed site installs					
<b>FY 2022 OCO Plans:</b>					
N/A					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	<b>Project (Number/Name)</b> 676030 / <i>Global ASNT Inc 2</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
FY22 decrease reflects continuing development activities that were awarded in FY21.					
<b>Accomplishments/Planned Programs Subtotals</b>	0.117	21.391	19.729	0.000	19.729

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

N/A

**Remarks**

**D. Acquisition Strategy**

Global ASNT Inc 2 provides 3 separate capability incremental blocks. Global ASNT Inc 2, Block 1 is a Middle Tier of Acquisition (MTA) Section 804 Rapid Prototyping program. Global ASNT Inc 2, Blocks 2 and 3 will notionally utilize a traditional DoD 5000.02 acquisition strategy.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	<b>Project (Number/Name)</b> 676030 / <i>Global ASNT Inc 2</i>
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Product Development	C/CPAF	Various : Bedford, MA	-	-		13.558	Aug 2021	11.435	Feb 2022	-		11.435	-	-	-
<b>Subtotal</b>			-	-		13.558		11.435		-		11.435	-	-	N/A

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Information Assurance	SS/CPAF	Booz Allen Hamilton : Bedford, MA	-	-		0.160	Jul 2021	0.165	Apr 2022	-		0.165	-	-	-
<b>Subtotal</b>			-	-		0.160		0.165		-		0.165	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Planning	PO	96 TW : Eglin AFB, FL	-	-		0.355	May 2021	0.489	Mar 2022	-		0.489	-	-	-
<b>Subtotal</b>			-	-		0.355		0.489		-		0.489	-	-	N/A

<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DMS - Civilian Pay	Various	Various : Bedford, MA	-	0.117	Oct 2020	1.100	Oct 2020	1.235	Oct 2021	-		1.235	-	-	-
PSC - (Eng/Acq Support, Travel)	C/CPAF	Various : Bedford, MA	-	-		6.218	Oct 2020	6.405	Oct 2021	-		6.405	-	-	-
<b>Subtotal</b>			-	0.117		7.318		7.640		-		7.640	-	-	N/A

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2022 Air Force</b>								<b>Date: May 2021</b>				
<b>Appropriation/Budget Activity</b> 3600 / 7				<b>R-1 Program Element (Number/Name)</b> PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>				<b>Project (Number/Name)</b> 676030 / <i>Global ASNT Inc 2</i>				
	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	-	0.117	21.391		19.729		-		19.729	-	-	N/A

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	<b>Project (Number/Name)</b> 676030 / <i>Global ASNT Inc 2</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>Global ANST Inc 2</b>																												
ASP Approved				■																								
Solicitation Released					■																							
Proposal Evaluations Completed					■	■																						
Agreement Award							■																					
RDT&E (Non-HEMP)								■	■	■																		
RDT&E (HEMP)									■	■	■	■	■	■														
Production														■	■	■	■	■	■	■	■	■	■	■	■	■	■	
RAA IOC (Non-HEMP)																			■									
RAA IOC (HEMP)																									■			
RAA FOC (HEMP)																											■	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303131F / <i>Minimum Essential Emergency Communications Network (MEECN)</i>	<b>Project (Number/Name)</b> 676030 / <i>Global ASNT Inc 2</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Global ANST Inc 2</b>				
ASP Approved	1	2021	1	2021
Solicitation Released	2	2021	2	2021
Proposal Evaluations Completed	2	2021	3	2021
Agreement Award	4	2021	4	2021
RDT&E (Non-HEMP)	1	2022	4	2022
RDT&E (HEMP)	1	2022	2	2024
Production	1	2023	3	2026
RAA IOC (Non-HEMP)	1	2024	1	2024
RAA IOC (HEMP)	3	2025	3	2025
RAA FOC (HEMP)	3	2026	3	2026



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0303133F / <i>High Frequency Radio Systems</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	15.689	0.000	0.000	0.000	0.000	-	-	-	-	-	-
675046: <i>Systems Engineering &amp; Integration</i>	-	15.689	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

Mission Description and Budget Item Justification: The HF Modernization program is designed to replace existing legacy High Frequency (HF) radios with a modernized HF radio on all Air Force (AF) aircraft that currently are equipped with HF radios (e.g., AN/ARC-190). The current HF radios installed on AF aircraft have reached obsolescence and there is a compelling need to modernize the HF capabilities. The replacement radio will have similar form and fit, but increased capability. The new radio needs to incorporate new technologies such as 3G/4G Automatic Link Establishment (ALE), wide band features that allow the radio to operate from 3 KHz up to 48 KHz channel spacing, and Low Probability of Intercept/Low Probability of Detection (LPI/LPD) features. The new HF radio should be software defined (SDR) to accommodate growth for newer technologies and embedded cryptographic options.

The current AN/ARC-190 radios, that serve a majority of HF airborne needs, will approach end of life 2025 and do not have current capabilities to be sustainable for future years. Current and future AF aircraft with validated requirements for HF radios will experience a shortage of HF radios starting in FY20. With the increased shortage of spares, as the current HF radios continue to fail, Air Traffic Control (ATC), Air Operation Centers (AOC), and other controlling agencies will lose the ability to communicate with aircraft. HF Modernization provides alternate means of communication when satellite communications are not available due to nature and man-made disruptions. It is essential that these airborne radios keep pace to guarantee interoperability or theater C2 will be degraded.

Program management and administration efforts consist of, but are not limited to, contract services and government costs. This program element may include necessary civilian pay expenses required to manage, execute, and deliver HF Modernization weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. in FY19 (0) and in FY20 (0) was expended for civilian pay expenses in this program element.

Funding for this exhibit contained in PE 0303133F.

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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force				<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 0303133F / <i>High Frequency Radio Systems</i>				
<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	
Previous President's Budget	15.881	0.000	0.000	0.000	0.000	
Current President's Budget	15.689	0.000	0.000	0.000	0.000	
Total Adjustments	-0.192	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	-0.192	0.000	0.000	0.000	0.000	
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>				<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> High Frequency Radio System				15.689	0.000	0.000
<b>Description:</b> Development of High Frequency Radio System						
<b>FY 2021 Plans:</b> N/A, there is no FY21 funding for this effort.						
<b>FY 2022 Plans:</b> N/A, there is no FY22 funding for this effort.						
<b>Accomplishments/Planned Programs Subtotals</b>				15.689	0.000	0.000
<b>D. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>Remarks</b> Major Thrust - Funding decrease from FY20 to FY21 and FY22 as result of DOD CIO funding availability.						
<b>E. Acquisition Strategy</b> Efforts awarded on an annual basis, exercising existing contract options, to support Development of High Frequency Radio System.						



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303133F / <i>High Frequency Radio Systems</i>	<b>Project (Number/Name)</b> 675046 / <i>Systems Engineering &amp; Integration</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b><i>High Frequency Radio System</i></b>																												
Development	[REDACTED]																											

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303133F / <i>High Frequency Radio Systems</i>	<b>Project (Number/Name)</b> 675046 / <i>Systems Engineering &amp; Integration</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>High Frequency Radio System</i></b>				
Development	1	2020	4	2021

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0303140F / <i>Information Systems Security Program</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	26.732	10.351	8.032	0.000	8.032	-	-	-	-	-	-
675100: <i>Cryptographic Modernization</i>	-	26.732	10.351	8.032	0.000	8.032	-	-	-	-	-	-

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

Information Systems Security Program (ISSP) - Includes resources, manpower authorizations, necessary facilities and equipment required to perform INFOSEC research and development, to provide INFOSEC services, to procure INFOSEC products required to secure telecommunications and information systems when such products are separately procurable from host systems, and to provide INFOSEC maintenance and support. Also includes costs associated with the protection afforded to telecommunications and information systems which process sensitive data and efforts to ensure confidentiality, integrity, and availability of the information and the system.

The 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)). ISSP delivers on rising national, DoD, and AF priorities to address cyber security threats and increasing war-fighter dependence on cyberspace. The AF and the DoD require the capability to securely 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 war-fighter positions, mission planning, target strikes, commanders' orders, intelligence, force strength, and force readiness. When an adversary is capable of interpretation, manipulation, or destruction of the information used by the war-fighter, 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 war-fighting 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 element may include necessary civilian pay expenses required to manage, execute, and deliver ISSP weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 (0.000M) was expended for civilian pay expenses in this program element, and in FY21 (0.0000M) is forecasted for civilian pay expenses in this program element.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0303140F / <i>Information Systems Security Program</i>
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This requirement supports performance of a full financial audit as required by title 10 U.S.C. Chapter 9A, Sec 240-D.

This program is in Budget Activity 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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	27.726	10.351	13.598	0.000	13.598
Current President's Budget	26.732	10.351	8.032	0.000	8.032
Total Adjustments	-0.994	0.000	-5.566	0.000	-5.566
• 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	-0.994	0.000			
• Other Adjustments	0.000	0.000	-5.566	0.000	-5.566



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0303140F / <i>Information Systems Security Program</i>				<b>Project (Number/Name)</b> 675100 / <i>Cryptographic Modernization</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
675100: <i>Cryptographic Modernization</i>	-	26.732	10.351	8.032	0.000	8.032	-	-	-	-	-	-
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 multi-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 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 new Key Management Enterprise (KME). 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 multi-domain security needed to protect the flow and exchange of strategic, operational, and tactical information in accordance with national and international policy/standards, and the validated requirements of decision makers, warfighters, and the intelligence community.

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, multi-domain, network-centric capabilities. Activities also include studies and analysis to support both current program planning/execution and future program planning.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver ISSP weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 (0.000M) was expended for civilian pay expenses in this program element, and in FY21 (0.0000M) is forecasted for civilian pay expenses in this program element.

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Technology Development (TD)	2.189	0.291	0.414

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303140F / <i>Information Systems Security Program</i>	<b>Project (Number/Name)</b> 675100 / <i>Cryptographic Modernization</i>

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

**Description:** Technical Development (TD) conducts concept development, early systems engineering, and development/modernization activities to analyze and mitigate evolving crypto threats and Communications Security (COMSEC) capability gaps across AF and DoD mission areas. Develops, plans and executes Technology Maturation and Risk Reduction (TMRR) and Engineering and Manufacturing Development (EMD) activities for future cryptographic initiatives. 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. Initiatives include but are not limited to: Advanced Cryptographic Capabilities Increment One (ACC Inc. 1) and Cryptographic Modernization 2 (CM2).

**FY 2021 Plans:**

- Continue to coordinate AF Limited User Testing (LUT) for the Advanced Cryptographic Capabilities Increment One (ACC Inc.1) initiative
- Continue to identify materiel solutions requiring modification or acquisition under the joint Cryptographic Modernization 2 (CM2) Initial Capabilities Document (ICD) and provide information to AF Lead Command to support AF1067 modifications or JCIDS documentation for follow-on acquisition
- Conduct Technology Maturation and Risk Reduction (TMRR) activities, execute AF 1067 cryptographic equipment modifications, and begin new cryptographic equipment developments within the scope of the CM2 program
- Continue the modification of CM2 impacted cryptographic devices to mitigate CM2 associated threats
- Develop 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 Risk Management Framework (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)
- Provide TSN contract language and clauses to effectively acquire trusted systems
- Continue executing funding from the Technology Development (TD) thrust for the modification of the KIV-78A IFF Mode 5 device in support of the Cryptographic Modernization 2 (CM2) effort as stated in TD description
- Continue market research and preparation for the modification of the KIV-77A IFF Mode 5 device in support of the Cryptographic Modernization 2 (CM2) effort as stated in TD description
- Continue to perform studies, analysis and prototyping efforts aimed at countering increasing classic and quantum computing threats
- Continue to gather metrics on new algorithms provided by NSA so that the data can be given to defense contractors on CM2 efforts

FY 2020	FY 2021	FY 2022

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303140F / <i>Information Systems Security Program</i>	<b>Project (Number/Name)</b> 675100 / <i>Cryptographic Modernization</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p>-Initiate efforts to enable artificial intelligence and machine learning capabilities for the AF Advanced Battle Management System (ABMS) and Joint All Domain Command and Control (JADC2) by developing and delivering NSA Approved cryptologic solutions to secure communications and data storage for tactical and strategic level data</p> <p>-The AF Cryptographic Modernization Effort modernizes cryptographic devices protecting critical national security information across multi-domain operations</p> <p>-R&amp;D efforts to support Agile updates to Air Force Cryptographic Equipment that will provide rapid algorithm and capability evolution to defend against advanced and evolving threats</p> <p>-These activities will span several dozen development and study efforts that support the upgrade process, crypto key management, quantification of impacts, and holistic algorithm resiliency</p> <p><b>FY 2022 Plans:</b></p> <p>-Will complete development and obtain NSA certification for modified KIV-78A IFF Mode 5 device in support of the Cryptographic Modernization 2 (CM2) effort as stated in TD description</p> <p>-Will continue market research and preparation for the modification of the KIV-77A IFF Mode 5 device in support of the Cryptographic Modernization 2 (CM2) effort as stated in TD description</p> <p>-Will continue to perform studies, analysis and prototyping efforts aimed at countering increasing classic and quantum computing threats</p> <p>-Will continue to gather metrics on new algorithms provided by NSA so that the data can be given to defense contractors on CM2 efforts</p> <p>-Will enable artificial intelligence and machine learning capabilities for the AF Advanced Battle Management System (ABMS) and Joint All Domain Command and Control (JADC2) by developing and delivering NSA Approved cryptologic solutions to secure communications and data storage for tactical and strategic level data</p> <p>-Will modernize cryptographic devices protecting critical national security information across multi-domain operations</p> <p>-Will provide R&amp;D efforts to support Agile updates to Air Force Cryptographic Equipment that drive rapid algorithm and capability evolution to defend against advanced and evolving threats</p> <p>-These activities will span several dozen development and study efforts that support the upgrade process, crypto key management, quantification of impacts, and holistic algorithm resiliency</p> <p>-Continue to coordinate AF Limited User Testing (LUT) for the Advanced Cryptographic Capabilities Increment One (ACC Inc.1) initiative</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b></p> <p>- Funding increased due to increase in requirements</p>				
<b>Title:</b> IFF Mode 5		4.480	5.581	3.852

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303140F / <i>Information Systems Security Program</i>	<b>Project (Number/Name)</b> 675100 / <i>Cryptographic Modernization</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Description:</b> Identification Friend or Foe (IFF) Mode 5 devices provide authentication and encryption/decryption services to IFF Mode 5 host equipment. These encryption devices operate within military aircraft, fixed, and transportable ground stations when connected to an interrogator and/or transponder. The Identification Friend or Foe (IFF) Mode 5 crypto models KIV-77 and KIV-78 require permanent modification. The modification of these devices are required to address produce-ability and algorithm re-programmability mandated by the National Security Agency (NSA) and the 2019 Chairman of the Joint Chiefs of Staff Notice (CJCSN) 6510.</p> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>- Continue executing funding from the Technology Development (TD) thrust for the modification of the KIV-78A IFF Mode 5 device in support of the Cryptographic Modernization 2 (CM2) effort as stated in TD description</li> <li>- Continue market research and preparation for the modification of the KIV-77A IFF Mode 5 device in support of the Cryptographic Modernization 2 (CM2) effort as stated in TD description</li> </ul> <p><b>FY 2022 Plans:</b></p> <ul style="list-style-type: none"> <li>- Will reallocate funding from the Technology Development thrust to execute the permanent modification of the IFF Mode 5 in support of the Cryptographic Modernization 2 (CM2) effort</li> <li>- Will complete development and obtain NSA certification for modified KIV-78A IFF Mode 5 device in support of the Cryptographic Modernization 2 (CM2) effort as stated in TD description</li> <li>- Will continue market research and preparation for the modification of the KIV-77A IFF Mode 5 device in support of the Cryptographic Modernization 2 (CM2) effort as stated in TD description</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b></p> <ul style="list-style-type: none"> <li>- Funding decreased due to higher DoD priorities.</li> </ul>				
<p><b>Title:</b> Space Modular Common Crypto (SMCC)</p> <p><b>Description:</b> 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, &amp; Commanding (TT&amp;C), Mission Data (MD), and/or Transmission Security (TRANSEC) key stream functions for the Air Force and Intelligence Community space systems.</p> <p><b>FY 2021 Plans:</b> N/A</p> <p><b>FY 2022 Plans:</b></p>		12.124	0.100	0.100

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303140F / <i>Information Systems Security Program</i>	<b>Project (Number/Name)</b> 675100 / <i>Cryptographic Modernization</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
N/A				
<p><b>Title:</b> Algorithm Transition Compliance and Support</p> <p><b>Description:</b> Supports Air Combat Command (AF lead for Cyber Superiority) in Algorithm Transition Compliance and provides Information Assurance (IA) support by conducting analysis on all utilized cryptographic algorithms and hundreds of cryptographic equipment types to support transition efforts. This includes the development and planning of technology demonstrations to ensure new algorithms can be integrated into the multitude of devices across the AF crypto enterprise, determining and monitoring mitigation strategies to address vulnerabilities, and tracking and reporting algorithm/device integration. Assesses current state of AF cryptography across the enterprise and develops the Cryptographic Roadmap. Develops and maintains a classified Crypto Modernization (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><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>- Continue to analyze the AF crypto enterprise and provide situational awareness of significant risks related to aging inventory and cryptographic vulnerabilities</li> <li>- Continue to provide analysis of adequacy of COMSEC products in support of NSA requirements, sustainment issues, and the state of technology</li> <li>- Provide Crypto-Mod analysis database to AF community to assist in annual assessments and long term efforts to develop enterprise capabilities based assessment (CBA) and to identify technical capability gaps</li> <li>- Conduct annual assessment of the state of the AF cryptographic enterprise and update the Cryptographic Roadmap</li> </ul> <p><b>FY 2022 Plans:</b></p> <ul style="list-style-type: none"> <li>- Will continue to analyze the AF crypto enterprise and provide situational awareness of significant risks related to aging inventory and cryptographic vulnerabilities</li> <li>- Will continue to provide analysis of adequacy of COMSEC products in support of NSA requirements, sustainment issues, and the state of technology</li> <li>- Will provide Crypto-Mod analysis database to AF community to assist in annual assessments and long term efforts to develop enterprise capabilities based assessment (CBA) and to identify technical capability gaps</li> <li>- Will conduct annual assessment of the state of the AF cryptographic enterprise and update the Cryptographic Roadmap</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b></p> <ul style="list-style-type: none"> <li>- Funding decreased due to higher DoD priorities.</li> </ul>		4.938	4.279	3.566
<b>Title:</b> Classified Data At Rest (CDAR)		3.001	0.100	0.100

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303140F / <i>Information Systems Security Program</i>	<b>Project (Number/Name)</b> 675100 / <i>Cryptographic Modernization</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Description:</b> 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><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>- Complete TMRR prototyping</li> <li>- Continue market research and preparation for Milestone B and entry into EMD</li> </ul> <p><b>FY 2022 Plans:</b></p> <ul style="list-style-type: none"> <li>-Will begin development of increment 1 of the CDAR enterprise cryptographic solution</li> <li>-Continue market research and preparation for Milestone B and entry into EMD</li> <li>-Continue development of system security documentation</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	26.732	10.351	8.032

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• OPAF 03 831010: <i>COMSEC Equipment</i>	54.756	50.634	51.861	-	51.861	-	-	-	-	-	-

**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.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force												Date: May 2021				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 7				PE 0303140F / Information Systems Security Program				675100 / Cryptographic Modernization								
Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total		Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost				
Tech Development	Various	MULTIPLE : MULTIPLE	-	2.189	Jan 2020	0.291	Jan 2021	0.414	Jan 2022	-		0.414	-	-	-	
IFF Mode 5	Various	MULTIPLE : MULTIPLE	-	4.480	Apr 2020	2.564	Feb 2021	1.955	Feb 2022	-		1.955	-	-	-	
Space Modular Common Crypto (SMCC)	C/CPIF	MULTIPLE : MULTIPLE	-	9.383	Feb 2020	-		-		-		-	-	-	-	
Algorithm Transition Compliance and Support	Various	MULTIPLE : MULTIPLE	-	4.482	Apr 2020	3.607	Apr 2021	3.566	Apr 2022	-		3.566	-	-	-	
CDAR	Various	MULTIPLE : MULTIPLE	-	3.001	Feb 2020	0.100	Feb 2021	0.100	Feb 2022	-		0.100	-	-	-	
<b>Subtotal</b>			-	23.535		6.562		6.035		-		6.035	-	-	N/A	
Test and Evaluation (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total		Cost To Complete	Total Cost	Target Value of Contract
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 Modular Common Crypto (SMCC)	Various	MULTIPLE : MULTIPLE	-	0.743	Dec 2019	-		-		-		-	-	-	-	
IFF Mode 5	C/CPAF	Not specified. : TBD	-	-		0.320	Jan 2021	0.422	Jan 2022	-		0.422	-	-	-	
<b>Subtotal</b>			-	0.743		0.320		0.422		-		0.422	-	-	N/A	
Management Services (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total		Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost				
Program Management Administration (PMA)	Various	Various : Various	-	2.454	Dec 2019	3.469	Dec 2020	1.575	Dec 2021	-		1.575	-	-	-	
<b>Subtotal</b>			-	2.454		3.469		1.575		-		1.575	-	-	N/A	





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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303140F / Information Systems Security Program	<b>Project (Number/Name)</b> 675100 / Cryptographic Modernization

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>Cryptographic Modernization APPN 3600, BA07, PE 0303140F, BPAC 675100</b>	
Technology Development	
IFF Mode 5	
Space Modular Common Crypto (SMCC)	
Algorithm Transition Compliance and Support	
CDAR	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303140F / <i>Information Systems Security Program</i>	<b>Project (Number/Name)</b> 675100 / <i>Cryptographic Modernization</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Cryptographic Modernization APPN 3600, BA07, PE 0303140F, BPAC 675100</i></b>				
Technology Development	1	2020	4	2022
IFF Mode 5	3	2020	4	2022
Space Modular Common Crypto (SMCC)	1	2020	4	2021
Algorithm Transition Compliance and Support	1	2020	4	2022
CDAR	1	2020	4	2022

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0303142F / <i>Global Force Management - Data Initiative</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	2.129	1.344	0.452	0.000	0.452	-	-	-	-	-	-
676027: <i>Global Force Mgt Initiative</i>	-	2.129	1.344	0.452	0.000	0.452	-	-	-	-	-	-
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 inter-operable 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 Air Force, Joint, and DoD planners, warfighters, decision-makers, senior leaders and associated systems and functions.

Funds will be used to perform studies and innovative integration efforts for common technology capabilities such as cloud migration, technology development and mobile application.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapons system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 0.0M was expended for civilian pay expenses in this program element, and in FY21 0.0M is forecasted for civilian pay expenses in this program element.

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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force				<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 0303142F / <i>Global Force Management - Data Initiative</i>				
<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	
Previous President's Budget	2.210	1.346	0.458	0.000	0.458	
Current President's Budget	2.129	1.344	0.452	0.000	0.452	
Total Adjustments	-0.081	-0.002	-0.006	0.000	-0.006	
• Congressional General Reductions	0.000	-0.002				
• 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	-0.081	0.000				
• Other Adjustments	0.000	0.000	-0.006	0.000	-0.006	
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>				<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Global Force Management - Data Initiative				2.129	1.344	0.452
<b>Description:</b> 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.						
<b>FY 2021 Plans:</b>						
- Continue Functional/Data Validation						
- Continue to implement major Joint Staff J8 directed database changes						
<b>FY 2022 Plans:</b>						
- Will continue to implement major Joint Staff J8 directed database changes						
- Will continue refactor database						
- Will continue to implement GFM-DI XSD 4.0 Database Changes						
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b>						
Funding decreased due to a planned RDT&E funding phased reduction.						
<b>Accomplishments/Planned Programs Subtotals</b>				2.129	1.344	0.452
<b>D. Other Program Funding Summary (\$ in Millions)</b>						
N/A						
<b>Remarks</b>						

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force Date: May 2021

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

**R-1 Program Element (Number/Name)**  
PE 0303142F / *Global Force Management - Data Initiative*

**E. Acquisition Strategy**

The program will utilize an evolutionary 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.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force												Date: May 2021				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 7				PE 0303142F / Global Force Management - Data Initiative				676027 / Global Force Mgt Initiative								
<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
GFM-DI AFOS / Development Contract	C/FFP	Iron Flame : Baltimore, MD	-	1.459	Mar 2020	0.719	Mar 2021	0.452	Dec 2021	-		0.452	-	-	-	
<b>Subtotal</b>			-	1.459		0.719		0.452		-		0.452	-	-	N/A	
<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
CIE Support - NIPR/SIPR Dev Environment	C/FFP	AFLCMC/HNIZ : Montgomery, AL	-	0.022	May 2020	0.031	May 2021	0.000		-		0.000	-	-	-	
EPASS - A&AS	C/CPFF	Oasis : Bedford, MA	-	0.050	Apr 2020	0.087	Apr 2021	0.000		-		0.000	-	-	-	
Enclave System Admin Services	MIPR	DISA: DECC-OKC : Montgomery, AL	-	0.437	Aug 2020	0.416	Aug 2021	0.000		-		0.000	-	-	-	
<b>Subtotal</b>			-	0.509		0.534		0.000		-		0.000	-	-	N/A	
<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
Lead Developmental Test Organization Independent Test & Evalaution	MIPR	AFLCMC/HNIZ : MONTGOMERY, AL	-	0.054	Dec 2019	0.056	Dec 2020	0.000		-		0.000	-	-	-	
<b>Subtotal</b>			-	0.054		0.056		0.000		-		0.000	-	-	N/A	
<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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 Office Support	Various	AFLCMC/HIB : MONTGOMERY, AL	-	0.107	Oct 2019	0.035	Oct 2020	0.000		-		0.000	-	-	-	
<b>Subtotal</b>			-	0.107		0.035		0.000		-		0.000	-	-	N/A	







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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303142F / <i>Global Force Management - Data Initiative</i>	<b>Project (Number/Name)</b> 676027 / <i>Global Force Mgt Initiative</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>GFM-DI Inc 2</b>				
- Functional/Data Validation	1	2020	3	2021
- Joint Staff J8 Validation	1	2020	1	2022
- Refactor Database	2	2022	4	2022
- GFM-DI XSD 4.0 Database Changes	4	2022	4	2022

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0303248F / <i>All Domain Common Platform</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	64.000	0.000	64.000	-	-	-	-	-	-
675218: <i>Applications Development</i>	-	0.000	0.000	64.000	0.000	64.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**Note**  
 This is not a new start. In FY 2022, PE 0303248F, All Domain Common Platform (ADCP), Project 675218, Applications Development, the cloud hosting platform efforts were transferred from PE 0207410F, Air & Space Operations Center (AOC), Project 674596, AOC WS Modifications, in order to support enterprise level activities.

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

The All Domain Common Platform (ADCP) is an extensible cloud-based Infrastructure and Platform as a Service (IaaS/PaaS) hosting platform built to deliver highly resilient C2 mission applications and data to Airmen deployed around the world. The ADCP is a warfighting capability that enables any organization to build, deploy and monitor mission applications to the end state of production. Having applications operational in various environments ensures data is accessible as it is needed across Air Force mission sets. The ADCP's collection of technologies, services and tooling enables warfighter outcomes by abstracting away technical complexity and enabling the deployment of products onto its infrastructure.

This program is part of the overarching Kessel Run portfolio and this foundational Kessel Run system is the primary path to production for modernized C2 systems. ADCP is in collaboration with all primary customers of the platform and environment to include Air Operations Center, Intelligence Programs, the AF Rapid Capabilities Office, and others. This program is USAF's contributing platform to JADC2 for user-facing C2 capability with the resiliency requirements met through the escalating phases of warfare.

Funding directly supports design, development, engineering, network and platform architecture, prototyping efforts to increase platform, communications and network capabilities, data science, reinforcement learning, machine learning, artificial intelligence, product management and program management to build functionality and scalability of the platform. ADCP develops using agile methodologies and DevSecOps practices to deliver improved capabilities at scale, in support of mission requirements. The ADCP is an evolving, delivered and managed product delivered to customers ensuring the requisite tools and services needed to securely build, deploy and sustain successful C2 mission applications.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.000M was expended for civilian pay expenses in this program element, and in FY21 \$0.000M is forecasted for civilian pay expenses in this program element.

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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0303248F / All Domain Common Platform
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	64.000	0.000	64.000
Total Adjustments	0.000	0.000	64.000	0.000	64.000
• 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	64.000	0.000	64.000

**Change Summary Explanation**

FY 2022: Funding added due to transfer of efforts from PE 0207410F, AOC, and Air Force Corporate Structure support of enterprise level platform activities.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<b>Title:</b> Applications Development	0.000	0.000	64.000	0.000	64.000
<b>Description:</b> All Domain Common Platform					
<b>FY 2021 Plans:</b> See PE 0207410F, Air & Space Operations Center (AOC), Project Number 674596, AOC WS Modifications.					
<b>FY 2022 Base Plans:</b> - Build resilient production Kubernetes based platform on Unclass, SIPR and JWICS and migrate existing customers - Deliver observability tooling in support of application customers as well as platform - Support Continuous Integration/Continuous Delivery (CI/CD) pipelines - Migrate to more containerized automated delivery - Automate delivery and deployment operations - Improve C2 mission application resilience and reliability and decrease lead time for new capability delivery					
<b>FY 2022 OCO Plans:</b>					

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0303248F / <i>All Domain Common Platform</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
N/A					
<b><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i></b> Funding increased due to transfer of efforts from RDT&E, AF, PE 0207410F, Air & Space Operations Center (AOC), Project Number 674596, AOC WS Modifications.					
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	0.000	64.000	0.000	64.000

<b>D. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPAF 03 833140: <i>Strategic Command And Control</i>	0.000	0.000	3.541	0.000	3.541	-	-	-	-	-	-

**Remarks**

**E. Acquisition Strategy**  
 Currently, ADCP program is part of the Investment Master List (IML) and will transition to the Software Acquisition Pathway (SWAP). The acquisition strategy is to capitalize on market research, continue efforts that are currently funded through PEs 27410F, 27431F, 27438F, and 27601F, transition infrastructure support to a singular entity while maintaining diversity amongst Cloud Services and Engineering Services. ADCP will also use Other Transaction Authority (OTA) to continue commercial best practices for software development and to continue scaling of the modern Infrastructure as a Service/Platform as a Service (IaaS/PaaS) solution. Activities are also accomplished via Military Interdepartmental Purchase Requests (MIPR). Additionally, significant technical expertise will be sought after via modular contracting approach and provided by Government Agencies, DoD Laboratory, Federally Funded Research and Development Centers (FFRDC), Academia, and Engineering & Professional Acquisition Support Services contractors as well as commercial industry partners.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303248F / All Domain Common Platform	<b>Project (Number/Name)</b> 675218 / Applications Development
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ADCP Development	Various	Various : TBD	-	0.000		0.000		40.658	Dec 2021	0.000		40.658	-	-	-
ADCP Data Science	C/Various	Various : TBD	-	0.000		0.000		7.064	Apr 2022	0.000		7.064	-	-	-
<b>Subtotal</b>			-	0.000		0.000		47.722		0.000		47.722	-	-	N/A

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ADCP Direct Mission Support	C/CPFF	Various : TBD	-	0.000		0.000		5.812	Dec 2021	0.000		5.812	-	-	-
<b>Subtotal</b>			-	0.000		0.000		5.812		0.000		5.812	-	-	N/A

<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ADCP Engineering Services	Various	Various : TBD	-	0.000		0.000		3.565	Oct 2021	-		3.565	-	-	-
ADCP Program Support	C/Various	Various : TBD	-	0.000		0.000		6.901	Dec 2021	-		6.901	-	-	-
<b>Subtotal</b>			-	0.000		0.000		10.466		-		10.466	-	-	N/A

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract	
<b>Project Cost Totals</b>		-	0.000	0.000	64.000	0.000	64.000	-	-	N/A

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303248F / All Domain Common Platform	<b>Project (Number/Name)</b> 675218 / Applications Development

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>AF Command and Control (C2) Common Platform</b>	
All Domain Common Platform	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0303248F / All Domain Common Platform	<b>Project (Number/Name)</b> 675218 / Applications Development

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>AF Command and Control (C2) Common Platform</b>				
All Domain Common Platform	1	2022	4	2022

**Note**

See PE 0207410F, Air & Space Operations Center (AOC), Project Number 674596, AOC WS Modifications for prior years development events.



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0304260F / <i>Airborne SIGINT Enterprise</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	85.157	127.876	97.546	0.000	97.546	-	-	-	-	-	-
675180: <i>RC-135 (Airborne SIGINT Development - RC-135 Rivet Joint)</i>	-	33.396	45.066	45.274	0.000	45.274	-	-	-	-	-	-
675183: <i>Common Development (Airborne SIGINT Development - Common Development)</i>	-	17.338	54.841	30.198	0.000	30.198	-	-	-	-	-	-
675185: <i>COMPASS BRIGHT</i>	-	25.289	20.484	14.545	0.000	14.545	-	-	-	-	-	-
675186: <i>Special Programs (Airborne SIGINT Development - Special Platforms)</i>	-	9.134	7.485	7.529	0.000	7.529	-	-	-	-	-	-

**Note**  
 Project 675185, (COMPASS BRIGHT), changed from (Non-Traditional SIGINT (NTS))

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

This program funds multi-domain, multi-Intelligence, Surveillance and Reconnaissance (ISR) research, development, test and evaluation (RDT&E) efforts in support of the National Defense Strategy (NDS), as applied by the Air Force in the Next Generation ISR Dominance Flight Plan. Specifically, Program Element (PE) 0304260F provides authorized and appropriated funding to Signals Intelligence (SIGINT) RDT&E efforts for utilization on airborne platforms.

The future ISR portfolio will consist of multi-domain, multi-intelligence systems and remain confident across the entire conflict spectrum. The Airborne SIGINT Enterprise (ASE) PE is integral to developing the SIGINT component of the multi-domain, multi-ISR system capable of maintaining the warfighter's decisive advantage through all ranges of military operations, to include highly contested environments (HCE).

ASE Program funds are distributed to projects based on the development priorities established by the USAF SIGINT Capabilities Working Group (SCWG). The SCWG is chartered to guide the ASE capability investment. When required, the USAF may move funds between ASE projects, developing the highest priority projects in response to urgent (e.g., JUON) and emerging (e.g., JEON) warfighter needs.

The ASE Program participates in the development, integration, testing, and implementation of International and Air Force standards (e.g., North Atlantic Treaty Organization (NATO) standardization) to ensure Joint, Allied, and Coalition interoperability with ASE fielded systems. ASE funds lead the modernization efforts including existing airborne platform sensors, and where appropriate, their interfaces with the Air Force Distributed Common Ground System (AF DCGS). The ASE Program approach is a synergistic development effort providing Air Force-wide ISR capabilities consistent with the NDS.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0304260F / <i>Airborne SIGINT Enterprise</i>
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ASE will use the Air Force SIGINT Architecture (AFSA) for planning and decision-making. AFSA is focused on employing open architecture standards whenever possible, to allow maximum effectiveness, efficiency and flexibility of development upgrades with multi-domain interoperability. The primary goal is to produce an open system architecture-based, capability-focused SIGINT investment strategy for the USAF.

Funds in any project may be utilized to cover activities to include studies and analysis activities, supporting both current program planning and execution and future program planning. This program element may include necessary civilian pay expenses required to manage, execute, and deliver technology and sensor capabilities. The use of such program funds would be in addition to civilian pay expenses budgeted in program element 0605831F. In FY20 0.177M expended and in FY21 0.246M is forecasted for civilian pay expenses in this program element.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	85.157	128.110	135.043	0.000	135.043
Current President's Budget	85.157	127.876	97.546	0.000	97.546
Total Adjustments	0.000	-0.234	-37.497	0.000	-37.497
• 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	-0.234	-37.497	0.000	-37.497

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0304260F / Airborne SIGINT Enterprise				<b>Project (Number/Name)</b> 675180 / RC-135 (Airborne SIGINT Development - RC-135 Rivet Joint)			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
675180: RC-135 (Airborne SIGINT Development - RC-135 Rivet Joint)	-	33.396	45.066	45.274	0.000	45.274	-	-	-	-	-	-
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 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 disbursed among the RC-135V/W RIVET JOINT, the RC-135U COMBAT SENT, and the RC-135S COBRA BALL programs. Funding reflects the SCWG priorities and the accomplishment of other Airborne SIGINT Enterprise initiatives.

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> RC-135 SIGINT Development	33.396	45.066	45.274
<b>Description:</b> Non-Recurring Engineering for the RC-135 signals intelligence systems. See Classified Budget Exhibits (PE 0305207F)			
<b>FY 2021 Plans:</b> - Developing SIGINT efforts for the RC-135 fleet to include new signal sets and upgrades to current capabilities. See PE 0305207F for classified details. Classified requirements POC is HAF AF/A200 (704) 614-7317.			
<b>FY 2022 Plans:</b> - Will continue SIGINT development efforts for the RC-135 fleet to include new signal sets and upgrades to current capabilities. See PE 0305207F for classified details. Classified requirements POC is HAF AF/A200 (704) 614-7317.			
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Minor increase due to inflation.			
<b>Accomplishments/Planned Programs Subtotals</b>	33.396	45.066	45.274

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0304260F / Airborne SIGINT Enterprise	<b>Project (Number/Name)</b> 675180 / RC-135 (Airborne SIGINT Development - RC-135 Rivet Joint)

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2022</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u>	<u>Total Cost</u>
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	
• APAF 05 Line Item DARPO1: RC-135	227.673	191.332	207.596	-	207.596	-	-	-	-	-	-

**Remarks**

The funds within Program 0305207F procure all necessary aircraft modifications for the RC-135 program and include those funds necessary to field SIGINT capabilities developed under Project 675180 of the 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.

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2022 Air Force</b>											<b>Date: May 2021</b>				
<b>Appropriation/Budget Activity</b> 3600 / 7						<b>R-1 Program Element (Number/Name)</b> PE 0304260F / Airborne SIGINT Enterprise					<b>Project (Number/Name)</b> 675180 / RC-135 (Airborne SIGINT Development - RC-135 Rivet Joint)				

<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
RC-135 SIGINT Development	SS/ Various	L3Harris : Greenville, TX	-	33.396	Jan 2020	45.066	Jan 2021	45.274	Jan 2022	-		45.274	-	-	-
<b>Subtotal</b>			-	33.396		45.066		45.274		-		45.274	-	-	N/A

**Remarks**  
Above contract method/type will be CPFF and FFP

	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	-	33.396	45.066	45.274	-	45.274	-	-	N/A

**Remarks**  
FY20: RC-135 projects decreased to support higher Air Force priorities



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0304260F / Airborne SIGINT Enterprise	<b>Project (Number/Name)</b> 675180 / RC-135 (Airborne SIGINT Development - RC-135 Rivet Joint)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Development of RC-135 mission sensors</b>				
Development of RIVET JOINT mission sensors (see 0305207F for classified details)	1	2020	4	2022
Development of COMBAT SENT mission sensors (see 0305207F for classified details)	1	2020	4	2022
Development of COBRA BALL mission sensors (see 0305207F for classified details)	1	2020	4	2022

**Note**

Requirements documentation is classified. Classified requirements POC is HAF AF/A2/6UO (703) 614-7317

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0304260F / Airborne SIGINT Enterprise				<b>Project (Number/Name)</b> 675183 / Common Development (Airborne SIGINT Development - Common Development)			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
675183: Common Development (Airborne SIGINT Development - Common Development)	-	17.338	54.841	30.198	0.000	30.198	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The Common Development project supports airborne SIGINT design studies, engineering analysis, non-recurring engineering (NRE), program management, and other efforts associated with support to the fielded Airborne Signals Intelligence Payload (ASIP) and the development of follow-on SIGINT sensors and their associated air and ground components. The Common Development project also supports the development and integration of new sensor capabilities, quick reaction capabilities, and replacement components affected by Diminishing Manufacturing Sources and Material Shortages (DMSMS).

Development supports the ASIP system and follow-on SIGINT sensors to include Global High-altitude Open-system Sensor Technology (GHOST). The ASIP sensor provides a common SIGINT system, allowing for maximum coverage of the electromagnetic spectrum through the use of an integrated high and low band system. The GHOST sensor is being developed as a platform agnostic SIGINT sensor to replace ASIP through the use of rapid acquisition strategies, implementation of open architecture concepts, and rapid integration of new signals of interests. GHOST will be designed to address the NDS and Next Generation ISR Dominance Flight Plan identified needs for multi-ISR systems in order to sustain SIGINT operations in a highly contested environment.

This project also supports overarching Airborne SIGINT Enterprise Program common development to include, but not limited to, the Air Force SIGINT Architecture maintenance, SIGINT modeling and simulation efforts, and technology development and risk reduction through the Air Force Research Lab managed Open Architecture Technology Lab (OATL). Capability improvements needed to exploit service identified signals of interest will be identified as priorities by the Air Force SCWG. This project provides the warfighter increased SIGINT combat capability via rapid acquisition. Capability enhancements are implemented as soon as the ASE technology achieves satisfactory risk levels. ASE developed Sensors will be integrated and tested on available platforms, funding permitting.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver technology and sensor capabilities. The use of such program funds would be in addition to civilian pay expenses budgeted in program element 0605831F. In FY19 \$0.075M and in FY20 \$0.177M was expended for civilian pay expenses in this program element.

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Common SIGINT Development	17.338	54.841	30.198



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0304260F / Airborne SIGINT Enterprise	<b>Project (Number/Name)</b> 675183 / Common Development (Airborne SIGINT Development - Common Development)

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Description:</b> Develop and test common open architecture compliant SIGINT system for multiple SIGINT platforms, to include ASIP support and follow-on SIGINT sensors using an open system architecture to the maximum extent possible. Additionally, will advance testing capabilities through the Open Architecture Technology Lab for current and future SIGINT sensors.</p> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>- Develop new signals capabilities and enhancements. Details are classified.</li> <li>- Enhance OATL infrastructure to support future SIGINT sensor development and testing.</li> <li>- Leverage sensor development activities to support GHOST prototype efforts by multiple vendors.</li> <li>- Evaluate open architecture compliance of GHOST prototypes in the OATL.</li> </ul> <p><b>FY 2022 Plans:</b></p> <ul style="list-style-type: none"> <li>- Will continue to develop new signals capabilities and enhancements. Details are classified.</li> <li>- Will continue to enhance OATL infrastructure to support future SIGINT sensor development and testing.</li> <li>- Will Leverage sensor development activities to support GHOST prototype efforts by multiple vendors.</li> <li>- Will continue to evaluate open architecture compliance of GHOST prototypes in the OATL.</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Decrease in FY22 due to GHOST Phase 1 completion and GHOST Phase 2 contract award for prototype Development, integration, and flight testing.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	17.338	54.841	30.198

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• APAF 05 Line Item HAWK00: RQ-4 Mods	4.851	126.340	117.382	-	117.382	-	-	-	-	-	-
• RDTE 07 0305202F: Dragon U-2	0.550	1.840	3.920	-	3.920	-	-	-	-	-	-

**Remarks**  
Not all Other Program Funding is associated with SIGINT.

**D. Acquisition Strategy**  
SIGINT capabilities will be developed and integrated onto various platforms using an evolutionary acquisition approach to field incremental capability improvements, leveraging the OATL to incorporate platform agnostic, open system architecture. Requirements as validated and prioritized by the SCWG, will be executed through

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0304260F / <i>Airborne SIGINT Enterprise</i>	<b>Project (Number/Name)</b> 675183 / <i>Common Development (Airborne SIGINT Development - Common Development)</i>

acquisition strategies employing maximum use of Middle Tier Acquisition (MTA) authorities to include Section 804 rapid prototyping. The GHOST System will evolve rapidly starting with demonstrations of open architecture compliance on representative prototype hardware in the OATL before successively progressing to a testing program of a flyable prototype system and eventually production system. Such capabilities will be acquired and delivered by contracting with the appropriate vendor(s) while encouraging competition where possible and leveraging any existing USG capabilities that have already been developed.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0304260F / Airborne SIGINT Enterprise	<b>Project (Number/Name)</b> 675183 / Common Development (Airborne SIGINT Development - Common Development)
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<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
ASIP Global Hawk Increment 1	SS/CPFF	Northrop Grumman : San Jose, CA	-	0.000		0.000		0.000		-		0.000	-	-	-
ASIP Upgrades Increment 2 - Build A; SIL / Cyber Support	SS/CPFF	Northrop Grumman : San Jose, CA	-	4.029	Sep 2020	-		-		-		-	-	-	-
Open Architecture Technology Lab (OATL)	Various	Various : Various	-	6.011	Feb 2020	7.870	Mar 2021	2.000	Mar 2022	-		2.000	-	-	-
Global High-Altitude Open-system Sensor Technology (GHOST)	Various	Various : Various	-	3.710	Dec 2020	41.368	Mar 2021	20.678	Apr 2022	-		20.678	-	-	-
Air Force SIGINT Architecture (AFSA)	Various	AECOM : Annapolis Junction, MD	-	2.879	Mar 2020	4.042	Feb 2021	4.000	Dec 2021	-		4.000	-	-	-
<b>Subtotal</b>			-	16.629		53.280		26.678		-		26.678	-	-	N/A

<b>Management Services (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
PMA	Various	Various : Dayton, OH	-	0.709	Mar 2020	1.561	Feb 2021	3.520	Feb 2022	-		3.520	-	-	-
<b>Subtotal</b>			-	0.709		1.561		3.520		-		3.520	-	-	N/A

<b>Project Cost Totals</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
	-	17.338	54.841	30.198	-	30.198	-	-	N/A

**Remarks**

- Funding increase from FY20 to FY21 due to returning to normal funding levels and supports GHOST follow-on SIGINT sensor prototyping efforts ramping up in FY21.
- ASIP Global Hawk Increment 1 completed development efforts in FY19.
- ASIP Increment 2 Build A development efforts and support efforts to maintain the ASIP Systems Integration Lab (SIL) and cybersecurity authority to operate were ended in FY20, and will transition to the airborne platforms.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0304260F / Airborne SIGINT Enterprise	<b>Project (Number/Name)</b> 675183 / Common Development (Airborne SIGINT Development - Common Development)
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	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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- Open Architecture Technology Lab (OATL) technology development and risk reduction efforts will continue in FY21 and FY22 to demonstrate rapid technology insertion and support GHOST prototyping efforts.



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0304260F / Airborne SIGINT Enterprise	<b>Project (Number/Name)</b> 675183 / Common Development (Airborne SIGINT Development - Common Development)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>SIGINT Common Development</b>				
ASIP Global Hawk Increment 1 Upgrades	1	2020	2	2020
ASIP Upgrades Increment 2 - Build A; SIL / Cyber Support	1	2020	4	2020
Open Architecture Technology Lab (OATL)	1	2020	4	2022
Global High-Altitude Open-System Sensor Technology (GHOST)	1	2020	4	2022
Air Force SIGINT Architecture (AFSA)	1	2020	4	2022

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0304260F / Airborne SIGINT Enterprise				<b>Project (Number/Name)</b> 675185 / COMPASS BRIGHT			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
675185: COMPASS BRIGHT	-	25.289	20.484	14.545	0.000	14.545	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The COMPASS BRIGHT program develops, demonstrates, and rapidly transitions advanced Air Force specific 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 mature technologies for application in SIGINT and MASINT systems or subsystems. Production and integration of these developed technologies will be conducted by the appropriate programs. COMPASS BRIGHT projects are selected through a data call process, whereby the USAF evaluates proposals from the laboratories, platforms, and other government agencies, to select those projects that are most promising.

Operational Reconnaissance (Ops Recce) is part of the initiative to improve overall USAF intelligence, surveillance, and reconnaissance (ISR) capability through development and use of sensor data from non-traditional 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 COMPASS BRIGHT efforts. These tasks may be filtered through the SIGINT Capability Working Group (SCWG) outside the normal vetting process to expedite acquisition of high-end capabilities for the warfighter.

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

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

	FY 2020	FY 2021	FY 2022
<b>Title:</b> COMPASS BRIGHT Tech Development	25.289	20.484	14.545
<b>Description:</b> Develops projects in the SIGINT and MASINT areas for transition to the RC-135 fleet, other intelligence, surveillance, and reconnaissance platforms and Ops Recce.			
<b>FY 2021 Plans:</b> - Initiate, continue, and complete various SIGINT projects to include enhanced ELINT exploitation, COMINT, Audio exploitation, Ops Recce, signals of interest prosecution, and non-traditional ISR (NTISR).			
- FY22 Project selection process initiated.			
<b>FY 2022 Plans:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0304260F / Airborne SIGINT Enterprise	<b>Project (Number/Name)</b> 675185 / COMPASS BRIGHT
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022
- Will initiate, continue, and complete various SIGINT projects to include enhanced ELINT exploitation, COMINT, Audio exploitation, Ops Recce, signals of interest prosecution, and NTISR.			
- FY23 Project selection will be initiated.			
<b><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i></b> Funding decreased due to Compass Bright returning to normal funding levels. FY20 and FY21 funding were increased as payback for FY19 realignment for higher Air Force priorities.			
<b>Accomplishments/Planned Programs Subtotals</b>	25.289	20.484	14.545

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APAF 05 DARP01: RC-135	227.673	191.332	207.596	-	207.596	-	-	-	-	-	-
• APAF 06 DARP01: RC-135	50.448	51.282	51.305	-	51.305	-	-	-	-	-	-

**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.

On an annual basis, the SIGINT Capabilities Working Group (SCWG) 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.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0304260F / Airborne SIGINT Enterprise	<b>Project (Number/Name)</b> 675185 / COMPASS BRIGHT
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Product Development	C/CPAF	Not specified. : TBD	-	0.000		0.000		0.000		-		0.000	-	-	-
COMPASS BRIGHT	Various	Multiple : Various	-	23.590	Nov 2019	18.492	Nov 2020	8.619	Nov 2021	-		8.619	-	-	-
Ops Recce	Various	Multiple : Various	-	0.000		0.000	Dec 2020	3.191	Jan 2022	-		3.191	-	-	-
<b>Subtotal</b>			-	23.590		18.492		11.810		-		11.810	-	-	N/A

**Remarks**  
On an annual basis, the SIGINT Capabilities Working Group (SCWG) 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.

<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Compass Bright PMA	Various	Various : Various, OH	-	1.699	Nov 2019	1.495	Nov 2020	1.926	Jan 2022	-		1.926	-	-	-
OPS Recce PMA	C/CPAF	Not specified. : TBD	-	0.000		0.497	Jan 2021	0.809	Jan 2022	-		0.809	-	-	-
<b>Subtotal</b>			-	1.699		1.992		2.735		-		2.735	-	-	N/A

			Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			-	25.289	20.484	14.545	-	14.545	-	-	N/A

**Remarks**  
FY20 COMPASS BRIGHT increased to restore program support levels following previous reductions.



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**Exhibit R-4A, RDT&E Schedule Details:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0304260F / Airborne SIGINT Enterprise	<b>Project (Number/Name)</b> 675185 / COMPASS BRIGHT
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>COMPASS BRIGHT</b>				
SIGINT Technologies	1	2020	4	2022
- ELINT Programs	1	2020	4	2022
- COMINT Programs	1	2020	4	2022
- Special Signals Programs	1	2020	4	2022
- Audio Programs	1	2020	4	2022
- Analytics Programs	1	2020	4	2022
Ops Recce Efforts	1	2020	4	2022

**Note**

On an annual basis, the SCWG 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. 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.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0304260F / Airborne SIGINT Enterprise	<b>Project (Number/Name)</b> 675186 / Special Programs (Airborne SIGINT Development - Special Platforms)
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
675186: Special Programs (Airborne SIGINT Development - Special Platforms)	-	9.134	7.485	7.529	0.000	7.529	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

This project supports special 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 SCWG. 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 war fighter 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-9A remotely piloted aircraft as funding permits.

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

	FY 2020	FY 2021	FY 2022
<b>Title:</b> SIGINT Development	9.134	7.485	7.529
<b>Description:</b> Develop, update, and test SIGINT capabilities for QRC and normalized special programs SIGINT projects.			
<b>FY 2021 Plans:</b> - Will continue to modernize SIGINT systems used by the MQ-9A.			
<b>FY 2022 Plans:</b> - Will continue to modernize SIGINT systems used by the MQ-9A.			
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding remained the same with slight increase to account for inflation.			
<b>Accomplishments/Planned Programs Subtotals</b>	9.134	7.485	7.529

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

N/A

**Remarks**

**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.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0304260F / Airborne SIGINT Enterprise	<b>Project (Number/Name)</b> 675186 / Special Programs (Airborne SIGINT Development - Special Platforms)
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<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Upgrades to SIGINT systems used by the MQ-9 Remotely piloted aircraft	Various	Various : Various	-	9.134	Jan 2020	7.265	Jan 2021	7.209	Jan 2022	-		7.209	-	-	-
<b>Subtotal</b>			-	9.134		7.265		7.209		-		7.209	-	-	N/A

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

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Flight Test	Various	Various : Various	-	-		0.220	May 2021	0.320	May 2022	-		0.320	-	-	-
<b>Subtotal</b>			-	-		0.220		0.320		-		0.320	-	-	N/A

<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
-	9.134	7.485	7.529	-	7.529	-	-	N/A

**Remarks**



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0304260F / Airborne SIGINT Enterprise	<b>Project (Number/Name)</b> 675186 / Special Programs (Airborne SIGINT Development - Special Platforms)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>SIGINT Development</b>				
MQ-9 Sensor 1 Modernization	1	2020	4	2022
MQ-9 Sensor 2 Modernization	1	2020	4	2022
MQ-9 Sensor Upgrades	1	2020	4	2022

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0304310F / <i>Commercial Economic Analysis</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	3.305	4.035	3.770	0.000	3.770	-	-	-	-	-	-
675896: <i>Commercial Economic Analysis</i>	-	3.305	4.035	3.770	0.000	3.770	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

To preserve Air Force and DoD military advantage from commercial and economic risk, the Office of Commercial Economic Analysis (OCEA) produces in-depth analytical assessments and advanced risk mitigation strategies based on commercially available industry, market, and economic information. These assessments and strategies support the decision making efforts of Service, Department of Defense, and Whole of Government to protect National Security Innovation Base equities and sustain the U.S. competitive advantage.

The funding request provides for an enterprise analytic platform providing a technical prototype which will aggregate risk data and produce mitigation strategies and impact analytic products, i.e. mature big data architecture, higher domain connectivity, continuous assessment capability and integrate external applications. The funding also supports continuous assessment of the commercially available information to ensure it is accurate, current, and relevant.

Additional classified details can be found in OSD Comptroller's classified Justification Book Volume 6.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.00M was expended for civilian pay expenses in this program element, and in FY21 \$0.00M is forecasted for civilian pay expenses in this program element.

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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0304310F / <i>Commercial Economic Analysis</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	3.431	4.042	4.377	0.000	4.377
Current President's Budget	3.305	4.035	3.770	0.000	3.770
Total Adjustments	-0.126	-0.007	-0.607	0.000	-0.607
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	-0.126	-0.007			
• 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	-0.607	0.000	-0.607

**Change Summary Explanation**

Mark applied to entire Air Force 3600 appropriation due to overall under-execution of overall RDT&E portfolio.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Commercial Economic Analysis	3.305	4.035	3.770
<b>Description:</b> Develop solutions to protect the National Security Innovation Base from adversary information attacks and protect the U.S. technological advantage. Research, develop, test and evaluate Commercial Economic Analysis capabilities, systems, tools, data, products, and services through a disciplined, yet agile, process that ensures commercial economic modeling pilots, risk management constructs, decision support tools, and continuous monitoring capabilities are available for Air Force sectors and segments of the National Security Innovation Base.			
Additional classified details can be found in OSD Comptroller's classified Justification Book Volume 6.			
<b>FY 2021 Plans:</b> Utilize existing contracts and new IDIQ contract task orders for continuation of modular components and data architecture framework supporting risk management, risk mitigation and nontraditional support capabilities.			
Additional classified details can be found in OSD Comptroller's classified Justification Book Volume 6.			
<b>FY 2022 Plans:</b> Utilize existing contracts and new IDIQ contract task orders for continuation of modular components and data architecture framework supporting risk management, risk mitigation and nontraditional support capabilities.			

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0304310F / <i>Commercial Economic Analysis</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
Additional classified details can be found in OSD Comptroller's classified Justification Book Volume 6.			
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Increase based on contract escalation costs.			
<b>Accomplishments/Planned Programs Subtotals</b>	3.305	4.035	3.770

<b>D. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b> <b>Base</b>	<b>FY 2022</b> <b>OCO</b>	<b>FY 2022</b> <b>Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• O&M 030431F: <i>Commercial Economic Analysis</i>	29.081	18.207	20.319	-	20.319	-	-	-	-	-	-

**Remarks**  
N/A

**E. Acquisition Strategy**  
Pursue competitively awarded contracts for follow-on to existing contract and task orders, with emphasis on system integration and corresponding data architectures. IDIQ task orders and specific system integration, cloud connectivity, and data contracts are the cornerstone of OCEA RDT&E activities.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0304310F / Commercial Economic Analysis	<b>Project (Number/Name)</b> 675896 / Commercial Economic Analysis
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<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Enterprise Architecture and Data Integration	SS/CPIF	Novetta : McLean, VA	-	1.308	Aug 2020	-		-		-		-	-	-	-
Analytic and Technical Services follow-on	C/TBD	TBD : TBD	-	-		0.535	Jul 2021	0.375	Jul 2022	-		0.375	-	-	-
Data Integration	C/FFP	Dun & Bradstreet : Reston, VA	-	-		3.000	Mar 2021	3.000	Mar 2022	-		3.000	-	-	-
<b>Subtotal</b>			-	1.308		3.535		3.375		-		3.375	-	-	N/A

<b>Support (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
FFRDC	SS/FFP	MITRE : McLean, VA	-	1.797	Oct 2019	0.500	May 2021	0.395	May 2022	-		0.395	-	-	-
Hosting Services	SS/FFP	AWS (C2S) : Seattle, WA	-	0.200	Nov 2019	-		-		-		-	-	-	-
<b>Subtotal</b>			-	1.997		0.500		0.395		-		0.395	-	-	N/A

<b>Project Cost Totals</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
	-	3.305	4.035	3.770	-	3.770	-	-	N/A

**Remarks**  
 Product Development: Follow-on Analytic and Technical Services IDIQ contract will replaces previous Enterprise Architecture and Data Integration contract in FY21.  
 Support: Contract award is scheduled for 1Q/FY21 for these continuing efforts.



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0304310F / <i>Commercial Economic Analysis</i>	<b>Project (Number/Name)</b> 675896 / <i>Commercial Economic Analysis</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>OCEA</b>				
Mature Big Data Architecture	1	2020	2	2026
Higher Domain Connectivity	1	2020	2	2026
Continuous Assessment Capability	1	2020	2	2026
Integrate External Applications	1	2020	2	2026

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305015F / C2 Air Operations Suite - C2 Info Services
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	9.022	0.000	0.000	0.000	0.000	-	-	-	-	-	-
675218: <i>Applications Development</i>	-	5.206	0.000	0.000	0.000	0.000	-	-	-	-	-	-
675220: <i>Unit Level</i>	-	3.816	0.000	0.000	0.000	0.000	-	-	-	-	-	-

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

Command and Control (C2) Air Operations Suite - C2 Information Services (C2AOS-C2IS) funds operational development necessary to acquire and modify segments of Air Force's (AF) C2 capabilities and services. Applications Development provides worldwide operational capabilities for AF C2 in support of DoD, Coalition Partners, and other government agencies. These efforts focus on support of the Joint Forces Air Component Commander (JFACC) that provides air, space and cyber support as presented to the AOC and to other AF and Joint Services C2 systems. Applications Development efforts deliver capabilities identified in the Joint Command and Control (JC2) Capability Development Document (CDD) (2013). These activities include C2AOS-C2IS needs identified in the Capability Definition Package (CDP) (2012). This program is part of the overarching Kessel Run portfolio.

Applications Development: C2AOS-C2IS creates web-enabled information services to expose air operations data using standardized schemas, such as those developed by the Air Operations Community of Interest. C2AOS-C2IS also develops and matures net-centric C2 applications for air battle planning, execution, and management functions. These applications include Network Enabled Weapons (NEW); the remainder of the CDP and Theater Battle Management Core Systems - Force Level (TBMCS FL) functionality; services to support air mission and Friendly Order of Battle execution, Alerting, Publish and Subscribe, Content Management and Reporting; and integration with a JC2 Reference Architecture (RA) host infrastructure environment.

Unit Level: Command and Control Incident Management and Emergency Response Application (C2IMERA; formerly Unit Command and Control [UC2]) funds develop and integrate C2IMERA as an evolving sequence of increasing software capabilities that support a wing commander's ability to track base level resources, incident management, and provide a real time Common Operating Picture, enabling a commander to have total situational awareness during peace and wartime operations. C2IMERA operations software systems addresses needs identified in the TBMCS Operational Requirements Document (ORD) (2001), the UC2 Baseline System Requirements Document (SRD), and AF Form 1067, Modification Proposal, requirements documents. C2IMERA is utilizing Agile Software Development and Operations (DevOps) methodology by directly soliciting user feedback for improvements to the software. C2IMERA is fielded to Wing Operations Centers (WOC), the Maintenance Operations Centers (MOC), the Emergency Operations Centers (EOC), Crisis Action Teams (CAT), and many other work-centers across multiple MAJCOMs with plans to expand for use as an AF wide application.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$2.050M was expended for civilian pay expenses in this program element, and in FY21 \$0.000M is forecasted for civilian pay expenses in this program element.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305015F / C2 Air Operations Suite - C2 Info Services
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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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	9.313	0.000	0.000	0.000	0.000
Current President's Budget	9.022	0.000	0.000	0.000	0.000
Total Adjustments	-0.291	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	-0.001	0.000			
• SBIR/STTR Transfer	-0.290	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000



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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305015F / C2 Air Operations Suite - C2 Info Services	<b>Project (Number/Name)</b> 675218 / Applications Development
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
675218: <i>Applications Development</i>	-	5.206	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

This project funds operational development necessary to acquire and modify segments of Air Force's (AF) Command and Control (C2) capabilities and services. Applications Development provides worldwide operational capabilities for AF C2 in support of DoD, Coalition Partners, and other government agencies. These efforts focus on support of the Joint Forces Air Component Commander (JFACC) that provides air, space and cyber support as presented to the AOC and to other AF and Joint Services C2 systems. Applications Development efforts deliver capabilities identified in the Joint Command and Control (JC2) Capability Development Document (CDD) (2013). These activities include C2 Air Operations Suite - C2 Information Services (C2AOS-C2IS) needs identified in the Capability Definition Package (CDP) (2012). C2AOS-C2IS creates web-enabled information services to expose air operations data using standardized schemas, such as those developed by the Air Operations Community of Interest. C2AOS-C2IS also develops and matures net-centric C2 applications for air battle planning, execution, and management functions. These applications include Network Enabled Weapons (NEW); the remainder of the CDP and Theater Battle Management Core Systems - Force Level (TBMCS FL) functionality; services to support air mission and Friendly Order of Battle execution, Alerting, Publish and Subscribe, Content Management and Reporting; and integration with a JC2 Reference Architecture (RA) host infrastructure environment.

No Budget Year FY22 funding requested; FY22 project efforts are detailed in PE 0207438F, Theater Battle Management (TBM) C4I.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$2.050M was expended for civilian pay expenses in this program element, and in FY21 \$0.000M is forecasted for civilian pay expenses in this program element.

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

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<b>Title:</b> C2AOS-C2IS Development	5.206	0.000	0.000	0.000	0.000
<b>Description:</b> Conduct C2AOS-C2IS development and integration using FY16 NDAA, Sec 804 rapid prototyping authority. Develop a solution to address joint partner and non-AOC usage of C2AOS-C2IS in the Agile DevOps framework. This program element may include necessary civilian pay expenses required to manage, execute, and deliver Applications Development weapon system capability.					
<b>FY 2021 Plans:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305015F / C2 Air Operations Suite - C2 Info Services	<b>Project (Number/Name)</b> 675218 / Applications Development

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
See PE 0207438F, Theater Battle Management (TBM) C4I, Project Number 675218, Applications Development. <b>FY 2022 Base Plans:</b> See PE 0207438F, Theater Battle Management (TBM) C4I, Project Number 675218, Applications Development. <b>FY 2022 OCO Plans:</b> N/A <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A					
<b>Accomplishments/Planned Programs Subtotals</b>	5.206	0.000	0.000	0.000	0.000

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

N/A

**Remarks**

**D. Acquisition Strategy**

The acquisition strategy builds on agile development and modification of existing capabilities using evolutionary acquisition to standardize and modernize C2AOS-C2IS. C2AOS-C2IS modifications continue to operate under FY16 NDAA, Section 804, Middle Tier of Acquisition for Rapid Prototyping and Rapid Fielding leveraging commercial best practices to fully retire TBMCS FL. Funding for this activity in FY21 and FY22 is covered under PE 0207438F, Theater Battle Management (TBM) C4I.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305015F / C2 Air Operations Suite - C2 Info Services	<b>Project (Number/Name)</b> 675218 / Applications Development
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<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
C2AOS-C2IS Agile Software Development	C/T&M	Various : Multiple	-	3.156	Apr 2020	0.000		0.000		0.000		0.000	-	-	-
<b>Subtotal</b>			-	3.156		0.000		0.000		0.000		0.000	-	-	N/A

<b>Support (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
C2AOS-C2IS Civilian Direct Cite Authorizations for Product Development	Allot	AFLCMC/FZA : TBD	-	2.050	Feb 2020	0.000		0.000		0.000		0.000	-	-	-
<b>Subtotal</b>			-	2.050		0.000		0.000		0.000		0.000	-	-	N/A

<b>Project Cost Totals</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
	-	5.206	0.000	0.000	0.000	0.000	-	-	N/A

**Remarks**  
C2AOS-C2IS funding transferred to PE 0207438F, Theater Battle Management (TBM) C4I, Project Number 675218, Applications Development.

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305015F / C2 Air Operations Suite - C2 Info Services	<b>Project (Number/Name)</b> 675218 / Applications Development

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>Applications Development</b>	
C2AOS-C2IS Development	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305015F / C2 Air Operations Suite - C2 Info Services	<b>Project (Number/Name)</b> 675218 / Applications Development

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Applications Development</b>				
C2AOS-C2IS Development	1	2020	4	2020

**Note**  
See PE 0207438F, Theater Battle Management (TBM) C4I, Project Number 675218, Applications Development for continued development events.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305015F / C2 Air Operations Suite - C2 Info Services	<b>Project (Number/Name)</b> 675220 / Unit Level
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
675220: Unit Level	-	3.816	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

Command and Control Incident Management and Emergency Response Application (C2IMERA; formerly Unit Command and Control [UC2]) funds are used to develop and integrate C2IMERA as an evolving sequence of increasing software capabilities that support a wing commander's ability to track base level resources, incident management, and a real time Common Operating Picture, enabling a commander to have total situational awareness during peace and wartime operations. C2IMERA operations software systems addresses needs identified in the TBMCS Operational Requirements Document (ORD) (2001), the UC2 Baseline System Requirements Document (SRD), and AF Form 1067, Modification Proposal, requirements documents. C2IMERA is utilizing Agile DevOps methodology by directly soliciting user feedback for improvements to the software. C2IMERA is fielded to Wing Operations Centers (WOC), the Maintenance Operations Centers (MOC), the Emergency Operations Centers (EOC), Crisis Action Teams (CAT), and many other work-centers across multiple MAJCOMs with plans to expand for use as an AF wide application.

No Budget Year FY22 funding requested; FY22 project efforts are detailed in PE 0207522F, Airbase Air Defense Systems.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.000M was expended for civilian pay expenses in this program element, and in FY21 \$0.000M is forecasted for civilian pay expenses in this program element.

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

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<b>Title:</b> UC2/C2IMERA Software Development	3.816	0.000	0.000	0.000	0.000
<b>Description:</b> C2IMERA software development and integration.					
<b>FY 2021 Plans:</b> N/A					
<b>FY 2022 Base Plans:</b> See PE 0207522F, Airbase Air Defense Systems, Project Number 675218, Applications Development.					
<b>FY 2022 OCO Plans:</b> N/A					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305015F / C2 Air Operations Suite - C2 Info Services	<b>Project (Number/Name)</b> 675220 / Unit Level

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
N/A					
<b>Accomplishments/Planned Programs Subtotals</b>	3.816	0.000	0.000	0.000	0.000

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• OPAF 03 834520: Theater Battle Mgt C2 System	0.500	0.000	0.000	0.000	0.000	-	-	-	-	-	-

**Remarks**

**D. Acquisition Strategy**

Projects will be awarded via a sole-source contract for Agile DevOps development, fielding and support activities. The acquisition and contracting strategies were approved by the Senior Materiel Leader on 20 June 2018.





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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305015F / C2 Air Operations Suite - C2 Info Services	<b>Project (Number/Name)</b> 675220 / Unit Level

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>Unit Level</b>	
UC2/C2IMERA Development	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305015F / C2 Air Operations Suite - C2 Info Services	<b>Project (Number/Name)</b> 675220 / Unit Level

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Unit Level</i>				
UC2/C2IMERA Development	1	2020	4	2020

**Note**  
See PE 0207522F, Airbase Air Defense Systems, Project Number 675218, Applications Development for continued development events.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305020F / <i>CCMD Intelligence Information Technology</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	1.121	1.646	1.663	0.000	1.663	-	-	-	-	-	-
674901: <i>Ccmd Intelligence Information Technology</i>	-	1.121	1.646	1.663	0.000	1.663	-	-	-	-	-	-

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

Combatant Command Intelligence Enterprise Management Support Office (CCI EMSO) guides the development, modernization, alignment, and integration of Combatant Command Intelligence (CCI) enterprise capabilities and systems as part of the Defense Intelligence Enterprise. This program focuses on information technology (IT), data centric gaps, and build consensus across the Combatant Commands, Combat Service Agencies, and services to accelerate enterprise IT solutions to the Warfighter. It also provides foundational enterprise architectural research and mapping across CCI community. CCI EMSO includes a cloud-based research and assessment computing environment leveraging advance computing and storage technologies. It provides data-driven research, portfolio assessment and management, and decision support to enable OUSD(I&S)'s governance and management of the CCMD Intelligence Enterprise. This program office actively engages with the CCMDs and service providers to refine requirements, identify potential solutions, and advocate the modernization of enterprise capabilities critical to the warfighter. CCI EMSO champions CCMD Intelligence IT requirements during the implementation of DOD's Digital Transformation Strategy. Combatant Commands (CCMDs) require a cohesive, flexible IT enterprise to ensure intelligence content informs analysis, planning, warfighter operations, and strategic decision making. The CCI EMSO 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 (IC) users vice CCMD-specific missions or needs.

OUSD(I&S) and Joint Staff sponsored a capabilities based assessment resulting in an Intelligence System Initial Capability Document (IS-ICD - JROCM 094-16) and a Doctrine, Organization, Training, Material, Logistics, Policy, Facility (DOTMLPF) Change Request (DCR - JROCM 088-17). In response, OUSD(I&S) coordinated with the Air Force to create the CCI EMSO, formerly Combatant Command Intelligence Information Technology Provisional Program Activity Office (CCIIT PPAO). CCI EMSO is tasked to address these gap areas for the CCMDs. This program enables long term research and evaluation of systems and processes capable of supporting the CCI Enterprise.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY19 \$0.000M, FY20 \$0.000M, and FY21 \$0.000M was expended for civilian pay expenses in this program element.

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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305020F / <i>CCMD Intelligence Information Technology</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	1.121	1.649	1.688	0.000	1.688
Current President's Budget	1.121	1.646	1.663	0.000	1.663
Total Adjustments	0.000	-0.003	-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	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	-0.003	-0.025	0.000	-0.025

**Change Summary Explanation**

N/A

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0305020F / CCMD Intelligence Information Technology				<b>Project (Number/Name)</b> 674901 / Ccmd Intelligence Information Technology			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
674901: Ccmd Intelligence Information Technology	-	1.121	1.646	1.663	0.000	1.663	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

N/A

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

Combatant Command Intelligence Enterprise Management Support Office (CCI EMSO) guides the development, modernization, alignment, and integration of Combatant Command Intelligence (CCI) enterprise capabilities and systems as part of the Defense Intelligence Enterprise. This program focuses on information technology (IT) and data centric gaps, building consensus across the Combatant Commands, Combat Service Agencies, and services to accelerate enterprise IT solutions to the Warfighter. It also provides foundational enterprise architectural research and mapping across CCI community. CCI EMSO includes a cloud-based research and assessment computing environment leveraging advance computing and storage technologies. It provides data-driven research, portfolio assessment and management, and decision support to enable OUSD(I&S)'s governance and management of the CCMD Intelligence Enterprise. This program office actively engages with the CCMDs and service providers to refine requirements, identify potential solutions, and advocate the modernization of enterprise capabilities critical to the warfighter. CCI EMSO champions CCMD Intelligence IT requirements during the implementation of DOD's Digital Transformation Strategy. Combatant Commands (CCMDs) require a cohesive, flexible Information Technology (IT) enterprise to ensure intelligence content informs analysis, planning, warfighter operations, and strategic decision making. The CCI EMSO 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 (IC) users vice CCMD-specific missions or needs.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY19 \$0.000M, FY20 \$0.000M, and FY21 \$0.000M was expended for civilian pay expenses in this program element.

OUSD(I&S) and Joint Staff sponsored a capabilities based assessment resulting in an Intelligence System Initial Capability Document (IS-ICD - JROCM 094-16) and a Doctrine, Organization, Training, Material, Logistics, Policy, Facility (DOTMLPF) Change Request (DCR - JROCM 088-17). In response, OUSD(I&S) coordinated with the Air Force to create the CCI EMSO, formerly Combatant Command Intelligence Information Technology Provisional Program Activity Office (CCIIT PPAO). CCI EMSO is tasked to address these gap areas for the CCMDs. This program enables long term research and evaluation of systems and processes capable of supporting the CCI Enterprise.

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Combatant Command Intelligence Information Technology (CCMD Intel IT)	1.121	1.646	1.663

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305020F / CCMD Intelligence Information Technology	<b>Project (Number/Name)</b> 674901 / Ccmd Intelligence Information Technology

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Description:</b> 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.</p> <p><b>FY 2021 Plans:</b> Continuation of efforts: The RDT&amp;E funds continue research, test and evaluate multiple software tools and workflows impacting the CCI Enterprise. Complex research and evaluation of emerging data structures, visualization tools, and cross domain services directly address multiple Joint Requirements Oversight Council (JROC) requirements and CCMD Integrated Priority Lists (IPLs).</p> <p><b>FY 2022 Plans:</b> Continuation of efforts: The RDT&amp;E funds will be used to continue research, test and evaluate multiple software tools and workflows impacting the CCI Enterprise. Complex research and evaluation of emerging data structures, visualization tools, and cross domain services directly address multiple Joint Requirements Oversight Council (JROC) requirements and CCMD Integrated Priority Lists (IPLs).</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding increase to meet user requirements to develop evolving mission sets.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	1.121	1.646	1.663

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• O&M PE 0305020F: CCMD <i>Intelligence Information Technology</i>	20.901	13.575	12.586	-	12.586	-	-	-	-	-	-
<b>Remarks</b> N/A											

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

**UNCLASSIFIED**

**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305020F / CCMD Intelligence Information Technology	<b>Project (Number/Name)</b> 674901 / Ccmd Intelligence Information Technology
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<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
IT Equipment and Networking Technology Hardware	C/CPAF	Other Contracting : Fairfax, VA	-	1.121	Mar 2020	1.646	Mar 2021	0.195	Jun 2022	-		0.195	-	-	-
<b>Subtotal</b>			-	1.121		1.646		0.195		-		0.195	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Research and development contracts	C/CPAF	Other Contracting : Fairfax, VA	-	-		-		1.468	Feb 2022	-		1.468	-	-	-
<b>Subtotal</b>			-	-		-		1.468		-		1.468	-	-	N/A

<b>Project Cost Totals</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
	-	1.121	1.646	1.663	-	1.663	-	-	N/A

**Remarks**  
N/A

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305020F / CCMD Intelligence Information Technology	<b>Project (Number/Name)</b> 674901 / Ccmd Intelligence Information Technology

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b><i>Solution Analysis</i></b>	
Research intelligence capabilities / gaps / software and develop work-flows and requirements. Program will evaluate existing and potential software.	
<b><i>Requirements Development Solution</i></b>	
Refinement of requirements to match user input for added capability	



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305020F / <i>CCMD Intelligence Information Technology</i>	<b>Project (Number/Name)</b> 674901 / <i>Ccmd Intelligence Information Technology</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Solution Analysis</i></b>				
Research intelligence capabilities / gaps / software and develop work-flows and requirements. Program will evaluate existing and potential software.	1	2020	4	2026
<b><i>Requirements Development Solution</i></b>				
Refinement of requirements to match user input for added capability	1	2020	4	2026

**Note**

PB 2020 R-DOC Exhibit R-4 describes 4 lines. Capability Drop 1 and Capability Drop 2 lines of effort were moved into sustainment. Solution Analysis and Requirements Development are continuation of previous efforts.

Per ODNI and USD(I&S) Consolidated Intelligence Guidance for FY2022-2026, the Strategic objective direct both work toward enhanced capabilities and establishment of of a data-centric environment to continue through FY2026. The CCI EMSO will continue to address gap areas and support the transition from current state to a joint common fabric framework supporting the Intelligence IT enterprise though both solution analysis and requirements development.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305022F / <i>ISR Modernization &amp; Automation Dvmt (IMAD)</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	19.000	19.230	18.888	0.000	18.888	-	-	-	-	-	-
675197: <i>Core Technology</i>	-	16.000	15.936	15.740	0.000	15.740	-	-	-	-	-	-
675306: <i>Analysis Enterprise</i>	-	3.000	3.294	3.148	0.000	3.148	-	-	-	-	-	-

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

(U) AF ISR must adapt large data sets and condition it into mission ready data sets, allowing personnel to discover, manage, and analyze data and transform it into living intelligence.

(U) Kill Chain Automation applies new methodologies; advanced artificial intelligence and machine learning; ensures data is accessible, discoverable, and interoperable; and delivers decision advantage from detection to mission execution.

(U//FOUO) Algorithmic Warfare encompasses efforts to develop, employ, or field artificial intelligence, automation, machine learning, deep learning, and computer vision algorithms. This critical shift to the digital age will transition ISR analysis from the "what" to the "why" of analysis via human-machine teaming. Algorithmic Warfare can provide world-class ISR support to Joint Operations at the scale and speed required in modern warfare against our adversaries.

(U//FOUO) Algorithmic Warfare reshapes current sense, identify, attribute, share (SIAS, previously known as PED - processing, exploitation, and dissemination) models because the current models will be unsustainable and ineffective in developing ISR digital solutions to find efficiencies and thrive in a complex operating environment. This funding is a first step to address ISR analysts' struggles with data overload; they currently spend 80 percent of their time searching for data and 20 percent of their time making sense of the information.

(U) Supports National Defense Strategy priority of operating at the "speed of relevance."

(U) Supports Next Generation ISR Dominance Flight Plan.

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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305022F / <i>ISR Modernization &amp; Automation Dvmt (IMAD)</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	19.000	19.265	19.171	0.000	19.171
Current President's Budget	19.000	19.230	18.888	0.000	18.888
Total Adjustments	0.000	-0.035	-0.283	0.000	-0.283
• 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	-0.035	-0.283	0.000	-0.283

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305022F / <i>ISR Modernization &amp; Automation Dvmt (IMAD)</i>	<b>Project (Number/Name)</b> 675197 / <i>Core Technology</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
675197: <i>Core Technology</i>	-	16.000	15.936	15.740	0.000	15.740	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

(U//FOUO) Algorithmic Warfare encompasses efforts to develop, employ, or field artificial intelligence, automation, machine learning, deep learning, and computer vision algorithms. This critical shift to the digital age will transition ISR analysis from the "what" to the "why" of analysis via human-machine teaming. Algorithmic Warfare can provide world-class ISR support to Joint Operations at the scale and speed required in modern warfare against our adversaries.

(U//FOUO) Algorithmic Warfare reshapes current sense, identify, attribute, share (SIAS, previously known as PED - processing, exploitation, and dissemination) models because the current models will be unsustainable and ineffective in developing ISR digital solutions to find efficiencies and thrive in a complex operating environment. This funding is a first step to address ISR analysts' struggles with data overload; they currently spend 80 percent of their time searching for data and 20 percent of their time making sense of the information.

(U) Supports National Defense Strategy priority of operating at the "speed of relevance."

(U) Supports Next Generation ISR Dominance Flight Plan.

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

	FY 2020	FY 2021	FY 2022
<b>Title:</b> Algorithmic Warfare	16.000	15.936	15.740
<b>Description:</b> SECAF directed the AF to invest in a more automated environment to relieve strain on manpower in the out years. Algorithmic Warfare can provide world-class ISR support to Joint Operations at the scale and speed required in modern warfare against our adversaries. This effort supports National Defense Strategy of operating at the "speed of relevance."			
<b>FY 2021 Plans:</b> Continuing to develop ISR Algorithmic Warfare - artificial intelligence, automation, machine learning, deep learning, and computer vision algorithms			
<b>FY 2022 Plans:</b> Continue to develop ISR Algorithmic Warfare - artificial intelligence, automation, machine learning, deep learning, and computer vision algorithms			
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305022F / <i>ISR Modernization &amp; Automation Dvmt (IMAD)</i>	<b>Project (Number/Name)</b> 675197 / <i>Core Technology</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
Decreased development activities			
<b>Accomplishments/Planned Programs Subtotals</b>	16.000	15.936	15.740

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

N/A

**Remarks**

**D. Acquisition Strategy**

N/A



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305022F / <i>ISR Modernization &amp; Automation Dvmt (IMAD)</i>	<b>Project (Number/Name)</b> 675197 / <i>Core Technology</i>

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b><i>Algorithmic Warfare</i></b>	
Begin Algorithm Development	



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305022F / <i>ISR Modernization &amp; Automation Dvmt (IMAD)</i>	<b>Project (Number/Name)</b> 675197 / <i>Core Technology</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Algorithmic Warfare</i></b>				
Begin Algorithm Development	1	2020	4	2026

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305022F / <i>ISR Modernization &amp; Automation Dvmt (IMAD)</i>	<b>Project (Number/Name)</b> 675306 / <i>Analysis Enterprise</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
675306: <i>Analysis Enterprise</i>	-	3.000	3.294	3.148	0.000	3.148	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

(U) AF ISR must adapt large data sets and condition it into mission sets, allowing personnel to discover, manage, and analyze data and transform it into living intelligence. Kill Chain Automation applies new methodologies; advances automation and machine learning; ensures data is accessible, agreeable, and interoperable; and delivers decision advantage.

(U) Supports National Defense Strategy priority of operating at the "speed of relevance."

(U) Supports Next Generation ISR Dominance Flight Plan.

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

	FY 2020	FY 2021	FY 2022
<b>Title:</b> Kill Chain Automation	3.000	3.294	3.148
<b>Description:</b> AF's first ISR investment to work large data sets, automation, COTS IT tolls, and data aggregation.			
<b>FY 2021 Plans:</b> Continuing to fund software development to automate ISR analyst workflows; analysts currently spend 80 percent of their time searching for data and 20 percent of their time making sense of information. Human-machine teaming allows humans and machines to focus on activities they each do best.			
<b>FY 2022 Plans:</b> Continue to fund software development to automate ISR analyst workflows; analysts currently spend 80 percent of their time searching for data and 20 percent of their time making sense of information. Human-machine teaming allows humans and machines to focus on activities they each do best			
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Decreased to fund other higher Air Force priorities			
<b>Accomplishments/Planned Programs Subtotals</b>	3.000	3.294	3.148

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

N/A

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force		Date: May 2021
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305022F / <i>ISR Modernization &amp; Automation Dvmt (IMAD)</i>	Project (Number/Name) 675306 / <i>Analysis Enterprise</i>

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

**Remarks**

**D. Acquisition Strategy**

N/A



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305022F / <i>ISR Modernization &amp; Automation Dvmt (IMAD)</i>	<b>Project (Number/Name)</b> 675306 / <i>Analysis Enterprise</i>

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b><i>Kill Chain Automation</i></b>	
Begin automation development	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305022F / <i>ISR Modernization &amp; Automation Dvmt (IMAD)</i>	<b>Project (Number/Name)</b> 675306 / <i>Analysis Enterprise</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Kill Chain Automation</i></b>				
Begin automation development	1	2020	4	2026

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305099F / <i>Global Air Traffic Management (GATM)</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	4.404	4.637	4.672	0.000	4.672	-	-	-	-	-	-
674689: <i>Global Access Architecture</i>	-	4.404	4.637	4.672	0.000	4.672	-	-	-	-	-	-
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 Systems Division (AMSD), the designated Air Force (AF) Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM) and Navigation Safety Center of Excellence (COE). In accordance with AFI 63-101 and AFPAM 63-129, the COE conducts highly specialized analysis, engineering assessments, and performance monitoring of military and civil CNS/ATM capabilities which ensures manned and unmanned aircraft system conformance to national and international civil aviation standards, allowing safe and efficient access to global airspace. The COE's assessment of compliance with CNS/ATM standards feed directly into the Airworthiness approval process, according to Airworthiness Bulletin-325. The COE provides centralized avionics expertise to Headquarters Air Force, AF Major Commands (MAJCOM), and weapon system program offices. This centralized CNS/ATM technical expertise capability supplements all MAJCOMs and AF weapon system program offices. 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.

The majority of COE funding is allocated to engineering services provided by a Federally Funded Research and Development Center and contractor support. A reduction in budget will directly affect all aircraft program offices looking to equip with the latest CNS/ATM capabilities required for airspace access, preferred routing, or increased safety of flight.

Per AFPAM 63-129 the COE must maintain an online site for dissemination of CNS/ATM information as well as a catalog of common CNS/ATM products. The COE is overhauling its online presence through a Phase II SBIR effort to consolidate COE activities and streamline operations in a 'one-stop shop' storefront. It provides seamless data management, centralized knowledge hub, engineering workspace, communications management, working group management, and CNS/ATM product catalog. The website may also be used as a foundational platform to increase collaboration amongst key CNS/ATM stakeholders. An example of this is consolidated avionics equipage information being stored on the site to answer queries from leadership, civil aviation authorities, and the operational community. Organic and/or contractor-support sustainment funding for the COE online storefront will be required starting in FY23 following the development of the site.

This funding enables the COE to participate in government and industry technical forums as well as U.S. and international civil aviation standards bodies such as the Federal Aviation Administration (FAA), International Civil Aviation Organization (ICAO), Radio Technical Commission for Aeronautics (RTCA), a Department of Defense (DoD) voting member of the Airlines Electronic Engineering Committee (AEEC) and others. These organizations are responsible for the development and assessment of international civil aviation standards for safe and efficient flight operations in worldwide airspace. COE personnel analyze civil aviation standards as they are being developed and work to influence them to support DoD interests.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305099F / <i>Global Air Traffic Management (GATM)</i>	
<p>Applicable technical and engineering criteria established by U.S. and international civil aviation standards are documented in the COE maintained Generic Performance Matrices (GPMs). The COE works with MAJCOM and aircraft System Program Office (SPO) personnel and develops strategies to implement CNS/ATM capability requirements on AF weapon systems as well as tailor the GPMs to each platform's unique avionics architecture and operational mission. After completion of CNS/ATM component integration and testing, COE personnel validate platform performance against the aviation standards necessary for the platform to interoperate with air traffic control and other airspace users safely and efficiently in worldwide airspace. The resulting performance assessment reports are submitted to the aircraft program office and becomes part of their Airworthiness and Operational Safety, Sustainability, and Effectiveness (OSS&amp;E) certification package.</p> <p>The COE provides technical analysis and assessments of CNS/ATM and navigation safety avionics equipment throughout the life cycle of manned and unmanned aircraft platforms. Efforts include but are not limited to performance assessment, test support, performance monitoring, interoperability testing, cybersecurity assessments, and the development of CNS/ATM capabilities for unmanned platforms. Unmanned platform support includes location-specific Ground Based Detect and Avoid (GBDAA) radar and airspace characterization, and evaluation of emerging unmanned aircraft system technologies. Currently, the COE is surging to meet program office assessment demands. In addition, the COE is projecting an increase in Communications and Navigation performance assessments beginning in FY22 through the FYDP due to new CNS/ATM capabilities to include, but not limited to: M-Code, ARC-210 replacements, SATCOM upgrades, and performance based navigation.</p> <p>The COE administers and manages multiple contracts including the electronic Global Air Traffic Management (iGATM) catalog to enable centralized procurement of CNS/ATM and navigation safety avionics equipment, navigation data, and technical engineering services for aircraft platform program offices and other mission partners. Technical engineering services may include avionics interoperability testing, cybersecurity assessments, and the development and assessment of CNS/ATM capabilities for emerging unmanned platform technologies. The iGATM catalog may also offer hardware, software, risk kits, operations and training materials, and the installation and check-out of GBDAA and other emerging unmanned see and avoid technologies and systems. These contracts are used by aircraft program offices across the DoD, among other federal agencies, and in support of foreign military sales.</p> <p>The Digital Aeronautical Flight Information File (DAFIF) electronic navigation database is developed and maintained by the National Geospatial-Intelligence Agency (NGA) and contains critical safety of flight information used by the majority of DoD flight crews to fly Instrument Flight Rules (IFR) procedures, safely navigate airways and fly Instrument Approach Procedures (IAPs) to civil and military airfields worldwide. The COE performs periodic and event driven audits of NGA navigation source data, alternate industry navigation source data providers, and navigation data software tools required by civil aviation authorities.</p> <p>This program element may include necessary civilian pay expenses required to manage, execute, and deliver the Global Air Traffic Management system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.000M was expended for civilian pay expenses in this program element, and in FY21 \$0.000M is forecasted for civilian pay expenses in this program element.</p> <p>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.</p>		



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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force				<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 0305099F / <i>Global Air Traffic Management (GATM)</i>				
<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	
Previous President's Budget	4.544	4.645	4.743	0.000	4.743	
Current President's Budget	4.404	4.637	4.672	0.000	4.672	
Total Adjustments	-0.140	-0.008	-0.071	0.000	-0.071	
• 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	-0.140	0.000				
• Other Adjustments	0.000	-0.008	-0.071	0.000	-0.071	
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>				<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> CNS/ATM COE Administration of DoD Avionics Equipment Catalog				0.750	0.797	0.818
<b>Description:</b> In accordance with AFPAM 63-129 Section 2.7.7 and AFI 63-101 Section 5.4.6.2, the CNS/ATM COE maintains a centralized Indefinite Delivery/Indefinite Quantity (ID/IQ) contract which contains pre-approved products for use by implementing aircraft SPOs. These include or will include: navigation safety avionics equipment/components, navigation data, and technical engineering services. Supports numerous DoD, US Federal Agencies, and Foreign Military Sales program offices. Provide preferred customer pricing and extended warranty.						
<b>FY 2021 Plans:</b> Continue administration of the CNS/ATM electronic storefront and enhanced DoD electronic avionics equipment catalog. Conduct market research, monitor industry for new CNS/ATM products, and conduct aircraft SPO data calls for avionics equipment which could be added to catalog.						
<b>FY 2022 Plans:</b> Continue administration of the CNS/ATM electronic storefront and enhanced DoD electronic avionics equipment catalog. Conduct market research, monitor industry for new CNS/ATM products, and conduct aircraft SPO data calls for avionics equipment which could be added to catalog.						
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding increased due to inflation.						
<b>Title:</b> CNS/ATM COE Digital Aeronautical Flight Information File (DAFIF) Management				1.837	1.888	1.877

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 0305099F / <i>Global Air Traffic Management (GATM)</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Description:</b> 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. Ensures the validity of multiple sources of information critical to implementation of international performance based navigation (PBN) standards.</p> <p><b>FY 2021 Plans:</b> Continue efforts with DoD agencies and the FAA to audit/certify electronic navigational databases and sources, and 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 sufficient accuracy/performance necessary to operate manned and remotely piloted aircraft globally.</p> <p><b>FY 2022 Plans:</b> Continue efforts with DoD agencies and the FAA to audit/certify electronic navigational databases and sources, and 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 sufficient accuracy/performance necessary to operate manned and remotely piloted aircraft globally.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Increase due to inflation in the budget.</p>				
<p><b>Title:</b> CNS/ATM COE Standards Bodies Engagement and Generic Performance Matrix (GPM) Development</p> <p><b>Description:</b> Participate in technical forums to understand and influence civil aviation standards and incorporate DoD interests to ensure safe and efficient access of AF manned and unmanned aircraft to the global airspace. Create new and/or revise 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 30+ aircraft program offices with the development of CNS/ATM related test and evaluation plans, the analysis of test/performance data, and the assessment of aircraft CNS/ATM performance through preparation of a Performance Assessment Report (PAR).</p> <p><b>FY 2021 Plans:</b> Prioritize participation in technical forums and civil aviation standards bodies based on funding and operational requirements of AF platforms. Continue development of generic and tailored performance matrices to ensure AF manned and remotely piloted aircraft are capable and certified to operate safely and efficiently in worldwide civil airspace in accordance with emerging performance based CNS/ATM requirements.</p>		1.817	1.952	1.977

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305099F / <i>Global Air Traffic Management (GATM)</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022
<p>Continue to support AF aircraft platform program office test and design reviews, analysis of test/performance data, and performance assessment reports. Prioritize manpower support to provide deliverable products such as the TPM or PAR to ACAT 1 and reportable modification programs, to include but limited to: : AT-6, T-7A, F-35, HH-60W, MH-139, KC-135, C-130J, F-16, and E-11. Support will be provided to AF platform program offices based on manpower availability and operational requirements of AF platforms. FY21 platform support requests are anticipated by: A-10, B-1, B-2, B-52, C-5, C-17, C-130H,C-130J, CV-22, E-3, E-4, E-8, E-11, F-15EX, F-16, F-22, HC-130J, UH-1N, KC-135, KC-46, MC-130H, RQ-4, MQ-9, HH-60W and VC-25.</p> <p><b><i>FY 2022 Plans:</i></b> Prioritize participation in technical forums and civil aviation standards bodies based on funding and operational requirements of AF platforms. Continue development of generic and tailored performance matrices to ensure AF manned and remotely piloted aircraft are capable and certified to operate safely and efficiently in worldwide civil airspace in accordance with emerging performance based CNS/ATM requirements. Continue to support AF aircraft platform program office test and design reviews, analysis of test/performance data, and performance assessment reports. Prioritize manpower support to provide deliverable products such as the TPM or PAR to ACAT 1 and reportable modification programs, to include but limited to: HC-130J, VC-25, KC-135, C-17, and C-130H. Support will be provided to AF platform program offices based on manpower availability and operational requirements of AF platforms. FY22 platforms support requests are anticipated by at least the following program offices: A-10, B-1, B-2, B-52, C-5, C-17, C-130H,C-130J, CV-22, E-3, E-4, E-8, E-11, F-15EX, F-16, F-22, HC-130J, UH-1N, KC-135, KC-46, MC-130H RQ-4, MQ-9, HH-60W and VC-25.</p> <p><b><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i></b> Funding increase to support additional platform support requests and inflation.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	4.404	4.637	4.672

**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.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305099F / <i>Global Air Traffic Management (GATM)</i>	<b>Project (Number/Name)</b> 674689 / <i>Global Access Architecture</i>
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<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Center of Excellence: Technical support for CNS/ATM requirement assessments, GPM development, DAFIF navigation data chain audits/certification, and CNS/ATM ID/IQ contract management.	C/T&M	MITRE : Bedford, MA	-	2.548	Oct 2019	2.646	Oct 2020	2.665	Oct 2021	-		2.665	-	-	-
CNS/ATM Center of Excellence: Technical support for operational requirement assessments, GPM development, DAFIF navigation data chain audits/certification, and CNS/ATM ID/IQ contract management.	C/CPFF	Oasis Systems : Lexington, MA	-	1.016	Jul 2020	1.160	Jul 2021	1.176	Jul 2022	-		1.176	-	-	-
<b>Subtotal</b>			-	3.564		3.806		3.841		-		3.841	-	-	N/A

<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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 - PMA (Contract Services)	C/T&M	Oasis Systems : Lexington, MA	-	0.549	Jul 2020	0.550	Jul 2021	0.550	Jul 2022	-		0.550	-	-	-
Program office support - PMA (Contract Svcs)	C/T&M	Tecolote/Quantech : Bedford, MA	-	0.073	Oct 2019	0.061	Oct 2020	0.061	Oct 2021	-		0.061	-	-	-
Program office support - PMA (Other Govt Costs)	Various	Various : Bedford, MA	-	0.218	Oct 2019	0.220	Oct 2020	0.220	Oct 2021	-		0.220	-	-	-
<b>Subtotal</b>			-	0.840		0.831		0.831		-		0.831	-	-	N/A



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305099F / <i>Global Air Traffic Management (GATM)</i>	<b>Project (Number/Name)</b> 674689 / <i>Global Access Architecture</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>CNS/ATM COE</b>																												
Generic Performance Matrix Development																												
DAFIF Management																												
CNS/ATM iGATM II Contract Administration																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305099F / <i>Global Air Traffic Management (GATM)</i>	<b>Project (Number/Name)</b> 674689 / <i>Global Access Architecture</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>CNS/ATM COE</b>				
Generic Performance Matrix Development	1	2020	4	2026
DAFIF Management	1	2020	4	2026
CNS/ATM iGATM II Contract Administration	2	2021	2	2026

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305103F / <i>Cyber Security Initiative</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.383	0.290	0.000	0.290	-	-	-	-	-	-
671931: <i>TECH SURVEIL COUNTER MEAS EQPT</i>	-	0.000	0.383	0.290	0.000	0.290	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

Integrate MDCO network sensor collections and analytical capabilities to enable data sharing.

In FY 2022, PE 0305103F, Cyber Security Initiative, Project 671931, Tech Surveillance Counter Measures, efforts were transferred to PE 03031113F, Cyber Security Intelligence Support, Project 671931, Tech Surveillance Counter Measurement Equipment, in order to more appropriately categorize the funding according to purpose.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Cyber Security Initiative capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.0M was expended and in FY21 \$0.0M is forecasted for civilian pay expenses in this program element.

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><u>B. Program Change Summary (\$ in Millions)</u></b>	<b><u>FY 2020</u></b>	<b><u>FY 2021</u></b>	<b><u>FY 2022 Base</u></b>	<b><u>FY 2022 OCO</u></b>	<b><u>FY 2022 Total</u></b>
Previous President's Budget	0.000	0.384	0.294	0.000	0.294
Current President's Budget	0.000	0.383	0.290	0.000	0.290
Total Adjustments	0.000	-0.001	-0.004	0.000	-0.004
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-0.001			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-0.004	0.000	-0.004

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305103F / <i>Cyber Security Initiative</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Title:</b> Tech Surveill Counter Mess Equipment</p> <p><b>Description:</b> CI Process Exploit Dissemination (PED)</p> <p><b>FY 2021 Plans:</b> Analysis of MDCO sensor integration</p> <p><b>FY 2022 Plans:</b> Integrate MDCO network sensor collections.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Decreased development efforts.</p>	0.000	0.383	0.290
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	0.383	0.290

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

N/A

**Remarks**

**E. Acquisition Strategy**

Integrate MDCO sensor collection and analysis.

Acquisition strategy for program efforts will be assessed as program requires. Competitive contracts will be used to the maximum extent possible.



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305103F / <i>Cyber Security Initiative</i>	<b>Project (Number/Name)</b> 671931 / <i>TECH SURVEIL COUNTER MEAS EQPT</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b><i>CI Process Exploit Dissemination (PED) System Development</i></b>	
Analysis of MDCO sensor integration	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305103F / <i>Cyber Security Initiative</i>	<b>Project (Number/Name)</b> 671931 / <i>TECH SURVEIL COUNTER MEAS EQPT</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>CI Process Exploit Dissemination (PED) System Development</i></b>				
Analysis of MDCO sensor integration	1	2021	4	2026

**Note**

Integrate MDCO sensor collection and analysis.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305111F / <i>Weather Service</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	34.292	36.573	26.228	0.000	26.228	-	-	-	-	-	-
672738: <i>Weather Service</i>	-	34.292	36.573	26.228	0.000	26.228	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

This budget activity funds the operational development necessary to acquire, sustain, and modernize Air Force Weather Service (AFWS) capabilities in support of the 2018 National Defense Strategy's (NDS) three lines of effort. To improve readiness for a more lethal force, AFWS provides timely, accurate, resilient, and relevant environmental information to enable global battlespace situational awareness for Air Force (AF), Army, Special Operations Forces (SOF), Space Force (USSF), combatant commands, the Intelligence Community (IC), and other government agencies. AFWS provides climate impacts and assessments, as well as space and terrestrial weather sensing, forecasting, and weather analytic capabilities, at home station and deployed, in order to deliver critical environmental intelligence in support of decision makers to gain the asymmetric advantage during the full spectrum of air and space combat operations. AFWS decreases the risk to mission and risk to force by increasing the lethality, effectiveness, and survivability of Department of Defense (DoD) weapon systems. To strengthen alliances and partnerships, AFWS development efforts integrate DoD, government agency, commercial, and international partner environmental data with AFWS information system equipment for processing, storing, exploiting, and disseminating multi-domain weather information for analysis, forecasting, mission integration, and greater interoperability. To ensure greater performance and affordability for the Department of the AF, AFWS sensors and information systems are being modernized through improvements to architecture and system efficiency, cybersecurity, joint all-domain command and control (JADC2) and sensing grid integration, migration to cloud computing, artificial intelligence and machine learning (AI/ML) initiatives, and expanding agile software development, delivery, and integration practices. The AF Weather Enterprise digital transformation and cloud migration effort modernizes key capabilities providing the military advantage to accurately predict environmental impacts optimizing mission planning, targeting, weaponeering, mission execution, battle damage assessment, and space systems operations.

AFWS aligns activities under four capability areas: Weather Data Collection, Weather Data Analysis and Dissemination, Weather Forecasting, and Product Tailoring/Warfighter Applications (PTWA). This alignment ensures an integrated and systems-oriented approach to program management decisions. Of these four capability areas, three (Weather Data Analysis and Dissemination, Weather Forecasting, and PTWA) are addressed by APPN 3600, BA 07, PE 0305111F, Project 672738 - Weather Service. Effective FY 2021, a portion of the APPN 3600 funding and activities from Weather Data Analysis and Dissemination and Weather Forecasting are migrated to the PTWA capability area to better address development of applications, software, command and control (C2) system integration, and web interfaces that directly impact the warfighter within the Weather Application Rapid Production (WARPspeed) program of record. In FY 2021, WDA Increment 5 and WARPspeed programs of record were approved as Software Acquisition Pathway Programs and are considering the potential for conversion of funding to APPN 3600, BA 08, as part of a pilot to better align funding with this new designation. By FY 2023, a portion of the APPN 3600 funding and activities from AF PE 0305111F, Project 672738, Weather Service, will be transferred to the USSF PE 1203940SF, Space Situational Awareness Operations, in order to align current AF ground-based space sensing projects to the USSF.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force Date: May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305111F / <i>Weather Service</i>
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1. Weather Data Analysis and Dissemination provides a cybersecure cloud computing-based Continuous Integration/Continuous Delivery (CI/CD) environment for software development and deployment; large-scale environmental data ingest, processing, and product generation; the machine-to-machine dissemination of specific, mission-tailored weather data on-demand to support warfighter operations; and weapon system interoperability, rapidly integrating into C2 nodes and shortening the Combatant Commander kill chain. The Weather Data Analysis and Dissemination capability area includes activities for Weather Data Analysis Increment 4 (WDA Inc 4) and its follow-on, Weather Data Analysis Increment 5 (WDA Inc 5).

2. Weather Forecasting provides global and regional advanced scientific numerical weather and climate prediction capabilities for automated, high-resolution forecast products supporting mission planning and execution with an emphasis on clouds, theater scale weather, aerosol/chemical constituents, hydrology, machine learning, and space environmental characterization. Weather Forecasting includes activities for Numerical Weather Modeling (NWM) and Space Weather Analysis and Forecast System (SWAFS). By FY 2023, the SWAFS portion of the APPN 3600 funding and activities from AF PE 0305111F, Weather Service, will be transferred to the USSF PE 1203940SF, Space Situational Awareness Operations.

3. Product Tailoring Warfighter Applications (PTWA) provides software applications that provide and enhance environmental intelligence to support rapid warfighter decision-making. PTWA includes the program, Weather Applications Rapid Production (WARPspeed), which is a suite of software applications developed and delivered across multiple security classification levels and encompasses weather workflow tools and decision aids used to tailor terrestrial and space environmental information, which include both Forecaster-in-the-Loop (FITL) and automated machine-to-machine processes enhanced by AI/ML. WARPspeed leverages the Weather Data Analysis Increment 5 (WDA Inc 5) cloud computing, data processing, and CI/CD platforms to rapidly develop, deliver, and sustain software capabilities, whether deployed into the AF Weather Virtual Private Cloud (AFW-VPC) or to warfighter processing nodes at the edge. The PTWA program Joint Environmental Toolkit (JET) subsumed several software and web development efforts previously aligned under the Weather Data Analysis and Dissemination capability area in FY 2021 and was renamed to WARPspeed. PTWA and WARPspeed also now include Weather Services - Live, Virtual, Constructive (WS-LVC) and the machine learning Global Synthetic Weather Radar (GSRW) capabilities, which were previously aligned under Weather Forecasting. The WARPspeed program of record is not a new start.

Activities include research 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).

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

This program is in Budget Activity 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:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305111F / <i>Weather Service</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	35.461	23.640	27.507	0.000	27.507
Current President's Budget	34.292	36.573	26.228	0.000	26.228
Total Adjustments	-1.169	12.933	-1.279	0.000	-1.279
• Congressional General Reductions	0.000	-0.067			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	13.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-1.169	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-1.279	0.000	-1.279

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

**Project:** 672738: *Weather Service*

Congressional Add: *Commercial Weather Data Pilot (CWDP) Program*

Congressional Add: *Research on Atmospheric Rivers*

Congressional Add: *Enhanced Weather Prediction*

Congressional Add Subtotals for Project: 672738

Congressional Add Totals for all Projects

	<b>FY 2020</b>	<b>FY 2021</b>
	4.817	10.000
	1.963	3.000
	2.890	-
Congressional Add Subtotals for Project: 672738	9.670	13.000
Congressional Add Totals for all Projects	9.670	13.000

**Change Summary Explanation**

FY20: \$1.169M reprogrammed at end of FY20 to account for actuals.

FY21: \$0.067M reduction due to undistributed congressional general reduction and \$13M program increase due to congressional adds for Commercial Weather Data Pilot (\$10M) and Atmospheric Rivers (\$3M).

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Weather Data Analysis Increment 4 (WDA Inc 4)	6.307	0.000	0.000
<b>Description:</b> WDA Inc 4 provides a net-centric infrastructure that assimilates worldwide sources of atmospheric and space environment data and produces decision-quality information for warfighters.			
<b>FY 2021 Plans:</b>			

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 0305111F / <i>Weather Service</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
N/A				
<b>FY 2022 Plans:</b> N/A				
<b>Title:</b> Weather Data Analysis Increment 5 (WDA Inc 5)		3.400	0.736	1.801
<b>Description:</b> WDA Inc 5 institutes a cloud computing-based platform enabling a transition from agile development to a CI/CD pipeline for software development and deployment efforts which will enable rapid updates to functionality and security measures. The WDA Inc 5 cloud computing platform will also provide an enterprise big data analytics capability and AI/ML platform, as well as supporting and funding development and deployment of web services, data management, platform monitoring, application on-boarding, and platform user management. Finally, the program will provide both classified and unclassified cloud computing platforms that communicate directly with C2 customers.				
<b>FY 2021 Plans:</b> - FY 2021 funding in WDA Inc 5 will support AI/ML platform integration and development improvements to the AFW-VPC platform.				
<b>FY 2022 Plans:</b> - FY 2022 funding will support the CI/CD pipeline modernization for weather software and applications and will further AI/ML platform integration and new data integration to the AFW-VPC platform.				
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> FY 2022 increased compared to FY2021. Funding increased due to CI/CD pipeline modernization for weather software and applications, AI/ML platform modernization, and new data integration into the AFW-VPC platform.				
<b>Title:</b> Numerical Weather Modeling (NWM)		12.092	8.894	10.510
<b>Description:</b> The NWM program will transition High Performance Computing (HPC) System 11 into operations early in FY 2021, and expand and enhance the computing capability to begin supporting machine learning development. NWM also provides data and products used to issue advisories and warnings for DoD resource protection. NWM integrates with the Air Force Weather Weapon System's Weather Data Analysis (WDA) Inc 4 and Inc 5 processing centers to analyze and predict weather phenomena.				
<b>FY 2021 Plans:</b> - Complete integration and transition of hydrology streamflow model into operations. - Continue Land Information System (LIS) enhancement and integration and field an annual update. - Continue meteorological satellite (METSAT) integration and exploitation efforts for cloud forecasting applications through the Cloud Analysis and Forecast project. - Continue explicit cloud data assimilation (DA) and modeling collaboration and development activities.				

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 0305111F / <i>Weather Service</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<ul style="list-style-type: none"> <li>- Begin seasonal-to-sub-seasonal forecast capability development and field initial drought warning prediction capability.</li> <li>- Begin dust forecasting improvement efforts in collaboration with RDT&amp;E partners to include the UK Met Office, and US Army Cold Region Research and Engineering Laboratory (CRREL).</li> <li>- Continue Oak Ridge National Laboratory (ORNL) RDT&amp;E collaboration tasks, focusing on model code optimization and hydrology prediction capabilities.</li> </ul> <p><b>FY 2022 Plans:</b></p> <ul style="list-style-type: none"> <li>- Continue METSAT exploitation and integration efforts for cloud forecasting applications.</li> <li>- Continue terrain modeling enhancement and integration, which includes hydrology streamflow capability and seasonal-to-sub-seasonal forecast capability development.</li> <li>- Continue ORNL RDT&amp;E collaboration tasks, focusing on model code optimization and hydrology prediction capabilities.</li> <li>- Continue Explicit Modeled Cloud data assimilation collaboration and development activities.</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> FY 2022 increased compared to FY 2021. Funding increased due to improvements to Cloud Depiction and Forecasting System II (CDFS II) for additional meteorological satellite launches, as well as increased RDT&amp;E for hydrology and seasonal-to-sub-seasonal forecasting.</p>				
<p><b>Title:</b> Weather Applications Rapid Production (WARPspeed)</p> <p><b>Description:</b> WARPspeed develops and delivers a suite of software applications across multiple security classification levels to provide and enhance environmental intelligence to support rapid warfighter decision making. Major software developments include: the Enterprise Environmental Platform (E2P), Mission Services, Global Synthetic Weather Radar (GSRW), weather C2 visualization plug-ins and integration, and other forecast and climatology applications.</p> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>- Enhance Mission Services, to include the continued development of Severe Parameter Impact Request Engine (SPIRE), which is a cloud-native and provider-agnostic application programming interface (API) request engine, built to handle the many facets of impact services.</li> <li>- Develop weather C2 visualization plug-ins to integrate weather data and software applications with various C2 systems and for use in the Expeditionary Weather (ExMET) program to provide remote and weather processing and display capabilities at the edge.</li> <li>- Integrate GSRW into the AFW-VPC and improve machine learning algorithms, improving overall GSRW performance and accuracy.</li> </ul>		0.000	9.844	9.555

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 0305111F / <i>Weather Service</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p>- Enhance applications to enable rapid streaming and local data-cache capabilities for forecast and climatology data hosted in the AFW-VPC.</p> <p><b>FY 2022 Plans:</b></p> <ul style="list-style-type: none"> <li>- Develop E2P which will provide a single front entry point into the Air Force Weather Enterprise for all html-based access capabilities for environmental content and services on all classification enclaves.</li> <li>- Continue to enhance Mission Services, to include the continued development of SPIRE.</li> <li>- Continue to develop weather C2 visualization plug-ins to integrate weather data and software applications with various C2 systems.</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> FY 2022 funding increased compared to FY 2021. Funding increased due to additional planned development and integration of software applications under the program of record WARPspeed.</p>				
<p><b>Title:</b> Space Weather Analysis and Forecast System (SWAFS)</p> <p><b>Description:</b> SWAFS is a software suite of 47 models/applications to ingest, process, and store space environmental data, run space environmental models to specify and forecast the near-earth environment, and run space effects characterization applications. SWAFS products support various operations including: spacecraft tracking and health, early warning and theater warning radar support, Global Positioning System (GPS) and satellite communication (SATCOM) user support, IC support, and high altitude and space flight support. SWAFS's current main thrust is working to deliver the magnetospheric Energetic Charged Particle Hazard Assessment System (ECP HAS) that is designed to inform satellite operators of hazards and the impacts to their spacecraft and will provide warfighters with the environmental awareness to safely sustain their respective orbits and missions.</p> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>- Begin transition of four of five components of the hazard assessment system to a cloud infrastructure. This phase of the ECP HAS will provide warfighters with a modern user interface to determine the hazards to space vehicles.</li> <li>- Begin integration of a cloud-ready ionospheric assimilation model. This model will support warfighters with cloud-hosted, enhanced characterization of the ionospheric impacts to DoD and IC systems.</li> <li>- Continue program office and other related support activities that may include, but are not limited to, studies, technical analysis, prototyping, etc.</li> </ul> <p><b>FY 2022 Plans:</b></p> <ul style="list-style-type: none"> <li>- Complete transition of four of five components of the hazard assessment system to a cloud infrastructure. This phase of the ECP HAS will provide warfighters with a modern user interface to determine the hazards to space vehicles at low-earth orbit (LEO) and GPS satellites' altitudes.</li> </ul>		2.279	4.099	4.362

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 0305111F / <i>Weather Service</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p>- Begin transition of the final component of the hazard assessment system to a cloud infrastructure. This phase of the ECP HAS will provide the warfighter with the final of four physics models to specify the hazards to space vehicles in geostationary and highly-elliptical orbits.</p> <p>- Begin integration of a cloud-ready ionospheric assimilation model. This model will support warfighters with cloud-hosted, enhanced characterization of the ionospheric impacts to DoD and IC systems.</p> <p>- Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to, program office support, studies, technical analysis, prototyping, etc.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> FY 2022 increased compared to FY 2021. Funding increased due to the completion of BA 04 RDT&amp;E work in PE 0604002F, AF Weather Service Research, and an increase in BA 07 RDT&amp;E work in PE 0305111F, Weather Service, to integrate the final SWAFS-ECP HAS application and components.</p>				
<p><b>Title:</b> Weather Services-Live, Virtual Constructive (WS-LVC)</p> <p><b>Description:</b> WS-LVC provides DoD Modeling and Simulation users a correlated and realistic natural environment. Tailorable scenarios are used to create specific effects for the warfighter.</p> <p><b>FY 2021 Plans:</b> N/A</p> <p><b>FY 2022 Plans:</b> N/A</p>		0.544	0.000	0.000
<b>Accomplishments/Planned Programs Subtotals</b>		24.622	23.573	26.228
		<b>FY 2020</b>	<b>FY 2021</b>	
<p><b>Congressional Add:</b> Commercial Weather Data Pilot (CWDP) Program</p> <p><b>FY 2020 Accomplishments:</b> - Validate and calibrate passive microwave data and other supporting activities, enabling the future operational use of commercial constellations.</p> <p>- Establish a baseline prototype network of commercial ground sites with deployed instrumentation to observe the equatorial scintillation space environment and report data in near-real-time for ingestion into DoD data assimilative scintillation tools.</p>		4.817	10.000	

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021	
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 0305111F / <i>Weather Service</i>	
		<b>FY 2020</b>	<b>FY 2021</b>
<p>- Initiate the creation of a AF development and testing capability inside a commercial cloud environment.</p> <p><b>FY 2021 Plans:</b> - Review all new Broad Agency Announcement (BAA) white papers and request proposals, while working with NWS and USSF to ensure cost savings and mitigation of redundancy through data sharing agreements between government/DoD agencies.</p> <p>- Award 3 to 4 new contracts from new BAA, subject to change based on number of white paper submissions.</p> <p>- Provide stakeholders' interim and final reports from contracts with PlanetiQ and GeoOptics which end in FY21.</p> <p>- Efforts will include exploring how commercial weather data can be used to fill in environmental sensing for data sparse regions, such as the Arctic and polar regions.</p> <p>- Commercial weather data will also be examined for the potential to be integrated into and used as training data for future weather applications utilizing machine learning/artificial intelligence.</p>			
<p><b>Congressional Add:</b> Research on Atmospheric Rivers</p> <p><b>FY 2020 Accomplishments:</b> - Fund dropsondes in support of AF Reserve Hurricane Hunters' research on atmospheric rivers.</p> <p>- Conduct RDT&amp;E activities to improve modeling capability of atmospheric rivers.</p> <p><b>FY 2021 Plans:</b> - Review all new BAA white papers and request proposals.</p> <p>- Support AF Reserve Hurricane Hunters' RDT&amp;E efforts for Atmospheric River dropsonde observations and reconnaissance flights.</p> <p>- Incrementally fund the second year of the Improving Predictions of Atmospheric Rivers project and build upon research efforts begun in FY20 to forecast improvements of landfall location and intensity of Atmospheric Rivers, as well as their associated heavy flooding threats and potential landslide impacts.</p> <p>- Award additional Atmospheric Rivers and associated enhanced weather RDT&amp;E tasks, to include areas of research such as Hurricane Hunter dropsonde and classified data assimilation, coupled modeling, and model blending development through quantification of impacts of increased observations on model performance.</p>		1.963	3.000
<p><b>Congressional Add:</b> Enhanced Weather Prediction</p> <p><b>FY 2020 Accomplishments:</b> - Fund collaborative research with community partners to enhance weather prediction capabilities such as modeling, data assimilation, validation, verification, AI/ML modeling, product development, and post-processing.</p>		2.890	-
<b>Congressional Adds Subtotals</b>		9.670	13.000

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305111F / <i>Weather Service</i>
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**D. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF 03 Line Item 833070: <i>Weather Observation Forecast</i>	31.447	33.021	32.376	-	32.376	-	-	-	-	-	-
• RDTE 04 0604002F: <i>Air Force Weather Services Research</i>	0.747	2.234	0.986	-	0.986	-	-	-	-	-	-

**Remarks**

**E. Acquisition Strategy**

AF Weather is adopting a CI/CD approach to delivering capabilities rapidly and routinely using multiple contracts to support a family of systems through development fielding and sustainment.

Cost Plus contracts are utilized for software development and sustainment and Fixed Firm Price contracts for Commercial-off-the-shelf (COTS) systems and Contract Logistics Support (CLS) efforts. Pre-competed General Services Administration (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 Digital (AFPEO Digital) and the Air Force Program Executive Officer for Space (AFPEO SP) are the PEOs for the AFWS. AFPEO Digital manages the ground-based atmospheric sensing and data analysis, atmospheric forecast systems, and PTWA. AFPEO SP manages the ground-based segments of space environment collection platforms as well as SWAFS. Both the AFPEO Digital and AFPEO SP are their respective program's Milestone Decision Authority (MDA), unless delegated.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305111F / <i>Weather Service</i>	<b>Project (Number/Name)</b> 672738 / <i>Weather Service</i>
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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 centralized web service capability (WDA Inc 4 (4D))	C/CPIF	Northrop Grumman : Bellevue, NE	-	2.959	Dec 2019	-		-		-		-	-	-	-
WDA, Develop web service, big data analytics, and ML/AI platform capabilities (WDA-Inc 5)	C/CPAF	NextGen Federal Systems : Morgantown, WV	-	3.400	Nov 2019	0.736	Nov 2020	1.801	Nov 2021	-		1.801	-	-	-
WDA 2, Development and integration of weather analysis software (Inc 4 AFW-WEBS)	C/CPFF	Raytheon : Long Beach, CA	-	1.689	Mar 2020	-		-		-		-	-	-	-
WARPspeed (E2P, Mission Services, GSWR)	Various	Various : Various	-	-		8.372	May 2021	8.099	Jan 2022	-		8.099	-	-	-
Commercial Weather Pilot Program	C/FFP	Various : Various	-	4.817	Feb 2021	10.000	Jun 2021	-		-		-	-	-	-
Research on Atmospheric Rivers	Various	Various : Various	-	1.963	Feb 2021	3.000	Jun 2021	-		-		-	-	-	-
Enhanced Weather Prediction	Various	Various : Various	-	2.890	Feb 2021	-		-		-		-	-	-	-
NWM 1 - Perform software enhancements to the mesoscale production model	MIPR	NCAR : Boulder, CO	-	0.668	Feb 2020	0.701	Mar 2021	-		-		-	-	-	-
NWM 2 - Improve land information system (LIS) application, providing earth surface boundary characterization for numerical modeling	Reqn	NASA : Greenbelt, MD	-	2.528	Feb 2020	2.462	Jan 2021	-		-		-	-	-	-
NWM - Develop and improve data assimilation techniques, system/ software optimization, and expanded system ingest/	Various	Various : Various	-	7.685	Jan 2020	4.342	May 2021	8.704	Jan 2022	-		8.704	-	-	-



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305111F / <i>Weather Service</i>	<b>Project (Number/Name)</b> 672738 / <i>Weather Service</i>
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
integration for enhanced modeling capabilities															
WS-LVC	C/CPIF	Northrop Grumman : Bellevue, NE	-	0.544	Apr 2020	-		-		-		-	-	-	-
SWAFS Magnetospheric Energized Charged Particle (ECP) Hazard Assessment System (HAS) Model Integration	PO	AFRL : Annapolis, MD	-	1.779	Oct 2019	3.181	Jan 2021	3.656	Jan 2022	-		3.656	-	-	-
SWAFS Cloud Transition Prep	C/FFP	Perspecta : Herndon, VA	-	-		0.418	Oct 2020	-		-		-	-	-	-
<b>Subtotal</b>			-	30.922		33.212		22.260		-		22.260	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	0.413	Jan 2020	0.581	Nov 2020	0.408	Nov 2021	-		0.408	-	-	-
<b>Subtotal</b>			-	0.413		0.581		0.408		-		0.408	-	-	N/A

<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	2.457	Oct 2019	2.280	Oct 2020	2.854	Oct 2021	-		2.854	-	-	-
FFRDC SMC	RO	Aerospace Corp : El Segundo, CA	-	0.500	Jan 2020	0.500	Jan 2021	0.706	Jan 2022	-		0.706	-	-	-
<b>Subtotal</b>			-	2.957		2.780		3.560		-		3.560	-	-	N/A



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**Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305111F / <i>Weather Service</i>	<b>Project (Number/Name)</b> 672738 / <i>Weather Service</i>
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FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b><i>Weather Service</i></b>	
Weather Data Analysis Inc 4 Build D Deliveries	
Weather Data Analysis Inc 5 Build A Deliveries	
WARPspeed	
Numerical Weather Modeling Deliveries	
Live, Virtual, and Constructive Deliveries	
Weather Data Analysis Inc 5 Build B Deliveries	
SWAFS- Energetic Charged Particle Hazard Assessment model (ECP HAS) Integration	
SWAFS Cloud Transition Prep	

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2022 Air Force **Date:** May 2021

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

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Weather Service</i></b>				
Weather Data Analysis Inc 4 Build D Deliveries	1	2020	1	2021
Weather Data Analysis Inc 5 Build A Deliveries	3	2020	1	2024
WARPspeed	1	2021	4	2024
Numerical Weather Modeling Deliveries	1	2020	4	2026
Live, Virtual, and Constructive Deliveries	1	2020	4	2020
Weather Data Analysis Inc 5 Build B Deliveries	3	2023	4	2025
SWAFS- Energetic Charged Particle Hazard Assessment model (ECP HAS) Integration	1	2020	4	2024
SWAFS Cloud Transition Prep	1	2020	4	2021

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development	<b>R-1 Program Element (Number/Name)</b> PE 0305114F I Air Traffic Control, Approach, and Landing System (ATCALs)
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	8.394	6.541	8.749	0.000	8.749	-	-	-	-	-	-
673587: Air Traffic Control Systems	-	8.394	6.541	8.749	0.000	8.749	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**Note**

This program, BA 7, PE 0305114F, project 673587, Man-Portable Electronically Scanned Antenna, is a new start.

**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, automation, 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 Air Traffic Control (ATC) Future Technology (AFT)(formerly referred to as the Federal Aviation Administration (FAA) Next Generation Air Transportation System (NextGen ATS)), Notice to Airmen (NOTAMs) software development, and development of of a Man-Portable Tactical Air Navigation (TACAN) electronically scanned antenna. The program name was changed to more accurately reflect the scope of the effort which includes military and civil capabilities/requirements. In order to enable safe and efficient military flight operations in a changing global airspace, the ATC Future Technology effort is designed to identify the warfighter's emerging airspace needs, analyze technologies, formulate requirements and positions, and advise DoD aviation and air traffic communities.

These efforts support the 2018 NDAA National Defense Strategy approach to "generate decisive and sustained U.S. military advantages" by enabling "forward force maneuver and posture resilience" through the research and development of technology and strategies that support adaptive, agile basing concepts of operations while providing ATCALs capabilities necessary to ensure enduring, resilient, efficient and safe air operations. ATC Future Technology will "evolve innovative operational concepts" by modernizing airfield operations and providing adaptive ATC services and systems appropriate for the current environment, which will bolster "Dynamic Force Employment" through scalable employment operations and globally deployable forces for the four layers of the "Global Operating Model: "contact, blunt, surge, and homeland".

FY22 efforts will continue to research and develop new technologies in the areas of aircraft launch and recovery for both fixed and expeditionary operations; operations in Global Positioning System (GPS) denied environments; military and civil airspace interoperability; optimization of flight operations; expeditionary technology development and prototyping; DoD/AF or civil US and international mandates (e.g., Mode-5); improved Notice to Airmen (NOTAMs) software capabilities; conduct of service operational test and evaluations as required; mitigation of windfarm interference (e.g., with Infill Radars); technology and evaluation of new civil air traffic control and landing system technologies that may have military utility to include an Early Operational Assessment (EOA) of Remote Virtual ATC Tower System technology, and Man-Portable TACAN antenna technology. As these technologies and architectures mature, fixed base and deployable ground system upgrades will be coordinated and fielded concurrently with related aircraft avionics capabilities that may be required (manned and unmanned). ATC Future Technology analysis and recommendations

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305114F / <i>Air Traffic Control, Approach, and Landing System (ATCALs)</i>
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may be captured in program charters and incorporated into the ATC Future Technology Strategic Roadmap. When implemented, these efforts will enable DoD aircraft to take advantage of new technologies and operational capabilities, to enhance safety, security, efficiency, affordability, and flight operations.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver the ATCALs weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.000M was expended for civilian pay expenses in this program element, and in FY21 \$0.000M is forecasted for civilian pay expenses in this program element.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	8.651	6.553	6.691	0.000	6.691
Current President's Budget	8.394	6.541	8.749	0.000	8.749
Total Adjustments	-0.257	-0.012	2.058	0.000	2.058
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-0.012			
• 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	-0.257	0.000			
• Other Adjustments	0.000	0.000	2.058	0.000	2.058

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<b>Title:</b> ATC Future Technology (AFT)	8.394	6.541	6.591	0.000	6.591
<b>Description:</b> Includes efforts to implement ATC Future Technologies efficiencies and capabilities. Focus is on aircraft launch and recovery, airspace interoperability, expeditionary technology development and prototyping, optimization of flight capability, adherence to mandates, technology research and analysis, Notice to Airmen software upgrades, ATC training and technology study, Early Operational Assessment of Remote Virtual Air Traffic Control Tower technology, and development of standards for certification of Infill radars to mitigate Windfarm interference to ATC surveillance radars.					
<b>FY 2021 Plans:</b>					
- Continues ATC Future Technology Analysis and Research which will include the following tasks:					

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305114F <i>I Air Traffic Control, Approach, and Landing System (ATCALs)</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
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-- Continues NOTAMs software upgrade.

-- Continues development and maturation of technology to support Aircraft Launch and Recovery for both expeditionary and fixed operations.

-- Continues supporting advancement in airspace interoperability between civilian and military fleets in both national and international airspace.

-- Continues to monitor emerging DoD/USAF and civil US and International mandates to ensure compliance of USAF fleets.

-- Continues Early Operational Assessment of a Remote Virtual Air Traffic Control Tower capability to assess ability to meet AF flying/ATC missions in lieu of brick and mortar control towers.

-- Continues preparation of source selection documentation and contract award for Man-Portable TACAN high power beacon transponder.

-- Continues Rapid Innovation Funds (RIF) contract award for multi-function radar

-- Continues development of Infill radar requirements and threshold parameters to enable operational validation for use in the National Airspace System.

-- Completes effort with FAA and Air Force Research Laboratory to develop air traffic control management technology and procedures/tools to ensure unmanned and manned aircraft can safely operate in civil airspace.

-- Completes ATC Training and Technology Study

**FY 2022 Base Plans:**

- Will continue ATC Future Technology Analysis and Research which will include the following tasks:

-- Will continue development and maturation of technology to support Aircraft Launch and Recovery for both expeditionary and fixed operations, such as the Small Footprint Precision Approach and Landing Capability

-- Will continue supporting advancement in airspace interoperability between civilian and military fleets in both national and international airspace.

-- Will continue to monitor emerging DoD/USAF and civil US and International mandates to ensure compliance of USAF fleets.

-- Will complete Early Operational Assessment of a Remote Virtual Air Traffic Control Tower capability to assess ability to meet AF flying/ATC missions in lieu of brick and mortar control towers.

-- Will award contract for Man-Portable TACAN high power beacon transponder.

-- Will continue multi-function radar development

-- Will continue development of Infill radar requirements and threshold parameters to enable operational validation for use in the National Airspace System.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305114F / <i>Air Traffic Control, Approach, and Landing System (ATCALs)</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>-- Will begin monitoring complementary and GPS alternative Position, Navigation, and Timing (PNT) developments to ensure early integration into ATCALs plans and programs</p> <p><b>FY 2022 OCO Plans:</b> None.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A</p>					
<p><b>Title:</b> Man-Portable Electronically Scanned Antenna</p> <p><b>Description:</b> Develops new electronically scanned antenna to replace the existing Man-Portable Tactical Air Navigation (TACAN) mechanical antenna. The new antenna will reduce system weight, improve reliability, and extend battery life. The Man-Portable TACAN provides aircraft with point-to-point navigating and instrument flight approaches to forward operating sites/landing zones and is critical to mission success in adverse weather conditions. It replaces 40+ year old legacy systems which are no longer supportable. The Man-Portable TACAN also supports the 2018 NDAA National Defense Strategy for rapidly deployable, adaptive, and scalable family of systems. A total of 68 systems will be procured (58 for the Active Duty and 10 for that Air National Guard.</p> <p><b>FY 2021 Plans:</b> N/A</p> <p><b>FY 2022 Base Plans:</b> - Will begin development of electronically scanned antenna to replace mechanical antenna and reduce weight, improve reliability, and extend battery life.</p> <p><b>FY 2022 OCO Plans:</b> None</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> New start.</p>	0.000	0.000	1.737	0.000	1.737
<p><b>Title:</b> NOTAMs Software</p> <p><b>Description:</b> The DoD NOTAMs system provides aircrews and airfield operations personnel with airfield conditions, temporary flight restrictions, navigation aid and airfield lighting outages, and special instructions for departing or landing at DoD airfields. Funding continues NOTAMs software development to incorporate</p>	0.000	0.000	0.421	0.000	0.421



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

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

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
International Civil Aviation Organization (ICAO) required digital codes, formats, and queries which enhance flight safety.					
<b><i>FY 2021 Plans:</i></b> NOTAMs software development FY20/21 funding included under ATC Future Technology (formerly NextGen Air Transportation System). In FY22, separate NOTAMs line established for continuation of NOTAMs Software.					
<b><i>FY 2022 Base Plans:</i></b> - Will continue NOTAMs software development.					
<b><i>FY 2022 OCO Plans:</i></b> None.					
<b><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i></b> In FY22, NOTAMs program moved from the AFT and established as a separate program.					
<b>Accomplishments/Planned Programs Subtotals</b>	8.394	6.541	8.749	0.000	8.749

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPAF 03 0305114F: <i>Air Traffic Control/Approach/Landing System (ATCALs)</i>	0.000	0.000	6.331	0.000	6.331	-	-	-	-	-	-

**Remarks**

**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 overall strategy for ATC Future Technology is focused on developing a long-term strategy for and executing the development of lightweight, scalable, readily deployable ATC equipment in order to support the National Defense Strategy.

Current contracting efforts include, but are not limited to, Early Operational Assessment (EOA) of Remote Virtual ATC Control Tower technology, Expeditionary Technology Development (including Man-Portable TACAN high power beacon transponder, Small Footprint PALC, multi-function radar, etc.), Prototyping, NOTAMs software upgrades, and Man-Portable TACAN Electronically Scanned Antenna development. Multiple ATC Future Technology Enterprise Architecture Implementation Tasks, Infill radar certification, and ATC Management of UASs are being executed via Military Inter-Departmental Purchase Requests, and Project Orders with various

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305114F / <i>Air Traffic Control, Approach, and Landing System (ATCALs)</i>	
<p>organizations (FAA, MITRE, Army, Air Force Research Laboratory, and Air Force Flight Standards Agency). The Remote Virtual ATC Control Tower EOA contract award was a full and open competition using Other Transaction Authority (OTA) procedures. The Expeditionary Technology Development and Prototyping and Man-Portable TACAN efforts will use full and open competition and Other Transaction Authority (OTA) procedures.</p> <p>The Air Force Program Executive Officer (PEO) Digital is the PEO for ATCALs and is also the delegated milestone decision authority. Program management, contracts, logistics, and financial management support is provided by the Air Force Life Cycle Management Center Aerospace Management Systems Division (AFLCMC/HBA) which is aligned under PEO/Digital.</p>		

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305114F / Air Traffic Control, Approach, and Landing System (ATCALs)	<b>Project (Number/Name)</b> 673587 / Air Traffic Control Systems
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Man-Portable TACAN Electronically Scanned Antenna	C/CPFF	AFLCMC/HBAA : Tinker AFB, OK	-	0.000		0.000		1.512	Mar 2022	-		1.512	-	-	-
AFT Expeditionary Technology Development and Prototyping	C/FFP	AFLCMC/HBA : Hanscom AFB, MA	-	3.287	Jan 2020	3.138	May 2021	3.297	Mar 2022	-		3.297	-	-	-
NOTAM Software	C/FFP	AFDW/PK : JB Andrews, MD	-	0.571	Feb 2021	0.424	Jun 2021	0.417	May 2022	-		0.417	-	-	-
<b>Subtotal</b>			-	3.858		3.562		5.226		-		5.226	-	-	N/A

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AFT Research/Analysis	MIPR	FAA : Washington, DC	-	0.000	Mar 2020	1.546	Feb 2021	2.188	Nov 2021	-		2.188	-	-	-
Travel	Various	Not specified. : TBD	-	0.112	Mar 2020	0.058	May 2021	0.090	Jan 2022	-		0.090	-	-	-
<b>Subtotal</b>			-	0.112		1.604		2.278		-		2.278	-	-	N/A

**Remarks**  
 Various contract types, performing activity and city/states are result of the use of Military Interdepartmental Purchase Requests (MIPR), Work Request (WR), Purchase Requests (PR), Project Orders (PO), etc. that are sent to multiple agencies in support of some tasks.

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AFT Remote Air Traffic Control Tower Capability EOA	WR	Various : Various	-	0.848	Feb 2020	0.850	Apr 2021	0.500	Feb 2022	-		0.500	-	-	-
AFT ATCALs Operational Test & Evaluation (OT&E)	WR	Various : Various	-	0.225	Dec 2020	0.225	Jun 2021	0.250	Jan 2022	-		0.250	-	-	-

**UNCLASSIFIED**

**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305114F / Air Traffic Control, Approach, and Landing System (ATCALs)	<b>Project (Number/Name)</b> 673587 / Air Traffic Control Systems
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<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AFT Infill Radar Certification	MIPR	FAA/AFRL : Washington/Griffiss, DC	-	3.000	May 2020	-		-		-		-	-	-	-
<b>Subtotal</b>			-	4.073		1.075		0.750		-		0.750	-	-	N/A

**Remarks**  
 Various contract types, performing activity and city/states are result of the use of Military Interdepartmental Purchase Requests (MIPR), Work Request (WR), Purchase Requests (PR), Project Orders (PO), etc. that are sent to multiple agencies in support of some tasks.  
 Operational FY22.

<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Man-Portable TACAN Electronically Scanned Antenna Program Management Administration (PMA)	C/CPAF	Various : OK City, Tinker AFB	-	-		-		0.225	Jan 2022	-		0.225	-	-	-
AFT PMA	C/CPFF	Various : Hanscom AFB, MA	-	0.351	Aug 2020	0.300	Dec 2020	0.270	Oct 2021	-		0.270	-	-	-
<b>Subtotal</b>			-	0.351		0.300		0.495		-		0.495	-	-	N/A

			Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			-	8.394	6.541	8.749	-	8.749	-	-	N/A

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305114F / Air Traffic Control, Approach, and Landing System (ATCALs)	<b>Project (Number/Name)</b> 673587 / Air Traffic Control Systems
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FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>Air Traffic Control Future Technology (AFT)</b>																												
Expeditionary Launch and Recovery Technology Development and Prototyping																												
Monitoring Emerging Mandates																												
Optimizing Flight Operations																												
Airspace Interoperability																												
Operations in GPS Denied Environments																												
Notice to Airmen (NOTAMs) Software Development																												
ATC Training and Technology Study																												
Fixed Remote Virtual ATC Tower EOA Installation/Integration/Site Prep																												
Fixed Remote Virtual ATC Tower EOA																												
Fixed Remote Virtual ATC Tower EOA Final Report (Apr 22)																												
Mobile Remote Virtual ATC Tower EOA/Site Prep/Equip Integration/Optimization																												
Mobile Remote Virtual ATC Tower EOA																												
Mobile Remote Virtual ATC Tower Report (Jun 22)																												
ATCALs Operational Test and Evaluation																												
Infill Radar Windfarm Mitigation Program Definition (WBS/SOW)																												
Infill Radar Windfarm Mitigation Criteria Development																												
Infill Radar Trial Validation																												



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305114F / <i>Air Traffic Control, Approach, and Landing System (ATCALs)</i>	<b>Project (Number/Name)</b> 673587 / <i>Air Traffic Control Systems</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Air Traffic Control Future Technology (AFT)</i></b>				
Expeditionary Launch and Recovery Technology Development and Prototyping	1	2020	4	2022
Monitoring Emerging Mandates	1	2020	4	2022
Optimizing Flight Operations	1	2020	4	2022
Airspace Interoperability	1	2020	4	2022
Operations in GPS Denied Environments	2	2022	4	2022
Notice to Airmen (NOTAMs) Software Development	2	2020	4	2021
ATC Training and Technology Study	3	2020	1	2021
Fixed Remote Virtual ATC Tower EOA Installation/Integration/Site Prep	1	2020	1	2021
Fixed Remote Virtual ATC Tower EOA	1	2021	3	2021
Fixed Remote Virtual ATC Tower EOA Final Report (Apr 22)	3	2021	3	2021
Mobile Remote Virtual ATC Tower EOA/Site Prep/Equip Integration/Optimization	3	2021	1	2022
Mobile Remote Virtual ATC Tower EOA	1	2022	3	2022
Mobile Remote Virtual ATC Tower Report (Jun 22)	3	2022	3	2022
ATCALs Operational Test and Evaluation	1	2020	4	2022
Infill Radar Windfarm Mitigation Program Definition (WBS/SOW)	1	2020	1	2021
Infill Radar Windfarm Mitigation Criteria Development	3	2020	4	2021
Infill Radar Trial Validation	1	2021	1	2022
UAS Management/Integration Into Civil Airspace WBS/SOW Prep	1	2020	2	2020
UAS Management/Integration Into Civil Airspace Policy/Data Exchange Model Development/Validation	3	2020	1	2021
<b><i>Man-Portable TACAN Electronically Scanned Antenna</i></b>				

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305114F / <i>Air Traffic Control, Approach, and Landing System (ATCALs)</i>	<b>Project (Number/Name)</b> 673587 / <i>Air Traffic Control Systems</i>
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<b>Events by Sub Project</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
Man-Portable TACAN Electronically Scanned Antenna Development	2	2022	4	2022
<b>NOTAMs Software</b>				
Software Development/Test	1	2022	4	2022



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305116F / <i>Aerial Targets</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	8.761	0.448	1.528	0.000	1.528	-	-	-	-	-	-
675136: <i>Target Systems Development</i>	-	4.791	0.448	1.528	0.000	1.528	-	-	-	-	-	-
675366: <i>QF-16</i>	-	3.970	0.000	0.000	0.000	0.000	-	-	-	-	-	-

**Note**

This program, BA 7, PE 0305116F, project 675136, Next Generation Aerial Target (NGAT), is a new start.

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

Full-scale Aerial Targets (FSAT), Subscale Aerial Targets (SSAT), Next Generation Aerial Targets (NGAT) and companion Target Control Systems (TCS) assure the effectiveness and currency of warfighter weapon systems to combat 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 live fire survivability and lethality testing before full rate production. 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, F-15, among other aircraft. Funding supports simulator development and improvements on the QF-16 FSAT, BQM-167A SSAT, NGAT, and updates of Target Control Systems and specialized target payload subsystems for requirements such as: missile scoring, electronic attack (EA), infrared (IR) countermeasures, radar/IR signature augmentation, and chaff and flare dispensing systems. Enables analysis, development and prototyping of threat emulations/simulations, and presentation of evolving threat scenarios and target area environments to prepare for emerging weapons development activities. Development is required to evolve aerial targets and target control capabilities to meet current and future threats. Air Force is the executive agent for full-scale aerial targets. The Navy is the lead service for subscale aerial targets.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0M was expended for civilian pay expenses in this program element, and in FY21 \$0M is forecasted for civilian pay expenses in this program element.

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.

**UNCLASSIFIED**

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305116F / <i>Aerial Targets</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	7.448	0.449	1.551	0.000	1.551
Current President's Budget	8.761	0.448	1.528	0.000	1.528
Total Adjustments	1.313	-0.001	-0.023	0.000	-0.023
• Congressional General Reductions	0.000	-0.001			
• 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	1.460	0.000			
• SBIR/STTR Transfer	-0.147	0.000			
• Other Adjustments	0.000	0.000	-0.023	0.000	-0.023

**Change Summary Explanation**

FY20: Reprogramming supports Electronic Attack (EA) design studies associated with aerial target platforms and their complementary payload subsystems.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0305116F / Aerial Targets				Project (Number/Name) 675136 / Target Systems Development			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
675136: <i>Target Systems Development</i>	-	4.791	0.448	1.528	0.000	1.528	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

This program, BA 7, PE 0305116F, project 675136, Next Generation Aerial Target (NGAT), is a new start.

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

Full-scale Aerial Targets (FSAT), Subscale Aerial Targets (SSAT), Next Generation Aerial Targets (NGAT) 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 (EA), and infrared (IR) devices. Funding supports continued improvement of overall performance enhancement efforts to meet evolving threats. 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, EA and IR countermeasures, radar and IR signature augmentation, chaff and flare dispensing systems, and overall target threat emulation.

EA payload upgrades provide new techniques and capabilities critical to subscale, mid-scale, and full-scale targets to realistically emulate current and emerging foreign threat systems in support of weapons testing.

TCS provides a myriad of sub-systems that, together, deliver the capability to control and track mission aerial targets 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, and the full safety of mission participants throughout the conduct and fulfillment of Test and Evaluation (T&E) objectives. Funding supports continued improvement of TCS capabilities to effectively meet the multi-service T&E demands of current and future warfighter weapon systems.

NGAT seeks to conduct early systems engineering and risk reduction activities to identify and mitigate the major risks associated with developing a new aerial target equipped with modern, threat representative, EA and associated subsystems needed for live fire air-to-air missile tests. NGAT seeks to represent as well as keep pace with adversary aircraft developments to present an up to date, realistic target for live-fire testing. These activities include design concept studies, engineering analysis, Radar Cross Section (RCS) measurements, RCS modeling Verification and Validation (V&V), and early prototyping and demonstration events as a proof of concept. Efforts will include engineering and design activities needed to modify prototype airframes with representative EA payloads as well as other subsystems unique to live-fire target missions, including, but not limited to, the design and integration of systems needed for missile scoring, telemetry, and target and payload control. Results

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305116F / <i>Aerial Targets</i>	<b>Project (Number/Name)</b> 675136 / <i>Target Systems Development</i>
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will lead to informed requirements development as well as indicate viable mid and far term solutions. Successful prototype demonstrations could lead to continued development and acquisition of a limited number of prototypes to continue refining the design and determine viability and cost/schedule risks in follow on efforts.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0M was expended for civilian pay expenses in this program element, and in FY21 \$0M is forecasted for civilian pay expenses in this program element.

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Title:</b> AFSAT (BQM-167A) Development</p> <p><b>Description:</b> Provide enhancements to AFSAT (BQM-167A) ability to emulate emerging threats in support of weapon testing.</p> <p><b>FY 2021 Plans:</b> N/A</p> <p><b>FY 2022 Plans:</b> Continue system upgrades to support expanded AFSAT capabilities to support achieving emulation of emerging threat targets as our adversaries develop and expand their arsenals.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding increased due to FY21 funds being moved to higher service priorities.</p>	3.037	0.025	0.976
<p><b>Title:</b> Digital Radio Frequency Memory (DRFM)</p> <p><b>Description:</b> Develop, improve, and update specialized target payload subsystems, both software and hardware, for requirements to emulate evolving adversary EA, IR, and radar tactics and techniques. These efforts are continuous as new threat intelligence surfaces, and are level of effort projects based on available funding.</p> <p><b>FY 2021 Plans:</b> N/A</p> <p><b>FY 2022 Plans:</b> N/A</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A</p>	0.399	0.000	0.000
<p><b>Title:</b> Target Control System</p> <p><b>Description:</b> Provide system enhancements to Advance Airborne Threat Target Control System (AATTCS), formerly known as Gulf Range Drone Control System (GRDCS), for command and control and tracking of aerial targets. Funding may be utilized for development of control systems for next generation aerial targets.</p>	1.355	0.423	0.453

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305116F / <i>Aerial Targets</i>	<b>Project (Number/Name)</b> 675136 / <i>Target Systems Development</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b><i>FY 2021 Plans:</i></b> Continue system upgrades to include, but not limited to, AATTCS software updates to support implementing QF-16, AFSAT, TCS enhancements and future TCS capability assessments.</p> <p><b><i>FY 2022 Plans:</i></b> Continue system upgrades to include, but not limited to, AATTCS software updates to support implementing QF-16, AFSAT, NGAT, TCS enhancements and future TCS capability assessments.</p> <p><b><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i></b> Funding increased due to manpower needs to address capability gaps in TCS.</p>			
<p><b><i>Title:</i></b> Next Generation Aerial Target (NGAT)</p> <p><b><i>Description:</i></b> NGAT seeks to conduct early systems engineering and risk reduction activities to identify and mitigate the major risks associated with developing a new aerial target for live fire surface-to-air, ship-to-air, and air-to-air missile tests.</p> <p><b><i>FY 2021 Plans:</i></b> N/A</p> <p><b><i>FY 2022 Plans:</i></b> Conduct limited initial design efforts to identify risks in future fabrication, installation, and ground/flight test of prototype electronic attack and other associated equipment needed to complete analysis of potential aerial target alternatives.</p> <p><b><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i></b> NGAT is a FY22 new start.</p>	0.000	0.000	0.099
<b>Accomplishments/Planned Programs Subtotals</b>	4.791	0.448	1.528

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• APAF 04 Line Item 10TRGT: <i>Target Drones</i>	130.837	133.273	116.169	-	116.169	-	-	-	-	-	-
• APAF 06 000999: <i>Initials Spares</i>	0.589	0.600	0.600	-	0.600	-	-	-	-	-	-
• APAF 07 000074: <i>War Consumables</i>	4.012	4.757	4.759	-	4.759	-	-	-	-	-	-
• APAF 07 Line Item 000075: <i>Other Production Charges</i>	16.514	16.495	16.450	-	16.450	-	-	-	-	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305116F / <i>Aerial Targets</i>	<b>Project (Number/Name)</b> 675136 / <i>Target Systems Development</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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**Remarks**

RDTE, BA 07: Aerial Targets - Includes funding for BPAC 675366, QF-16.

APAF, BA 04: Target Drones 10TRGT - Full Scale and Subscale Aerial Targets assure warfighters' weapon systems will perform effectively against real-world enemy fighters and cruise missiles. Adheres to Public Law title 10, Section 2366 "Live fire/Lethality" developmental/operational test requirements.

APAF, BA 06: Initial Spares/Repair Parts - Aircraft Initial Spares are required to fill the initial pipeline or inventory for all new aircraft systems, including modifications, support equipment, and other production categories. Initial spares include peculiar repairable and consumable components, assemblies, and sub-assemblies that must be available for issues at all levels of supply in time to support newly fielded end items.

APAF, BA 07: War Consumables - AFSAT Rocket-Assisted Take-Off (RATO) requirements executed at Hill AFB. A RATO is used in the initial launch phase to obtain appropriate speed and altitude.

APAF, BA 07: Other Production Charges - ALQ-167 and/or DLQ-9 Electronic Attack (EA) payloads for target drones including support equipment. Payloads emulate threat aircraft electronic countermeasures and jamming capabilities.

**D. Acquisition Strategy**

The AFSAT acquisition strategy is a sole source follow-on contract. The Target Control System acquisition strategy includes several small projects to provide enhancements to TCS (to include AATTCS) and will be accomplished with other government agencies and contracts as needed. EA Payloads acquisition strategy includes several small projects managed by the US Navy program office to provide enhancements to the target payloads for aerial targets. Similarly, the acquisition strategy for NGAT includes multiple contract awards to various contractors as well as support from other government agencies.



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**Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force** **Date: May 2021**

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305116F / <i>Aerial Targets</i>	<b>Project (Number/Name)</b> 675136 / <i>Target Systems Development</i>
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	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>Target System Development</b>	
BQM-167A: AFSAT GAPP	
TCS: Future TCS	
EA Pods: Multi-Channel Digital Radio Frequency Memory (DRFM); Hardware	
EA Pods: Multi-Channel Digital Radio Frequency Memory (DRFM); Software Spiral Upgrade	
NGAT: Analysis	



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305116F / <i>Aerial Targets</i>	<b>Project (Number/Name)</b> 675136 / <i>Target Systems Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Target System Development</i></b>				
BQM-167A: AFSAT GAPP	3	2020	3	2023
TCS: Future TCS	1	2020	4	2026
EA Pods: Multi-Channel Digital Radio Frequency Memory (DRFM); Hardware	1	2020	3	2022
EA Pods: Multi-Channel Digital Radio Frequency Memory (DRFM); Software Spiral Upgrade	1	2020	3	2022
NGAT: Analysis	1	2022	3	2022

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0305116F / <i>Aerial Targets</i>				<b>Project (Number/Name)</b> 675366 / <i>QF-16</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
675366: <i>QF-16</i>	-	3.970	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

Full-scale Aerial Targets (FSAT) ensure 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 live fire survivability and lethality testing before full-rate production. 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, F-15 aircraft, among other aircraft. Funding supports simulator development and improvements on the QF-16 FSAT, and updates of Target Control Systems (TCS) and specialized target payload subsystems for requirements such as: missile scoring, electronic attack (EA) 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 better meet 5th generation threat representation which includes, but not limited to, additional simultaneous operation of payloads, improved RCS, and other characteristics to enable current and future test objectives to be met.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0M was expended for civilian pay expenses in this program element, and in FY21 \$0M is forecasted for civilian pay expenses in this program element.

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> QF-16 Development Program	3.970	0.000	0.000
<b>Description:</b> Provide enhancements to emulate emerging threat(s) in support of weapons testing. Funding may be utilized for development of follow-on aerial target capabilities.			
<b>FY 2021 Plans:</b> N/A			
<b>FY 2022 Plans:</b> N/A			
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A			
<b>Accomplishments/Planned Programs Subtotals</b>	3.970	0.000	0.000

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305116F / <i>Aerial Targets</i>	<b>Project (Number/Name)</b> 675366 / <i>QF-16</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APAF 04 Line Item 10TRGT: <i>Target Drones</i>	130.837	133.273	116.169	-	116.169	-	-	-	-	-	-
• APAF 06 000999: <i>Initial Spares</i>	0.589	0.600	0.600	-	0.600	-	-	-	-	-	-
• APAF 07 000074: <i>War Consumables</i>	4.012	4.757	4.759	-	4.759	-	-	-	-	-	-
• APAF 07 Line Item 00075: <i>Other Production Charges</i>	16.514	16.495	16.450	-	16.450	-	-	-	-	-	-

**Remarks**

RDTE, BA07: Aerial Targets - Includes BPAC 675136, Target Systems Development.

APAF, BA 04: Target Drones 10TRGT - Full Scale and Subscale Aerial Targets assure warfighter's weapon systems will perform effectively against real-world enemy fighters and cruise missiles. Adheres to Public Law title 10, Section 2366 "Live fire/Lethality" developmental/operational test requirements.

APAF, BA 06: Initial Spares/Repair Parts - Aircraft Initial Spares are required to fill the initial pipeline or inventory for all new aircraft systems, including modifications, support equipment, and other production categories. Initial spares include peculiar repairable and consumable components, assemblies, and sub-assemblies that must be available for issues at all levels of supply in time to support newly fielded end items.

APAF, BA 07: War Consumables - AFSAT Rocket-Assisted Take-Off (RATO) requirements executed at Hill AFB. A RATO is used in the initial launch phase to obtain appropriate speed and altitude.

APAF, BA 07: Other Production Charges - ALQ-167 and/or DLQ-9 Electronic Attack (EA) payloads for target drones including support equipment. Payloads emulate threat aircraft electronic countermeasures and jamming capabilities.

**D. Acquisition Strategy**

Initial QF-16 contract was a competitively awarded contract that included development and production options. Any future development efforts to provide capability upgrades to improve target presentation, tracking, control, or to keep the platform current, may be awarded separately. Evaluation is currently underway to award a sole source follow-on production and sustainment contract to the incumbent for Lots 6-8.



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**Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305116F / <i>Aerial Targets</i>	<b>Project (Number/Name)</b> 675366 / <i>QF-16</i>
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FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>QF-16 Development Programs</b>	
QF-16 Multi-Payload Control (MPC)	

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2022 Air Force **Date:** May 2021

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

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>QF-16 Development Programs</i></b>				
QF-16 Multi-Payload Control (MPC)	1	2020	1	2022

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305128F / <i>Security and Investigative Activities</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	0.409	0.431	0.223	0.000	0.223	-	-	-	-	-	-
671931: <i>TECH SURVEIL COUNTER MEAS EQPT</i>	-	0.409	0.431	0.223	0.000	0.223	-	-	-	-	-	-
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 element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 0.00M was expended for civilian pay expenses in this program element, and in FY21 0.00M is forecasted for civilian pay expenses in this program element.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305128F / <i>Security and Investigative Activities</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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	0.425	0.432	0.441	0.000	0.441
Current President's Budget	0.409	0.431	0.223	0.000	0.223
Total Adjustments	-0.016	-0.001	-0.218	0.000	-0.218
• 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	-0.016	-0.001	-0.218	0.000	-0.218

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> TSCM	0.409	0.431	0.223
<b>Description:</b> 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.			
<b>FY 2021 Plans:</b> Develop law enforcement and counterintelligence restricted tools			
<b>FY 2022 Plans:</b> Develop law enforcement and counterintelligence restricted tools			
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Increased due to higher development costs			
<b>Accomplishments/Planned Programs Subtotals</b>			0.223



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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force Date: May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305128F / <i>Security and Investigative Activities</i>
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**D. Other Program Funding Summary (\$ in Millions)**  
N/A

**Remarks**

**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.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305128F / Security and Investigative Activities	<b>Project (Number/Name)</b> 671931 / TECH SURVEIL COUNTER MEAS EQPT
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<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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	C/CPAF	Not specified. : TBD	-	-		-		0.000		-		0.000	-	-	-
TSCM R/D	MIPR	HQ AFOSI : Quantico, VA	-	0.409	Apr 2020	0.431	Apr 2021	0.223	Apr 2022	-		0.223	-	-	-
<b>Subtotal</b>			-	0.409		0.431		0.223		-		0.223	-	-	N/A
<b>Project Cost Totals</b>			-	0.409		0.431		0.223		-		0.223	-	-	N/A

**Remarks**  
 Funds support AFOSI RDTE at the intelligence community's Interagency Test and Evaluation Lab at a secure location to identify, research, develop, test, and evaluate classified and unclassified technical surveillance and countermeasures solutions to emerging operational requirements in support of AFOSI services to protect Air Force and DoD resources.

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305128F / <i>Security and Investigative Activities</i>	<b>Project (Number/Name)</b> 671931 / <i>TECH SURVEIL COUNTER MEAS EQPT</i>

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>Technical Surveillance Equipment Test &amp; Evaluation</b>	
Transition from Phase II TSCM LASER Project to Phase III	
Complete Phase III (Final) TSCM LASER Project	
Tech Service Ops Advanced Tool Development	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305128F / <i>Security and Investigative Activities</i>	<b>Project (Number/Name)</b> 671931 / <i>TECH SURVEIL COUNTER MEAS EQPT</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Technical Surveillance Equipment Test &amp; Evaluation</i></b>				
Transition from Phase II TSCM LASER Project to Phase III	1	2020	4	2020
Complete Phase III (Final) TSCM LASER Project	1	2021	4	2021
Tech Service Ops Advanced Tool Development	1	2022	4	2026

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305145F / <i>Arms Control Implementation</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	40.177	0.000	0.000	0.000	0.000	-	-	-	-	-	-
674283: <i>Open Skies Treaty Aircraft Recap</i>	-	40.177	0.000	0.000	0.000	0.000	-	-	-	-	-	-

**Note**

The United States formally withdrew from the 1992 Open Skies Treaty on Nov. 22, 2020.

**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.

In October 2016, the Air Force used a multi-disciplinary High Performance Team to create and validate a series of required capabilities for an Open Skies aircraft, evaluate aircraft that could satisfy the required capabilities, and then consider each of the Doctrine, Organization, Training, materiel, Leadership and Education, Personnel, Facilities and Policy elements as part of a recommended solution. The effort accomplished two main purposes. First, it updated operational requirement and replaced the 1992 Operational Requirements Document to reflect both operational experience and expected Open Skies program needs for the foreseeable future. Second, it recommended an Air Force solution that best satisfied required capabilities within existing materiel solutions. The Joint Capabilities Board adopted the Air Force recommendation and directed acquisition of two small airliner class aircraft for the Open Skies Treaty mission to be acquired in a method consistent with the Federal Acquisition Regulation and other applicable guidance, training using existing contractor training facilities, equipment, and curriculum, and a maintenance concept with military personnel performing unit-level maintenance actions with contractor support for parts supply, and supply chain management, performed under a Low Utilization Maintenance Program.

This effort includes the design, development, and test activities for two OC-135B replacement weapon systems. This effort will modify a Federal Aviation Administration (FAA) certified, commercial-off-the-shelf, small airliner class aircraft. System Development requires structural design, interphone communications systems, flight deck avionics and modification to incorporate the Digital Visual Imaging System (DVIS) system.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver the OC-135B Open Skies Treaty weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.000M was expended for civilian pay expenses in this program element, and in FY21 \$0.000M is forecasted for civilian pay expenses in this program element.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305145F / <i>Arms Control Implementation</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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	41.546	0.000	37.543	0.000	37.543
Current President's Budget	40.177	0.000	0.000	0.000	0.000
Total Adjustments	-1.369	0.000	-37.543	0.000	-37.543
• 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	-1.369	0.000			
• Other Adjustments	0.000	0.000	-37.543	0.000	-37.543

**Change Summary Explanation**

FY 2020 funding reduced by \$1.369 million for Small Business Innovation Research.

FY 2022 funding request reduced by \$37.543 million due to Office of Secretary of Defense direction to cease all Open Skies Treaty Aircraft Recapitalization activities as a result of the United States formally withdrawing from the 1992 Open Skies Treaty.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0305145F / Arms Control Implementation				<b>Project (Number/Name)</b> 674283 / Open Skies Treaty Aircraft Recap			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
674283: Open Skies Treaty Aircraft Recap	-	40.177	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The Open Skies Treaty permits unarmed overflight of the sovereign territory of 34 signatory nations. The Treaty enhances mutual understanding and confidence by giving all participants, regardless of size, a direct role in gathering information through aerial imaging on military forces and activities of concern. Open Skies is one of the most wide-ranging international arms control efforts to date to promote openness and transparency in military forces and activities.

The Department of Defense is responsible for oversight, implementation of, and compliance with, arms control agreements, including the Open Skies Treaty. The United States Air Force has a requirement to execute missions under the Open Skies Treaty and utilizes two OC-135B aircraft as the observation aircraft. All roles and responsibilities are called out in Presidential Policy Directive 15, "Implementation of the Treaty on Open Skies," Mar 1, 2012. The OC-135B fleet has experienced decreasing mission reliability due to age, difficulties with out-of-production parts, and increasing operating costs. Open Skies missions averaged a 65% mission completion rate over the ten-year period from 2007 to 2017 with leading non-mission capable drivers being the engines, fuel system, landing gear, generators, and airframe. Additionally, the OC-135B aircraft's 6,500 km range is insufficient to fully execute mission options within the 96-hour in-country Treaty observation time constraint permitted under Treaty.

The Department of Defense, motivated by operational limitations of the OC-135B experienced during Open Skies missions combined with declining mission capability, prompted program officials to request a Capabilities-Based Assessment in July 2015 to study aircraft issues. The effort which completed in June 2016 indicated that key requirements within the 1992 Open Skies Operational Requirements Document were no longer current, and that the OC-135B had known capability performance gaps in range and mission completion.

In October 2016, the Air Force used a multi-disciplinary High Performance Team to create and validate a series of required capabilities for an Open Skies aircraft, evaluate aircraft that could satisfy the required capabilities, and then consider each of the Doctrine, Organization, Training, materiel, Leadership and Education, Personnel, Facilities and Policy elements as part of a recommended solution. The effort accomplished two main purposes. First, it updated operational requirement and replaced the 1992 Operational Requirements Document to reflect both operational experience and expected Open Skies Treaty program needs for the foreseeable future. Second, it recommended an Air Force solution that best satisfied required capabilities within existing materiel solutions. The Joint Capabilities Board adopted the Air Force recommendation and directed acquisition of two small airliner class aircraft for the Open Skies Treaty Aircraft Recap (OSTAR) mission to be acquired in a method consistent with the Federal Acquisition Regulation and other applicable guidance, training using existing contractor training facilities, equipment, and curriculum, and a maintenance concept with military personnel performing unit-level maintenance actions with contractor support for parts supply, and supply chain management, performed under a Low Utilization Maintenance Program.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305145F / Arms Control Implementation	<b>Project (Number/Name)</b> 674283 / Open Skies Treaty Aircraft Recap
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This effort includes the design, development, and test activities for two OC-135B replacement weapon systems. This effort will modify a Federal Aviation Administration (FAA) certified, commercial-off-the-shelf, small airliner class aircraft. System Development requires structural design, interphone communications systems, flight deck avionics and modification to incorporate the Digital Visual Imaging System (DVIS).

This program element may include necessary civilian pay expenses required to manage, execute, and deliver the OC-135B Open Skies Treaty weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.000M was expended for civilian pay expenses in this program element, and in FY21 \$0.000M is forecasted for civilian pay expenses in this program element.

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Title:</b> Open Skies Treaty Aircraft Recap Development</p> <p><b>Description:</b> The Open Skies System consists of the missionized aircraft (Digital Visual Imaging System sensor suite, flight deck avionics, and crew workstations) and Digital Ground Processing Station.</p> <p>The budget supports modification and Treaty Certification of two commercial-off-the-shelf, small airliner class OC-135B replacement aircraft. The program includes procurement of two commercial-derivative aircraft and Digital Visual Imaging System kits, design and development for mission system integration (structural design, interphone communications systems, flight deck avionics, and Digital Visual Imaging System hardware), test, and Federal Aviation Administration and Open Skies Treaty certification activities. Additionally, this effort establishes pre-operational support for aircraft, mission systems and Digital Ground Processing Station.</p> <p><b>FY 2021 Plans:</b> N/A</p> <p><b>FY 2022 Plans:</b> N/A</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A</p>	40.177	0.000	0.000
<b>Accomplishments/Planned Programs Subtotals</b>	40.177	0.000	0.000

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APAF 01 C135B0: C-135B	-	-	-	-	-	-	-	-	-	-	-
<b>Remarks</b>											



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Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force		Date: May 2021
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305145F / Arms Control Implementation	Project (Number/Name) 674283 / Open Skies Treaty Aircraft Recap

**D. Acquisition Strategy**

The Air Force Milestone Decision Authority approved the Open Skies Treaty Aircraft Recapitalization Materiel Development Decision (MDD) and revised Acquisition Strategy on 22 January 2020. The program was to award two contracts for aircraft purchase and development with embedded services for Contractor Logistics Support and Engineering Services. The program will utilize Full and Open Competition under Part 12 and Part 14 of the Federal Acquisition Regulation. The program will procure aircraft capable of achieving Open Skies Treaty Missions, integrate new treaty certified commercial-off-the-shelf Digital Visual Imaging Systems, and perform required Developmental Test, Operational Test, and Treaty Certification Data Gathering. The program will establish Pre-operational Support for aircraft, mission systems and the Digital Ground Processing Station necessary to deliver an aircraft, ready for Treaty Certification. The program provided for Engineering Services necessary to support the Treaty Certification process. Contractor Logistics Support elements included worldwide supply chain management, establishment of a Contractor Managed Base Supply, program management, depot maintenance, training services, field support, and engineering services for the aircraft, engines, and mission systems.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force												Date: May 2021				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 7				PE 0305145F / Arms Control Implementation				674283 / Open Skies Treaty Aircraft Recap								
<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
Product Development	C/CPAF	Not specified. : TBD	-	33.848	Aug 2021	-		-		-		-	-	-	-	
<b>Subtotal</b>			-	33.848		-		-		-		-	-	-	N/A	
<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
Acquisition Support	Allot	Not specified. : TBD	-	3.021	Sep 2020	-		-		-		-	-	-	-	
<b>Subtotal</b>			-	3.021		-		-		-		-	-	-	N/A	
<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
Tech Orders	TBD	Not specified. : TBD	-	1.900	Mar 2021	-		-		-		-	-	-	-	
<b>Subtotal</b>			-	1.900		-		-		-		-	-	-	N/A	
<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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 Support Costs	Various	Not specified. : Tinker AFB, OK	-	1.408	Jan 2020	-		-		-		-	-	-	-	
<b>Subtotal</b>			-	1.408		-		-		-		-	-	-	N/A	
<b>Project Cost Totals</b>			Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract					
<b>Project Cost Totals</b>			-	40.177	0.000	-	-	-	-	-	N/A					

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2022 Air Force							<b>Date:</b> May 2021			
<b>Appropriation/Budget Activity</b> 3600 / 7			<b>R-1 Program Element (Number/Name)</b> PE 0305145F / Arms Control Implementation			<b>Project (Number/Name)</b> 674283 / Open Skies Treaty Aircraft Recap				
	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>	

**Remarks**  
Government Support Cost include costs related to program office travel and government led test.

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305145F / Arms Control Implementation	<b>Project (Number/Name)</b> 674283 / Open Skies Treaty Aircraft Recap

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>Open Skies Treaty Aircraft Recap</b>																												
Aircraft Contract Source Selection																												
Aircraft Contract Award																												
Development Contract Source Selection																												
Development Contract Award																												
Design/Integration																												
Install/Test																												
Ready for Treaty Certification																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305145F / Arms Control Implementation	<b>Project (Number/Name)</b> 674283 / Open Skies Treaty Aircraft Recap

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Open Skies Treaty Aircraft Recap</b>				
Aircraft Contract Source Selection	3	2020	4	2020
Aircraft Contract Award	4	2020	4	2020
Development Contract Source Selection	4	2020	4	2021
Development Contract Award	4	2021	4	2021
Design/Integration	4	2021	4	2023
Install/Test	4	2023	2	2024
Ready for Treaty Certification	2	2024	2	2024

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305146F / <i>Defense Joint Counterintelligence Activities</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	6.858	4.881	8.733	0.000	8.733	-	-	-	-	-	-
671931: <i>TECH SURVEIL COUNTER MEAS EQPT</i>	-	6.858	4.881	8.733	0.000	8.733	-	-	-	-	-	-
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 CI operations in support of DoD and AF requirements.

Cyber CI enables the Air Force Office of Special Investigations to detect and deter covert activities conducted by Foreign Intelligence Entities seeking to compromise classified or sensitive information in cyberspace. The technologies provided will provide state of the art capabilities to detect and neutralize criminal activities targeted against sensitive and classified AF and DoD information and 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><u>B. Program Change Summary (\$ in Millions)</u></b>	<b><u>FY 2020</u></b>	<b><u>FY 2021</u></b>	<b><u>FY 2022 Base</u></b>	<b><u>FY 2022 OCO</u></b>	<b><u>FY 2022 Total</u></b>
Previous President's Budget	6.858	4.890	6.862	0.000	6.862
Current President's Budget	6.858	4.881	8.733	0.000	8.733
Total Adjustments	0.000	-0.009	1.871	0.000	1.871
• 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	-0.009	1.871	0.000	1.871

**Change Summary Explanation**

Funding increased to develop counter measures to address increased threats.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305146F / <i>Defense Joint Counterintelligence Activities</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Title:</b> Technical Surveillance Countermeasures (TSCM)</p> <p><b>Description:</b> 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><b>FY 2021 Plans:</b> Continue advancement of BLUE LANCER</p> <p><b>FY 2022 Plans:</b> Continue advancement of BLUE LANCER</p>	0.378	0.382	0.382
<p><b>Title:</b> Cyber Counterintelligence Pilot</p> <p><b>Description:</b> N/A</p> <p><b>FY 2021 Plans:</b> Continue R&amp;D for new iterations for Cyber CI/COPER CASTLE</p> <p><b>FY 2022 Plans:</b> Continue R&amp;D for new iterations for Cyber CI/COPER CASTLE</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Increase due higher development activity</p>	6.480	4.499	8.351
<b>Accomplishments/Planned Programs Subtotals</b>	6.858	4.881	8.733

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• O&M 35146F: <i>Defense Joint Counterintelligence Program</i>	57,429.000	61,430.000	64,082.000	-	64,082.000	-	-	-	-	-	-

**Remarks**

**E. Acquisition Strategy**  
Defense Joint Counterintelligence Program TSCM funds will be obligated on competitively awarded contracts. Cyber counterintelligence (CI) funding will be obligated on an existing Air Force contract with MIT/Lincoln Labs.







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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305146F / <i>Defense Joint Counterintelligence Activities</i>	<b>Project (Number/Name)</b> 671931 / <i>TECH SURVEIL COUNTER MEAS EQPT</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Develop Cyber CI/Copper Castle</i></b>				
Develop Counterintelligence Equipment and Software	1	2020	4	2026

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305179F / <i>Integrated Broadcast Service (IBS)</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	8.728	8.848	21.335	0.000	21.335	-	-	-	-	-	-
674779: <i>Integrated Broadcast Service (IBS)</i>	-	8.728	8.848	21.335	0.000	21.335	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

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 development efforts are 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 the development and/or upgrades of IBS (IBS-NS, CIB, and CMF)

This project will identify and implement an open system architecture that will accommodate growth as the migration continues to cloud hosted enterprise services. Additionally, IBS is a critical data information provider supporting Joint All Domain Command and Control and the emerging requirements for Advanced Battle Management System information exchange requirements.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver IBS system capability. In FY20 \$0.000M was expended for civilian pay expenses in this program element, and in FY21 \$0.000M is forecasted for civilian pay expenses in this program element.

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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305179F / <i>Integrated Broadcast Service (IBS)</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	8.728	8.864	9.050	0.000	9.050
Current President's Budget	8.728	8.848	21.335	0.000	21.335
Total Adjustments	0.000	-0.016	12.285	0.000	12.285
• Congressional General Reductions	0.000	-0.016			
• 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	12.285	0.000	12.285

**Change Summary Explanation**

FY21: \$0.016M Congressional Reduction of equal spread across AF RDT&E programs

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
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<b>Title:</b> Development/upgrades of the Integrated Broadcast Service (IBS-NS, CIB, and CMF)	6.906	6.854	19.341
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**Description:** Development/upgrades of the IBS (IBS-NS, CIB, and CMF).

***FY 2021 Plans:***

- Continued efforts to synchronize and integrate with DOD Intelligence Community (IC) Cloud as a potential producer/consumer; the capability will provide a long term searchable data store for IBS information.
- Continued efforts to upgrade the IBS Enterprise-level real-time and analytic views on Global and CCMDs watch floors; further integrate uplink sites with associated TIN by reducing equipment overhead and streamlining data flows
- Continued efforts 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
- Continued efforts to provide resilience to the IBS CIB UHF Broadcast by utilizing the Mobile User Objective System (MUOS) Wideband Code Division Multiple Access (WCDMA) SATCOM payload supporting the receipt of IBS on 1st generation MUOS terminals

	6.906	6.854	19.341
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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305179F / <i>Integrated Broadcast Service (IBS)</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<ul style="list-style-type: none"> <li>- Continued efforts to upgrade and connect the Combatant Command (CCMD) J2 CIB planning function with the CCMD J6 Integrated Waveform planning function</li> <li>- Continued efforts to upgrade the CIB Planning Tool and IBS-NS capability at the CCMDs to allow automated planning to occur for active producers</li> <li>- Continued development of the IBS Thin Client, which provides a light weight application to receive IBS information on mobile devices</li> <li>- Continued development of the CIB MUOS Group Integration - Many to Many, which achieves IBS Over the Air requirements on the MUOS - WCDMA payload</li> <li>- Continued efforts to upgrade the P5 system health and welfare status at the COCOMs to include Alternate Path status update messages</li> <li>-- Continued efforts to upgrade the resiliency of IBS to include polar coverage</li> <li>- Continued efforts to upgrade and transition current classified dissemination path to new architecture and enable SCI-level dissemination of IBS data</li> <li>- Continued efforts enhancement of uplink sites to handle operational surge increases</li> <li>- Continued efforts to upgrade the monitoring and control tools to assist in assured dissemination tasks at COCOM uplink watch sites, development and fielding of Downlink Monitoring Element (DME)</li> </ul> <p><b>FY 2022 Plans:</b></p> <ul style="list-style-type: none"> <li>- Will continue to synchronize and integrate with DOD Intelligence Community (IC) Cloud as a potential producer/consumer; the capability will provide a long term searchable data store for IBS information.</li> <li>- Will continue to upgrade the IBS Enterprise-level real-time and analytic views on Global and CCMDs watch floors; further integrate uplink sites with associated TIN by reducing equipment overhead and streamlining data flows</li> <li>- 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</li> </ul>			

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305179F / <i>Integrated Broadcast Service (IBS)</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
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- Will continue to provide resilience to the IBS CIB UHF Broadcast by utilizing the Mobile User Objective System (MUOS) Wideband Code Division Multiple Access (WCDMA) SATCOM payload supporting the receipt of IBS on 1st generation MUOS terminals
- Will continue to upgrade and connect the Combatant Command (CCMD) J2 CIB planning function with the CCMD J6 Integrated Waveform planning function
- Will continue to upgrade the CIB Planning Tool and IBS-NS capability at the CCMDs 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 Alternate Path status update messages
- 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 IBS 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 watch sites, development and fielding of Downlink Monitoring Element (DME)
- Will continue to provide modernization efforts in support of the IBS IS-CDD

***FY 2021 to FY 2022 Increase/Decrease Statement:***

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<ul style="list-style-type: none"> <li>- Will continue to provide resilience to the IBS CIB UHF Broadcast by utilizing the Mobile User Objective System (MUOS) Wideband Code Division Multiple Access (WCDMA) SATCOM payload supporting the receipt of IBS on 1st generation MUOS terminals</li> <li>- Will continue to upgrade and connect the Combatant Command (CCMD) J2 CIB planning function with the CCMD J6 Integrated Waveform planning function</li> <li>- Will continue to upgrade the CIB Planning Tool and IBS-NS capability at the CCMDs to allow automated planning to occur for active producers</li> <li>- Will continue development of the IBS Thin Client, which provides a light weight application to receive IBS information on mobile devices</li> <li>- Will continue development of the CIB MUOS Group Integration - Many to Many, which achieves IBS Over the Air requirements on the MUOS - WCDMA payload</li> <li>- Will continue to upgrade the P5 system health and welfare status at the COCOMs to include Alternate Path status update messages</li> <li>-- Will continue to upgrade the resiliency of IBS to include polar coverage</li> <li>- Will continue to upgrade and transition current classified dissemination path to new architecture and enable SCI-level dissemination of IBS data</li> <li>- Will continue enhancement of uplink sites to handle operational surge increases</li> <li>- Will continue to upgrade the monitoring and control tools to assist in assured dissemination tasks at COCOM uplink watch sites, development and fielding of Downlink Monitoring Element (DME)</li> <li>- Will continue to provide modernization efforts in support of the IBS IS-CDD</li> </ul>			



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305179F / <i>Integrated Broadcast Service (IBS)</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
- Funding increase due to development efforts focused on IBS modernization requirements outlined in the IS-CDD. These include s/w enhancements to integrate into the new Joint Tactical Terminal Next Generation Radio. Begins process to complete Cloud Migration and upgrades Common Integrated Broadcast Uplink sites to be WCDMA compliant.			
<b>Title:</b> Enterprise System Engineering <b>Description:</b> Enterprise Systems Engineering/CMF Integration/CIB Integration  <b>FY 2021 Plans:</b> Will continue Enterprise Systems Engineering/CMF/CIB Integration  <b>FY 2022 Plans:</b> Will continue Enterprise Systems Engineering/CMF/CIB Integration	0.900	0.994	0.994
<b>Title:</b> Test & Evaluation <b>Description:</b> Test & Evaluation of the IBS System  <b>FY 2021 Plans:</b> Will conduct Test and Evaluation activities of the IBS-NS system/subsystems  <b>FY 2022 Plans:</b> Will conduct Test and Evaluation activities of the IBS-NS system/subsystems	0.922	1.000	1.000
<b>Accomplishments/Planned Programs Subtotals</b>	8.728	8.848	21.335

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPAF 03 832070: <i>Intelligence Comm Equipment</i>	16.743	5.727	9.145	-	9.145	-	-	-	-	-	-

**Remarks**

**E. Acquisition Strategy**  
 IBS is in the PEO Digital 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-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305179F / <i>Integrated Broadcast Service (IBS)</i>	<b>Project (Number/Name)</b> 674779 / <i>Integrated Broadcast Service (IBS)</i>
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Product Development	C/CPFF	Not specified. : TBD	-	-		-		8.000		-		8.000	-	-	-
IBS (IBS-NS, CIB, and CMF) Development Upgrades	SS/CPFF	CACI/OGA/Various : Fairfax, VA	-	6.906	Feb 2020	6.854	Feb 2021	11.341	Feb 2022	-		11.341	-	-	-
<b>Subtotal</b>			-	6.906		6.854		19.341		-		19.341	-	-	N/A

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Enterprise Engineering/CMF Integration/CIB Integration	SS/CPFF	L3Harris : Greenville, TX	-	0.790	Aug 2020	0.874	Aug 2021	0.864	Aug 2022	-		0.864	-	-	-
<b>Subtotal</b>			-	0.790		0.874		0.864		-		0.864	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Interoperability and Development Testing	MIPR	JITC : Ft Hauchuca, AZ	-	0.665	Oct 2019	0.700		0.700		-		0.700	-	-	-
Responsible Test Organization (RTO)	PO	45th Test Sqn : Eglin AFB, FL	-	0.257	Oct 2019	0.300		0.300		-		0.300	-	-	-
<b>Subtotal</b>			-	0.922		1.000		1.000		-		1.000	-	-	N/A



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305179F / <i>Integrated Broadcast Service (IBS)</i>	<b>Project (Number/Name)</b> 674779 / <i>Integrated Broadcast Service (IBS)</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>IBS-NS</b>																												
Develop the monitoring and control tools to assist in assured dissemination																												
Integrate CMF updates into IBS-NS																												
Enterprise Systems Engineering of IBS (IBS-NS, CIB, and CMF)																												
Testing and Evaluation of IBS (IBS-NS, CIB, and CMF)																												
Develop and integrate IS-CDD requirements																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305179F / <i>Integrated Broadcast Service (IBS)</i>	<b>Project (Number/Name)</b> 674779 / <i>Integrated Broadcast Service (IBS)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>IBS-NS</b>				
Develop the monitoring and control tools to assist in assured dissemination	1	2020	1	2022
Integrate CMF updates into IBS-NS	1	2020	4	2022
Enterprise Systems Engineering of IBS (IBS-NS, CIB, and CMF)	1	2020	4	2022
Testing and Evaluation of IBS (IBS-NS, CIB, and CMF)	1	2020	4	2022
Develop and integrate IS-CDD requirements	1	2021	4	2022

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305202F / <i>Dragon U-2</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	36.389	36.593	17.146	0.000	17.146	-	-	-	-	-	-
674820: <i>Sensor Development</i>	-	36.389	36.593	17.146	0.000	17.146	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

The U-2S Dragon Lady platform is a high-demand/low-density aircraft equipped with state-of-the-art sensor and data link systems providing mission essential Intelligence, Surveillance, and Reconnaissance (ISR) to the Combatant Commands, Joint and Combined forces, and the IC community in peacetime and wartime. The program supports core missions such as Sensitive Reconnaissance Operations (outlined in CJCSI 3250.01) supporting the National Defense Strategy, in addition to other missions that include execution of CCMD OPLANs and CONPLANs, Humanitarian Assistance/Disaster Response (HADR), Counter-Insurgency (COIN) operations and third-party treaty verification/monitoring via the OLIVE HARVEST mission.

In the FY22 budget, the Air Force will maintain operational capability of the U-2 platform. FY22 development funds will be dedicated and required to sustain NDAA directed capability and capacity, and safe and effective operations until the remainder of U-2 scheduled service and AF divestiture in FY26. Efforts planned as part of the FY22 budget are required to ensure continuous worldwide operations through the remainder of U-2 service. Furthermore, FY22 efforts largely continue existing contracted efforts, which address reliability, maintainability, supportability, Diminishing Manufacturing Sources and Material Shortages (DMSMS), flight test, safety issues, and integration of capability development activities in support of the broader ISR portfolio.

During this time, RDT&E efforts will address sustainment, modification, and modernization of sensors and associated mission equipment that face near-terms sustainability and DMSMS. Also, RDT&E efforts focus on integrating/expanding platform capabilities within the larger ISR portfolio; these efforts include (but are not limited to) Advanced Synthetic Aperture Radar System (ASARS) 2B/C, avionics and navigation tech refresh, mission planning software and datalink infrastructure upgrades, modernization of aircraft data links, next generation SIGINT, and quick reaction capabilities (QRCs); enabling improved collection against emerging threats and capabilities through the remainder of scheduled U-2 operations.

Additionally, the U-2 program will continue to support emergent and/or experimental RDT&E efforts in support of Joint All-Domain Command and Control (JADC2) and Advanced Battle Management System (ABMS) as a platform surrogate for risk reduction.

Currently, the U-2 Program provides funding for an ASARS acquisition effort. This contracted effort will design, fabricate, integrate, and demonstrate system capability enhancements for a high-altitude deep look SAR system. This mitigates a DMSMS issue with the current U-2 SAR sensor and processor and implements an open-architecture radar environment.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305202F / <i>Dragon U-2</i>
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver Dragon U2 capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.0M was expended and in FY21 \$0.0M is forecasted for civilian pay expenses in this program element.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	36.389	18.660	18.319	0.000	18.319
Current President's Budget	36.389	36.593	17.146	0.000	17.146
Total Adjustments	0.000	17.933	-1.173	0.000	-1.173
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-0.067			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	18.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-1.173	0.000	-1.173

**Change Summary Explanation**

FY21 Transfer was an Air Force requested transfer from line 267 (Airborne Reconnaissance Systems). The FY21 reduction was an undistributed reduction-excess to need.

FY21 numbers reflected retention of the U-2, and additional investment and modernization efforts. FY22 PB reduces RDT&E totals from FY21 amount of \$36.6M to \$18.3M in FY22; FYDP sustains similar reduced levels until FY25. Reductions account for a portion of contracted efforts, addressing prudent actions for safety-of-flight, DMSMS, and sustainability issues. Additional modernization will be prohibited due to planned divestiture in FY26.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> U-2 Aircraft Update Block 20.1	35.839	36.043	16.596
<b>Description:</b> 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, 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			



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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 0305202F / <i>Dragon U-2</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
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><b>FY 2021 Plans:</b> 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, avionics system upgrades, emergency egress system sustainability and suitability effort, airframe Loads and Environment Spectra Survey (L/EES) Compliance and Flight Data Recorder Installation, mission planning system software and infrastructure migration, navigation system and stellar tracker initiatives, advanced and agile systems, 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, quick reaction capability (QRC) development, enhanced communications/SIGINT system demo and development, and tactical data-link (L-16, IBS, IFDL, MADL, etc.) design and integration.</p> <p><b>FY 2022 Plans:</b> Aircraft sustainment and/or enhancement efforts includes activities such as, but not limited to: -trade studies, analysis, preliminary system engineering, system and subsystem testing or demonstrations, sensor specification development, avionics system upgrades, emergency egress system sustainability and suitability effort, mission planning system software and infrastructure migration, navigation system sustainability, advanced and agile systems, Open Mission Systems and Unmanned Aerospace Systems Command and Control Standard Initiative (OMS/UCI) standards compliance and integration, GPS technical refresh, helmet and Full Pressure Suit technical refresh, quick reaction capability (QRC) development, enhanced communications/SIGINT system sustainability and modernization, and tactical data-link (L-16, IBS, IFDL, MADL, etc.) efforts to meet operational requirements.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Decrease due to scheduled FY26 divestiture</p>				
<p><b>Title:</b> U-2 Payload Update Block 20.1</p> <p><b>Description:</b> 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><b>FY 2021 Plans:</b></p>		0.550	0.550	0.550

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305202F / <i>Dragon U-2</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p>In FY21, the majority of planned RDT&amp;E base funding will fall under that aircraft mod category. Program office ACQ manager and PEM modify funding between categories as mission and threat environment evolves.</p> <p>Payload mod funding will be used to integrate ASARS-2B radar onto the platform.</p> <p><b>FY 2022 Plans:</b> The bulk of FY22 funding will occur under the Aircraft Update Block addressing sustainability and DMSMS. Payload mod funding will be used to transition the ASARS-2C radar program onto the platform.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	36.389	36.593	17.146

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

N/A

**Remarks**

**E. Acquisition Strategy**

Acquisition strategy for efforts to support aircraft modification and/or enhancement efforts will be assessed as required, based on current program activities.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305202F / <i>Dragon U-2</i>	<b>Project (Number/Name)</b> 674820 / <i>Sensor Development</i>
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Product Development	C/CPAF	Not specified. : TBD	-	0.000		0.000		0.000		-		0.000	-	-	-
ASARS Phase 1 Enhancements Design	SS/CPFF	Raytheon/Lockheed Martin : El Segundo, CA	-	5.700		14.560		3.746		-		3.746	-	-	0.000
ASARS Phase 2 Integration & Demonstration	SS/CPFF	Raytheon/Lockheed Martin Aeronautics : El Segundo, CA	-	0.550	Feb 2020	0.000		2.500	Dec 2021	-		2.500	-	-	0.000
Flight Test Support	SS/CPFF	Lockheed Martin Aeronautics : Palmdale, CA	-	0.000		0.000		0.000		-		0.000	-	-	0.000
Data Links Modernization	SS/CPFF	L3 Communications : Salt Lake City, UT	-	11.850	Mar 2020	4.900		3.400	Dec 2021	-		3.400	-	-	0.000
Navigation System	SS/CPFF	Lockheed Martin Aeronautics : Palmdale, CA	-	0.000		0.000		0.000		-		0.000	-	-	0.000
Emergency Egress System Sustainability and Suitability Effort	SS/CPFF	Lockheed Martin Aeronautics : Palmdale, CA	-	0.560		1.000		0.000		-		0.000	-	-	0.000
Avionics Technical Refresh	SS/CPFF	LMA : Palmdale, CA	-	6.950		11.733	Dec 2020	7.500	Nov 2021	-		7.500	-	-	0.000
Loads and Environment Spectra Survey (L/ESS) Compliance and Flight Data Recorder Installation	SS/CPFF	LMA : Palmdale, CA	-	0.000		0.000		0.000		-		0.000	-	-	0.000
Electro-Optical/Infrared Sensor Technical Refresh	SS/CPFF	Lockheed Martin Aeronautics : Palmdale, CA	-	2.439		2.500		0.000		-		0.000	-	-	0.000
Mission Planning Software Technical Refresh	TBD	TBD : TBD	-	5.400	Mar 2020	0.000		0.000		-		0.000	-	-	0.000
Electronic Warfare Suite (EWS) Advanced Threat	SS/CPFF	BAE : Nashua, NY	-	2.040	Apr 2020	1.900		0.000		-		0.000	-	-	22.100
<b>Subtotal</b>			-	35.489		36.593		17.146		-		17.146	-	-	N/A



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**Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force** **Date: May 2021**

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305202F / <i>Dragon U-2</i>	<b>Project (Number/Name)</b> 674820 / <i>Sensor Development</i>
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FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b><i>U-2 Dragon Lady</i></b>	
Advanced Synthetic Aperture Radars System (ASARS)	
Data Links Modernization	
Navigation System	
Emergency Egress System Sustainability and Suitability Effort	
Avionics Tech Refresh	

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2022 Air Force **Date:** May 2021

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

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>U-2 Dragon Lady</i></b>				
Advanced Synthetic Aperture Radars System (ASARS)	1	2020	4	2024
Data Links Modernization	1	2020	4	2024
Navigation System	1	2020	3	2022
Emergency Egress System Sustainability and Suitability Effort	3	2020	4	2023
Avionics Tech Refresh	2	2020	4	2023

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305205F / <i>Endurance Unmanned Aerial Vehicles</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	15.000	0.000	0.000	0.000	0.000	-	-	-	-	-	-
67A026: <i>MAGIC</i>	-	15.000	0.000	0.000	0.000	0.000	-	-	-	-	-	-
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' 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 and 20M in FY 2015, provided the program manager with the funding for the continuation of the Orion RPA development and initiation of the three phase flight testing series. Congressional adds of 5M in FY 2016, 50M in FY 2017, 40M in FY 2018 and 15M in FY 2019 continued the Orion Unmanned Aerial System (UAS) spiral development of a long endurance UAS. A Congressional Add of 15M in FY 2020 continued development of the air vehicle design and will culminate in a Critical Design Review (CDR).

Endurance UAV/Orion received no funding in FY2021 and is not funded for FY2022.

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 and 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.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305205F / <i>Endurance Unmanned Aerial Vehicles</i>
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver Orion capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.000M and in FY21 \$0.000M was expended for civilian pay expenses in this program element.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	15.000	0.000	0.000	0.000	0.000
Current President's Budget	15.000	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

	<b>FY 2020</b>	<b>FY 2021</b>
	15.000	0.000
	15.000	0.000
	15.000	0.000

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

	<b>FY 2020</b>	<b>FY 2021</b>
<b>Congressional Add:</b> <i>MAGIC</i>	15.000	0.000
<b>FY 2020 Accomplishments:</b> - Continued air vehicle design to ready the program for Critical Design Review.		
<b>FY 2021 Plans:</b> No FY21 funding.		
<b>Congressional Adds Subtotals</b>	15.000	0.000



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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force Date: May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305205F / <i>Endurance Unmanned Aerial Vehicles</i>
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**D. Other Program Funding Summary (\$ in Millions)**  
N/A

**Remarks**

**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, while working towards operational airworthiness and cybersecurity standards, and mission requirements for a deployable air vehicle (Block 1).



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305205F / <i>Endurance Unmanned Aerial Vehicles</i>	<b>Project (Number/Name)</b> 67A026 / <i>MAGIC</i>

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>MAGIC</b>	
Block 1 Initial Design through CDR	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305205F / <i>Endurance Unmanned Aerial Vehicles</i>	<b>Project (Number/Name)</b> 67A026 / <i>MAGIC</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>MAGIC</b>				
Block 1 Initial Design through CDR	1	2020	3	2021

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / <i>Airborne Reconnaissance Systems</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	137.157	123.287	71.791	0.000	71.791	-	-	-	-	-	-
672001: <i>Next-Generation Sensors</i>	-	0.000	46.263	20.184	0.000	20.184	-	-	-	-	-	-
672002: <i>Agile ISR</i>	-	0.000	5.342	5.413	0.000	5.413	-	-	-	-	-	-
672003: <i>Sensors Open System Architecture</i>	-	0.000	13.891	0.734	0.000	0.734	-	-	-	-	-	-
674818: <i>Imaging and Targeting Support</i>	-	29.729	0.000	0.000	0.000	0.000	-	-	-	-	-	-
674820: <i>Sensor Development</i>	-	81.972	44.689	30.344	0.000	30.344	-	-	-	-	-	-
675092: <i>JTC/SIL MUSE</i>	-	3.521	3.574	3.593	0.000	3.593	-	-	-	-	-	-
675291: <i>Gorgon Stare</i>	-	15.000	0.000	0.000	0.000	0.000	-	-	-	-	-	-
676025: <i>Data Compression</i>	-	6.935	9.528	11.523	0.000	11.523	-	-	-	-	-	-

**Note**

In FY2021 all funding in PE 0305206, (Airborne Reconnaissance Systems), Project 674818, (Imaging and Targeting Support) will be realigned to provide greater visibility and transparency of funding into the projects.

In FY2021, PE 0305206F, (Airborne Reconnaissance Systems), Project 674818, (Imaging and Targeting Support) efforts related to Next-Generation Sensors were transferred to Project 672001, (Next-Generation Sensors) in order to provide mission critical technology more quickly and cost effectively.

In FY2021, PE 0305206F, (Airborne Reconnaissance Systems), Project 674818, (Imaging and Targeting Support) efforts related to Agile ISR were transferred to Project 672002, (Agile ISR) in order to provide greater visibility and transparency.

In FY2021, PE 0305206F, (Airborne Reconnaissance Systems), Project 674818, (Imaging and Targeting Support) efforts related to System Open System Architecture were transferred to Project 672003, (Sensor Open System Architecture) in order to provide greater visibility and transparency.

In FY2021, PE 0305206F, (Airborne Reconnaissance Systems), Project 674818, (Imaging and Targeting Support) efforts related ASARS-2B were transferred to Project 674820, (Sensors Development) in order to provide greater visibility and transparency.

In FY2021, PE 0305206F, (Airborne Reconnaissance Systems), Project 674820, (Sensor Development) funds were transferred from PE 0604257F (Advanced Technology and Sensors), Project 645148, (Common Airborne Sense and Avoid), in order to align funding with Air Force project priorities and requirements.

In FY2021, PE 0305206F, (Airborne Reconnaissance Systems), Project 672001, (Next Generation Sensor) received 18M in funds that were intended for PE 0305202F (Dragon U-2), Project 674820, (Sensor Development), per FY21 PBD. Funds will be executed against U-2 avionics and sensor efforts under PE 0305202F (Dragon U-2).

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / <i>Airborne Reconnaissance Systems</i>	
<b>A. Mission Description and Budget Item Justification</b> <p>The Airborne Reconnaissance System (ARS) Program develops and integrates next generation intelligence, surveillance, and reconnaissance (ISR) capabilities. ARS includes platform agnostic sensor data processing; sensor products aiding assisted target recognition algorithms and other artificial intelligence activities (e.g. geolocation models, sensor-base exploitation tools, sensor networking capabilities); and implementation of Sensor open architecture standards. The ARS Program includes the following efforts: Next-Generation Sensors (672001), Agile ISR (672002), Sensors Open System Architecture (672003), Imaging and Targeting Support (674818), Sensor Development (674820), JTS/SIL MUSE (675092), Gorgon Stare (675291), and Data Compression (676025).</p> <p>The ARS PE is integral to developing multi-domain, multi-Intelligence (multi-INT) research, development, test and evaluation (RDT&amp;E) Program of Record (PoR) efforts in support of the National Defense Strategy (NDS) and 2018 DoD Artificial Intelligence Strategy, as applied by the Air Force in the Next Generation ISR Dominance Flight Plan. Specifically, Program 0305206F provides authorized and appropriated funding to multi-INT RDT&amp;E efforts for utilization on airborne platforms. This program traditionally provides a multi-INT venue for integration of technologies matured in both the Advanced Technology Sensors (0604257F) and Airborne SIGINT Enterprise (0304260F) programs. Additionally, with the creation and maturation of the Advanced Battle Management System (ABMS), the multi-INT efforts will also be integrated and executed using the openIntONE product line under Sensor Integration category within Advanced Battle Management System (ABMS). ABMS/openIntONE mission and funding is dedicated to integrating PoR capabilities into ABMS On Ramps, then those ABMS fused efforts will then be transitioned back to the PoR to sustain and field. Next Generation Sensors (NGS) PoR is specifically tied to the openIntONE product line and supporting its directives.</p> <p>NGS is a platform-agnostic suite of sensors defined for the best flexibility and capability for an ever-changing scale of ISR missions. Execution of the NGS activities are founded upon three pillars: Open Standards, Artificial Intelligence (AI)/Machine Learning(ML) algorithms, and Advanced Platform-Agnostic Sensors. The power behind the NGS program is an open architectural system design that enables rapid third party model and LRU insertion/replacement allowing for DevSecOps execution, onboard multi-modal and multi-INT processing, sensor cross-cueing, and AI/ML application. The AI/ML algorithms will be used to enable assisted target detection and identification. NGS will anticipate and more quickly counter our adversaries' future improvements in their abilities to hide from and defeat our ISR sensors. NGS efforts include, but are not limited to: Triple Raven multi-GEOINT Advance Technology Demonstration (ATD), Multi-Intelligence Common Open Architecture Reconnaissance Programs Standard (MI-COARPS), Raging Parakeet Joint Capability Technology Demonstration (JCTD), and Assisted Target Recognition for ISR (ATRI).</p> <p>The Open Standards pillar of next generation capabilities is supported through MI-COARPS and Sensors Open Systems Architecture (SOSA) which coordinates advanced technologies, and open architecture development for multi-INT sensor modalities. The AI/ML algorithm pillar of next generation capabilities will be supported by the Agile ISR and Data Compression efforts. Detection, Removal and Characterization Operations (DRACO) supports the development of a robust image quality improvement capability for airborne synthetic aperture radar (SAR) products. Additionally, the Reduction of Data Using Compression Enhancement (RDUCE) develops data compression algorithms, addressing current and future date dissemination systems' bandwidth limitations. Consistent with NDS, algorithms are multi-INT sensor agnostic that are submitted for formal adoption by the DOD-Intelligence Community (IC) Joint Enterprise Standards Committee (JESC) GEOINT and SIGINT standards groups. Platform Agnostic Sensors pillar of next generation capabilities will be supported by the Sensor Development effort, which includes the Advanced Synthetic Aperture Radar System (ASARS) front end antenna array and receiver exciter advancements (ASARS-2B). ASARS-2B follow-on RDT&amp;E extends range, enhances Ground Moving Target Indicator (GMTI) and SAR performance and introducing maritime capability, while laying the framework for future use of open architectures. Additional efforts that support the next generation capabilities include continuation of Gorgon Stare Wide Area Motion Imagery (WAMI) RDT&amp;E and the Multiple Unified Simulation Environment (MUSE) Joint Technology Center/Systems Integration Lab (JTC/SIL) by supporting ISR Training.</p>		

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / <i>Airborne Reconnaissance Systems</i>
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver technology and sensor capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 0.857M expended and in FY21 1.742M is estimated for civilian pay expenses in this program element.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	137.909	121.512	66.358	0.000	66.358
Current President's Budget	137.157	123.287	71.791	0.000	71.791
Total Adjustments	-0.752	1.775	5.433	0.000	5.433
• 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	-0.752	1.775	5.433	0.000	5.433

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

**Project:** 674818: *Imaging and Targeting Support*

Congressional Add: *Sensor Open System Architecture (SOSA)*

Congressional Add Subtotals for Project: 674818

**Project:** 675291: *Gorgon Stare*

Congressional Add: *Gorgon Stare*

Congressional Add Subtotals for Project: 675291

Congressional Add Totals for all Projects

	FY 2020	FY 2021
Congressional Add Subtotals for Project: 674818	0.000	-
Congressional Add Subtotals for Project: 675291	15.000	0.000
Congressional Add Totals for all Projects	15.000	0.000

**Change Summary Explanation**

FY20 decrease (-720K) due to Below Threshold Reprogramming to support approved TENCAP efforts.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / <i>Airborne Reconnaissance Systems</i>	
FY21 Congressional markup (+1.775M)		



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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems				<b>Project (Number/Name)</b> 672001 / Next-Generation Sensors			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
672001: <i>Next-Generation Sensors</i>	-	0.000	46.263	20.184	0.000	20.184	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY2021, PE 0305206F, (Airborne Reconnaissance Systems), Project 674818, (Imaging and Targeting Support) efforts related to Next Generation Sensors were transferred to Project 672001, (Next Generation Sensors) in order to provide greater visibility and transparency for integration into the sensor suite. This project is not a new start.

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

The Next Generation Sensors (NGS) program seeks to change the paradigm of Intelligence, Surveillance, and Reconnaissance (ISR) sensor acquisitions to deliver mission critical technology more quickly and cost effectively. NGS is a platform-agnostic suite of sensors defined for the best flexibility and capability for an ever-changing scale of ISR missions. Designated as a Middle Tier Acquisition, Section 804 program of record, the power behind the NGS program is an open architectural system design that enables individual sensor upgrades and enhancements and mission-specific mode and algorithm application, establishing a path to on-board multimodal and multi-INT processing, sensor cross-cueing, and artificial intelligence application. NGS efforts include, but are not limited to: Triple Raven multi-GEOINT Advance Technology Demonstration (ATD), multi-INT Common Open Architecture Reconnaissance Programs Standard (MI-COARPS), Raging Parakeet JCTD, Assisted Target Recognition for ISR (ATRI). Additionally, with the creation and maturation of the Advanced Battle Management System (ABMS), the multi-INT efforts will also be integrated and executed using the openIntONE product line under Sensor Integration category within ABMS. ABMS/openIntONE mission and funding is dedicated to integrating PoR capabilities into ABMS On Ramps, then those ABMS fused efforts will then be transitioned back to the PoR to sustain and field. Next Generation Sensors (NGS) PoR is specifically tied to the openIntONE product line and supporting its directives.

NGS program efforts are set by capability gaps within the Challenging Targets Initial Capabilities Document and as approved by the Capabilities Decision Memorandum (Signed Jan 2019). These requirements have been further verified, modeled, and developed through the Airborne Sensors for ISR (ASI) Analysis of Alternatives (AoA) and the Triple Raven ATD, which was approved by the Advanced Technology Council (ATC) in FY19.

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

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<b>Title:</b> Next Generation Sensors	0.000	46.263	20.184	-	20.184

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 672001 / Next-Generation Sensors

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

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p><b>Description:</b> Mold current and future ISR into a platform agnostic, non-proprietary, autonomous multi-INT cross cueing solution that is designed based on mission requirements. Sensors will have to penetrate up to highly contested domains and survive to operate. This project will also increase interoperability by developing common standards and interfaces for mission and sensor systems.</p> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>- Transition projects from AFRL and Imaging &amp; Targeting Support into programs of record to include new technologies in sensors and ISR technologies.</li> <li>- Triple Raven Advanced Technology Demonstration</li> <li>- Execute prototyping and requirements development for next generation platform agnostic, dual-band EO/IR and multi-mode LiDAR prototype sensors.</li> <li>- Design and develop government owned, standards compliant sensor pods.</li> <li>- Develop specific Artificial Intelligence Target Recognition Algorithms for multi-mode, ISR platforms. Develop synthetic data sets to increase algorithm effectiveness. Maintain database of labeled data for assisted target recognition (ATR) community. Develop multi-INT Open Architecture processors and standards.</li> <li>- Mature open architectures for ISR systems including cybersecurity analysis, industry standardization, and open architecture demonstrations.</li> <li>- Begin integration of the dual-band EO/IR system, open architecture ISR standards, and an open architecture aircraft.</li> </ul> <p><b>FY 2022 Base Plans:</b></p> <ul style="list-style-type: none"> <li>- Will mature sensor technology for electro-optical/infrared (EO/IR) and radar sensor modalities</li> <li>- Will develop, integrate, and test Triple Raven Prototype System (dual-band EO/IR and multi-mode LiDAR prototype sensor)</li> <li>- Will develop edge artificial intelligence (AI)/machine learning (ML) algorithms to ID critical mobile targets (CMTs)</li> <li>- Will develop multi-INT, open architecture (OA) processor and standards. Mature open architectures for ISR systems including cybersecurity analysis, industry standardization, and open architecture demonstrations</li> <li>- Will integrate cross-cueing, fusion algorithms, and edge AI/ML algorithm suite with sensors and processing open architecture (OA) standards into a penetrating aircraft (Raging Parakeet JCTD)</li> <li>- Will begin integration of Next Generation Sensors into relevant platforms</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b></p>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 672001 / Next-Generation Sensors

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
The increase from FY21 to FY22 accounts for increased support in Standards efforts (MI-COARPS) and inflation.					
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	46.263	20.184	-	20.184

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

N/A

**Remarks**

In FY2021, PE 0305206F, (Airborne Reconnaissance Systems), Project 672001, (Next Generation Sensor) received \$18M in funds that were intended for PE 0305202F (Dragon U-2), Project 674820, (Sensor Development), per FY21 PBD. Funds will be executed against U-2 avionics and sensor efforts under PE 0305202F (Dragon U-2).

**D. Acquisition Strategy**

Next Generation Sensors (NGS) is currently executing under a Middle Tier Acquisition Section 804 authority and is currently in the Rapid Prototyping (Alpha) phase. NGS (formerly known as ASI) is utilizing Imaging and Targeting Support (I&TS) and other ISR programs to execute rapid technology maturation and risk reduction (TMRR) activities. Execution of the NGS Middle Tier Acquisition (MTA) Rapid Prototyping activities will leverage parallel development activities and integrate them with a risk-informed approach to develop and demonstrate NGS capabilities that meet military needs under operationally-relevant environments and conditions. NGS is leveraging Advanced Technology Demonstration authority to mature and demonstrate cutting-edge sensor technology. This program has established a forum of stakeholders, consisting of multiple Other Government Agencies (OGAs), end-users, and MAJCOMs to ensure that the program deliverables are answering identified warfighter needs, to ensure a clear and concise technology transition path.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 672001 / Next-Generation Sensors
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<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Triple Raven ATD	Various	Various : TBD	-	-		6.000	Jun 2021	5.000	Feb 2022	-		5.000	-	-	-
NGS Sensors	Various	Various : TBD	-	-		30.186	Jun 2021	1.584	Feb 2022	-		1.584	-	-	-
NGS Algorithms (ATRI)	Various	Various : TBD	-	-		4.871	Jun 2021	2.214	Feb 2022	-		2.214	-	-	-
NGS Standards (OA)	Various	Various : TBD	-	-		2.525	Jun 2021	2.930	Dec 2021	-		2.930	-	-	-
Raging Parakeet JCTD	Various	Various : TBD	-	-		0.200	Feb 2021	5.900	Dec 2021	-		5.900	-	-	-
<b>Subtotal</b>			-	-		43.782		17.628		-		17.628	-	-	N/A

<b>Management Services (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
PMA: Other Gov't costs	Various	Not specified. : TBD	-	-		2.481	Feb 2021	2.556	Oct 2021	-		2.556	-	-	-
<b>Subtotal</b>			-	-		2.481		2.556		-		2.556	-	-	N/A

<b>Project Cost Totals</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
	-	-	46.263	20.184	-	20.184	-	-	N/A

**Remarks**  
 In FY2021, PE 0305206F, (Airborne Reconnaissance Systems), Project 674818, (Imaging and Targeting Support) efforts related to Next Generation Sensors were transferred to Project 672001, (Next Generation Sensor) in order to provide greater funding visibility and transparency into projects and to provide mission critical technology more quickly and cost effectively.

In FY2021, PE 0305206F, (Airborne Reconnaissance Systems), Project 672001, (Next Generation Sensor) received \$17.946M in funds that were intended for PE 0305202F (Dragon U-2), Project 674820, (Sensor Development), per FY21 PBD. Funds will be executed against U-2 avionics and sensor efforts under PE 0305202F (Dragon U-2).

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 672001 / Next-Generation Sensors

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>Next Generation Sensors</b>																												
Sensors																												
- Sensor Maturation & Risk Reduction																												
- Multi-Mode LiDAR Dev																												
- Algorithm/Code Dev, Camera Characterization																												
- Platform Integration																												
- Triple Raven ATD, EO/IR, LiDAR, Testing & Integration																												
Algorithms (ATRI)																												
- EO/IR Algorithm Development																												
- Radar Algorithm Development																												
- HSI Algorithm Development																												
- LiDAR Algorithm Development																												
Standards (Open Architecture)																												
- EMD																												
- SIL																												
- RedHawk																												
- Government Reference OA Development																												
Raging Parakeet JCTD																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / <i>Airborne Reconnaissance Systems</i>	<b>Project (Number/Name)</b> 672001 / <i>Next-Generation Sensors</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Next Generation Sensors</b>				
Sensors	2	2021	4	2022
- Sensor Maturation & Risk Reduction	2	2021	4	2022
- Multi-Mode LiDAR Dev	2	2021	2	2022
- Algorithm/Code Dev, Camera Characterization	2	2021	4	2022
- Platform Integration	2	2021	4	2022
- Triple Raven ATD, EO/IR, LiDAR, Testing & Integration	2	2021	4	2022
Algorithms (ATRI)	2	2021	4	2022
- EO/IR Algorithm Development	2	2021	4	2022
- Radar Algorithm Development	2	2021	4	2022
- HSI Algorithm Development	2	2021	4	2022
- LiDAR Algorithm Development	2	2021	4	2022
Standards (Open Architecture)	2	2021	4	2022
- EMD	2	2021	4	2022
- SIL	2	2021	4	2022
- RedHawk	2	2021	3	2021
- Government Reference OA Development	2	2021	4	2022
Raging Parakeet JCTD	2	2021	4	2022

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 672002 / Agile ISR
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
672002: Agile ISR	-	0.000	5.342	5.413	0.000	5.413	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY2021, PE 0305206F, (Airborne Reconnaissance Systems), Project 674818, (Imaging and Targeting Support) efforts related to Agile ISR were transferred to Project 672002, (Agile ISR) in order to provide greater visibility and transparency. This project is not a new start.

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

The Agile ISR BPAC matures, develops, and deploys projects started under the Imaging & Targeting Support (I&TS) program in support of current and future platform agnostic, non-proprietary, autonomous, multi-INT cross cueing ISR solutions based on Advanced Battle Management System (ABMS) and Joint All-domain Command and Control (JADC2) mission requirements. This includes, but is not limited to, Detection Removal and Characterization Operations (DRACO), support and development of AgilePod, and other projects. Portions of the developmental efforts under Agile ISR are classified.

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

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

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<b>Title:</b> DRACO	0.000	5.342	5.413	-	5.413
<p><b>Description:</b> Detection Removal and Characterization Operations (DRACO) is a robust Image Quality improvement capability for Airborne Synthetic Aperture Radar (SAR) products. The software resides in multiple locations on the ground and future efforts will migrate algorithms to airborne platforms supporting the Air Force, Army, Navy and other customers. DRACO efforts include but are not limited to development, design, fabrication, integration, demonstration, test, and transition of image quality improvement capabilities. This project originated under the I&amp;TS program. All other details are classified.</p> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>- Mature, develop and deploy DRACO capabilities in order to give the warfighter a more efficient and effective tool.</li> <li>- Complete DRACO 5.0 efforts and initiating DRACO 6.0.</li> <li>- Increase interoperability by developing common standards and interfaces.</li> </ul>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 672002 / Agile ISR

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
- Increase access and expand user base.					
<b><i>FY 2022 Base Plans:</i></b>					
- Will continue to mature, develop and deploy DRACO capabilities in order to give the warfighter a more efficient and effective tool.					
- Will continue to complete DRACO 6.0 efforts in FY23.					
- Will continue to increase interoperability by developing common standards and interfaces.					
- Will continue to increase access and expand user base.					
- Will integrate DRACO, assisted target recognition, and SAR compression algorithm into a software suite referenced as SAR Clean-up AI/ML Reduction (SCAR) Package					
<b><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i></b>					
Increase due to continued expansion of user base and integration efforts.					
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	5.342	5.413	-	5.413

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

N/A

**Remarks**

**D. Acquisition Strategy**

Capabilities will be developed and integrated onto various information systems and platforms using an agile acquisition approach. The projects will be executed and contracted with appropriate vendor(s) to deliver capability while driving competition where possible.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 672002 / Agile ISR
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<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
DRACO	SS/CPFF	Lockheed Martin : King of Prussia, PA	-	0.000		4.794	Dec 2020	5.116	Mar 2022	-		5.116	-	-	-
<b>Subtotal</b>			-	0.000		4.794		5.116		-		5.116	-	-	N/A

<b>Management Services (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
PMA: Other Govt Cost	Various	Not specified. : TBD	-	-		0.548	Oct 2020	0.297	Oct 2021	-		0.297	-	-	-
<b>Subtotal</b>			-	-		0.548		0.297		-		0.297	-	-	N/A

<b>Project Cost Totals</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	-	0.000		5.342		5.413	-	-	N/A

**Remarks**  
 In FY2021, PE 0305206F, (Airborne Reconnaissance Systems), Project 674818, (Imaging and Targeting Support) efforts related to Agile ISR were transferred to Project 672002, (Agile ISR) in order to provide greater visibility and transparency.

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 672002 / Agile ISR

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>Agile ISR</b>																												
DRACO 5.0																												
DRACO 6.0																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 672002 / Agile ISR

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Agile ISR</b>				
DRACO 5.0	1	2020	3	2021
DRACO 6.0	1	2021	1	2022

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems				<b>Project (Number/Name)</b> 672003 / Sensors Open System Architecture			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
672003: Sensors Open System Architecture	-	0.000	13.891	0.734	0.000	0.734	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY2021, PE 0305206F, (Airborne Reconnaissance Systems), Project 674818, (Imaging and Targeting Support) efforts related to System Open System Architecture were transferred to Project 672003, (Sensor Open System Architecture) in order to provide greater visibility and transparency. This project is not a new start.

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

The Sensors Open System Architecture (SOSA) project develops common hardware standards and associated software interfaces in support of the development for modalities of sensors, such as: RADAR, SIGINT, EW, Communications and EO/IR (development of standards and open architecture interfaces for Hardware and Electrical/Mechanical interfaces) in support of multiple airborne reconnaissance platforms, both manned and unmanned. Its objectives are to develop, demonstrate, and rapidly upgrade/iterate 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 through development of abstraction interfaces for sense (such as RADAR, ADS-B, TCAS, Next Generation Sensors, ASIP, and ASARS) and avoid logic.

This project is designed to support development of the Next Generation Sensors program, as well as other AFLCMC/WI emerging and program of record needs. As part of the development effort SOSA will be funding and supporting first article development of key common hardware solutions.

The SOSA SIL (System Integration Laboratory) will continue to support development of common hardware standards and associated software interfaces and provide a conformance/compliance program for industry partners and other DoD services.

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

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<b>Title:</b> Sensors Open System Architecture	0.000	13.891	0.734	-	0.734
<b>Description:</b> Description: The Sensors Open System Architecture (SOSA) project will execute activities to develop common hardware standards and associated software interfaces.					
<b>FY 2021 Plans:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 672003 / Sensors Open System Architecture

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

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<ul style="list-style-type: none"> <li>- Continue to support of RPA Sense and Avoid Technology (C-ABSAA Technology Maturation &amp; Risk Reduction Phase)</li> <li>- Continue to develop prototype of SOSA SAR/SIGINT capability</li> <li>- Continue to develop AgilePod internal electrical/mechanical interfaces</li> <li>- Continue to implement and execute hardware demonstrations</li> <li>- Continue to support EO/IR article prototyping</li> <li>- Continue to prepare and host interoperability demonstrations</li> <li>- SOSA/COARPSSIG/EW Demo Prototype 2 execution with congressional plus up (includes associated support)</li> </ul> <p><b>FY 2022 Base Plans:</b></p> <ul style="list-style-type: none"> <li>- Will continue to support of RPA Sense and Avoid Technology (C-ABSAA Technology Maturation &amp; Risk Reduction Phase)</li> <li>- Will continue to develop prototype of SOSA SAR/SIGINT capability</li> <li>- Will continue to develop AgilePod internal electrical/mechanical interfaces</li> <li>- Will continue to implement and execute hardware demonstrations</li> <li>- Will continue to support EO/IR article prototyping</li> <li>- Will continue to prepare and host interoperability demonstrations</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Decrease in funding is due to realignment of funds to higher Air Force priorities</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	13.891	0.734	-	0.734

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

N/A

**Remarks**

**D. Acquisition Strategy**

Coalition of Industry, DoD, and OGA partnerships to develop common hardware standards and associated software interfaces to support ACC and AFLCMC requirements for next generation sensors. Acquisition initiatives consist of prototype activities, risk reduction and demonstrations. Contracting strategy for FY22 and beyond is to be determined.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 672003 / Sensors Open System Architecture
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SOSA Hardware Development	SS/FFP	Dynetics (JSIL) : Huntsville, AL	-	-		0.558	Dec 2020	-		-		-	-	-	-
SOSA Hardware Development (1)	SS/CPFF	Skayl : DC & Arizona, AZ	-	-		0.558	Dec 2020	-		-		-	-	-	-
SOSA Hardware Development (2)	SS/CPFF	DCS : Dayton, OH	-	-		0.500	Dec 2020	0.439	Dec 2021	-		0.439	-	-	-
SOSA Hardware Development (3)	SS/CPFF	MIT/LL : Boston, MA	-	-		0.130	May 2021	-		-		-	-	-	-
SOSA Hardware Development (4)	SS/CPFF	GTRI Conformance : Atlanta, GA	-	-		0.300	Dec 2020	-		-		-	-	-	-
SOSA Hardware Development (5)	SS/CPFF	GTRI H/W Dev : Atlanta, GA	-	-		0.550	May 2021	-		-		-	-	-	-
SOSA Hardware Development (6)	SS/CPFF	BAH : Baltimore, MD	-	-		0.300	Dec 2020	-		-		-	-	-	-
SOSA Hardware Development (7)	SS/CPFF	GTRI Hardware Upgrade : Atlanta, GA	-	-		0.300	Dec 2020	-		-		-	-	-	-
SOSA Hardware Development (8)	SS/CPFF	Leitos : Dayton, OH	-	-		0.600	Dec 2020	0.200	Dec 2021	-		0.200	-	-	-
SOSA Hardware Development (9)	SS/FFP	Spectranetix/Pacific Def : El Segundo, CA	-	-		10.000	Mar 2021	-		-		-	-	-	-
<b>Subtotal</b>			-	-		13.796		0.639		-		0.639	-	-	N/A

<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Administration (PMA)	Various	Not specified. : TBD	-	-		0.095	Jul 2021	0.095	Dec 2021	-		0.095	-	-	-
<b>Subtotal</b>			-	-		0.095		0.095		-		0.095	-	-	N/A

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2022 Air Force</b>								<b>Date: May 2021</b>			
<b>Appropriation/Budget Activity</b> 3600 / 7				<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems				<b>Project (Number/Name)</b> 672003 / Sensors Open System Architecture			
	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>		<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	-	-	13.891		0.734	-		0.734	-	-	N/A

**Remarks**  
 In FY2021, PE 0305206F, (Airborne Reconnaissance Systems), Project 674818, (Imaging and Targeting Support) efforts related to System Open System Architecture were transferred to Project 672003, (Sensor Open System Architecture) in order to provide greater visibility and transparency.

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 672003 / Sensors Open System Architecture

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>Sensors Open System Architecture</b>																												
Technical Standard Publications (Semi-Annual Deliveries)																												
SOSA Demonstration																												
SIL Activites																												



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 672003 / Sensors Open System Architecture

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Sensors Open System Architecture</b>				
Technical Standard Publications (Semi-Annual Deliveries)	1	2021	4	2022
SOSA Demonstration	1	2021	4	2022
SIL Activites	1	2021	4	2022

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems				<b>Project (Number/Name)</b> 674818 / Imaging and Targeting Support			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
674818: <i>Imaging and Targeting Support</i>	-	29.729	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY2021, all funds in PE 0305206F, (Airborne Reconnaissance Systems), Project 674818, (Imaging and Targeting Support) efforts related to NGS, Agile ISR, SOSA, and ASARS were transferred to Project 672001 (Next-Generation Sensors/ASI), Project 672002, (Agile ISR), Project 672003 (Sensors Open System Architecture), and Project 674820 (Sensor Development) in order to provide greater visibility and transparency.

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

The I&TS purpose 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 but are not limited to: Radar, Electro-Optical/Infrared, hyperspectral imagery (HSI), Lidar/Ladar, and other technologies to improve measurement and signature intelligence, polarimetric imaging, ground moving target indicator (GMTI), maritime search/track, foliage penetration, 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 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 GCWG, 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 ASI AoA 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.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver technology and sensor capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY19 \$0.458M and in FY20 \$0.857M was expended for civilian pay expenses in this program element.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 674818 / Imaging and Targeting Support

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<p><b>Title:</b> Agile ISR</p> <p><b>Description:</b> Mold current and future ISR into a platform agnostic, non-proprietary, autonomous Multi-INT fusion and cross cuing solution that is designed based on mission requirements. Sensors will have to penetrate up to highly contested domains and survive to operate. This project will also increase interoperability by developing common standards and interfaces for mission and sensor systems. Through the AoA execution, the solution set will improve requirements and the development path for High Altitude SAR (ASARS), Next Generation Sensors, DRACO, SOSA, as well as other GCWG approved projects.</p> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>- Agile ISR, Next Generation Sensors and Sensors Open System Architecture will be transferred to individual Projects within PE0305206F in order to provide greater visibility and transparency into these activities. These transferred efforts will not be new starts. The new Projects are:</li> <li>-- Next Generation Sensors, Project 672001</li> <li>-- Agile ISR, Project 672002</li> <li>-- Sensors Open System Architecture, Project 672003</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b></p> <p>Decreased due to Agile ISR, Next Generation Sensors and Sensors Open System Architecture efforts being transferred to individual Projects within PE0305206F in order to provide greater visibility and transparency. These transferred efforts will not be new starts. The new Projects are:</p> <ul style="list-style-type: none"> <li>-- Next Generation Sensors, Project 672001</li> <li>-- Agile ISR, Project 672002</li> <li>-- Sensors Open System Architecture, Project 672003</li> </ul>	20.279	0.000	-	-	-
<p><b>Title:</b> ASARS-2B</p> <p><b>Description:</b> Develop/design/fabricate/integrate/demonstrate/test and field deep look high altitude ISR radar capabilities.</p> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>- ASARS efforts realigned to Project 674820 Sensor Development for consolidation and clarity of reporting.</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b></p>	9.450	0.000	-	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 674818 / Imaging and Targeting Support

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Decrease due to ASARS efforts realigned to Project 674820 Sensor Development for consolidation and clarity of reporting.					
<b>Accomplishments/Planned Programs Subtotals</b>	29.729	0.000	-	-	-
	<b>FY 2020</b>	<b>FY 2021</b>			
<b>Congressional Add:</b> Sensor Open System Architecture (SOSA)	0.000	-			
<b>FY 2020 Accomplishments:</b> N/A					
<b>Congressional Adds Subtotals</b>	0.000	-			

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• RDTE 07 0305202F: Dragon U-2	36.389	0.000	0.000	-	0.000	-	-	-	-	-	-

**Remarks**  
A portion of the funding within the U-2 RDT&E line will be used to advance ASARS development/design/fabrication/integration/demonstration/testing and fielding deep look high altitude ISR radar capabilities.

**D. Acquisition Strategy**  
Imaging and Targeting Support and Agile ISR efforts are prioritized on an annual basis by the GCWG, in accordance with the validated gaps in the Challenging Targets Initial Capabilities Document. Resulting funded efforts are then contracted for and/or executed by either various program offices, laboratories, industry, and/or other government agencies.

ASARS / High Altitude SAR 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/HBG (Robins AFB) for 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.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force												Date: May 2021				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 7				PE 0305206F / Airborne Reconnaissance Systems				674818 / Imaging and Targeting Support								
<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
SOSA	Various	Various : TBD	-	2.683	Feb 2020	-		-		-		-	-	-	-	
DRACO	SS/CPFF	Lockheed Martin : King of Prussia, PA	-	4.900	Mar 2020	-		-		-		-	-	-	-	
ASARS-2B EMD	SS/CPFF	Raytheon : El Segundo, CA	-	5.450	Feb 2020	-		-		-		-	-	-	170.430	
Triple Raven ATD	SS/CPFF	Collins : Westford, MS	-	10.402	Mar 2020	-		-		-		-	-	-	-	
Aether Spy	Various	Various : TBD	-	0.800	Apr 2020	-		-		-		-	-	-	-	
<b>Subtotal</b>			-	24.235		-		-		-		-	-	-	N/A	
<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Test and Evaluation	MIPR	Not specified. : TBD	-	0.130	Nov 2019	-		-		-		-	-	-	-	
<b>Subtotal</b>			-	0.130		-		-		-		-	-	-	N/A	
<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
PMA: Other Govt Cost	SS/T&M	Various : Dayton, OH	-	5.364	Jan 2020	-		-		-		-	-	-	-	
<b>Subtotal</b>			-	5.364		-		-		-		-	-	-	N/A	
<b>Project Cost Totals</b>			-	29.729		0.000		-		-		-	-	-	N/A	

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2022 Air Force							<b>Date:</b> May 2021			
<b>Appropriation/Budget Activity</b> 3600 / 7			<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems			<b>Project (Number/Name)</b> 674818 / Imaging and Targeting Support				
	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>	

**Remarks**  
 In FY2021, all funds in PE 0305206F, (Airborne Reconnaissance Systems), Project 674818, (Imaging and Targeting Support) efforts related to NGS, Agile ISR, SOSA, and ASARS were transferred to Project 672001 (Next-Generation Sensors/ASI), Project 672002, (Agile ISR), Project 672003 (Sensors Open System Architecture), and Project 674820 (Sensor Development) in order to provide greater visibility and transparency.

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 674818 / Imaging and Targeting Support

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>Imaging and Targeting Support</b>																												
Advance Airborne PCPAD Development																												
- SOSA																												
- DRACO																												
<b>ASARS-2B</b>																												
ASARS-2B EMD																												
- NRE Contract Award (Feb 2019)																												
- PDR (Dec 2019)																												
- CDR (Jul 2020)																												
<b>Next Generation Sensors</b>																												
- Triple Raven ATD																												
- Aether Spy																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 674818 / Imaging and Targeting Support

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Imaging and Targeting Support</b>				
Advance Airborne PCPAD Development	1	2020	4	2020
- SOSA	1	2020	4	2020
- DRACO	1	2020	4	2020
<b>ASARS-2B</b>				
ASARS-2B EMD	1	2020	4	2020
- NRE Contract Award (Feb 2019)	1	2020	1	2020
- PDR (Dec 2019)	1	2020	1	2020
- CDR (Jul 2020)	4	2020	4	2020
<b>Next Generation Sensors</b>				
- Triple Raven ATD	1	2020	4	2020
- Aether Spy	1	2020	4	2020



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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 674820 / Sensor Development
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
674820: <i>Sensor Development</i>	-	81.972	44.689	30.344	0.000	30.344	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

The Sensors Development project increases the range and collection capability, interoperability and processing of the Advanced Synthetic Aperture Radar Systems (ASARS) through design, development, testing, and fielding efforts. The Sensors Development efforts advance the capability of ASARS for U-2 employment, and is a critical component for the multi-INT Next Generation Sensors, project 672001, efforts. ASARS-2B (front-end) & ASARS-2C (back-end) efforts provide critical advancements and risk reduction in SAR/Moving Target Indication capability to be implemented in the future multi-INT, platform agnostic capability that Next Generation Sensors will provide.

The ASARS effort is a fifth generation, deep-look, high-altitude, ISR radar that is the foundation for the radar component of the Next Generation Sensors (NGS) family of systems as outlined in the AFROC approved ASARS-2C draft Capabilities Development Document (CDD). ASARS-2B (front-end) is the antenna and receiver exciter replacement. The ASARS-2C (back end) data processing efforts extend the ASARS-2B (front-end) radar capability using open architecture data processing and multi-platform integration. Open architecture improves performance and lowers cost by facilitating and enabling qualified third party software vendors to incorporate future multi-ISR capability to advance interoperability across joint operations. ASARS increases current capability and addresses National Defense Strategy Key Operational Problems and ISR Dominance flight plan.

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

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

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<b>Title:</b> Advanced Synthetic Aperture Radar System (ASARS)-2B (front-end)	81.972	44.689	30.344	-	30.344
<b>Description:</b> Develop, design, fabricate, integrate, test and field deep look high altitude ISR radar capabilities.					
<b>FY 2021 Plans:</b> - Continue to develop, design, fabricate, integrate, test and field deep look high altitude ISR radar capabilities.					
<b>FY 2022 Base Plans:</b> - Will Continue to develop, design, fabricate, integrate, test and field deep look high altitude ISR radar capabilities.					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 674820 / Sensor Development

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Funding decreased due to higher AF priorities,					
<b>Title:</b> Advanced Synthetic Aperture Radar System (ASARS)-2C (back-end)	0.000	0.000	0.000	-	0.000
<b>Description:</b> Integrate open radar processing architectures for enhanced RF capabilities and third party mode development.					
<b>FY 2021 Plans:</b> - Mature standards and technologies, and develop acquisition strategy for start in FY2021.					
<b>FY 2022 Base Plans:</b> - Will mature standards and technologies, and complete acquisition strategy for enhanced RF capabilities and third party mode development.					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Decrease due to phasing of ASARS-2C (back-end) funding.					
<b>Accomplishments/Planned Programs Subtotals</b>	81.972	44.689	30.344	-	30.344

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• RDTE 07 0305202F: <i>Dragon U-2 (JMIP)</i>	36.389	18.660	18.319	-	18.319	-	-	-	-	-	-
• RDTE 07 0305206F: <i>Airborne Reconnaissance Systems</i>	0.000	48.138	70.855	-	70.855	-	-	-	-	-	-

**Remarks**  
A portion of the funding within the U-2 RDT&E line will be used to advance ASARS development / design/fabrication/integration/demonstration/testing and fielding deep look high altitude ISR radar capabilities.  
In FY20, a portion of funding within project 674818 (Imaging and Targeting Support) is being used to advance ASARS-2B (front-end) efforts.

**D. Acquisition Strategy**  
ASARS / High Altitude SAR 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/HBG (Robins AFB) for test support.  
Acquisition strategy is to maximize commercial and national development efforts and investment through multiple contracting methods, including but not limited to the use of engineering change proposals to modify existing contracts and new contracts that were awarded both competitively or on a sole source basis.



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 674820 / Sensor Development

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>ASARS-2B</b>																												
ASARS-2B EMD																												
-- NRE Contract Award (Feb 2019)																												
-- PDR (Dec 2019)																												
-- CDR (Jul 2020)																												
<b>ASARS-2C</b>																												
ASARS-2C																												
-- Tech Maturation																												
-- NRE Contract Award (Dec 2021)																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 674820 / Sensor Development

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>ASARS-2B</b>				
ASARS-2B EMD	1	2020	2	2022
-- NRE Contract Award (Feb 2019)	1	2020	1	2020
-- PDR (Dec 2019)	1	2020	1	2020
-- CDR (Jul 2020)	4	2020	4	2020
<b>ASARS-2C</b>				
ASARS-2C	3	2021	4	2022
-- Tech Maturation	3	2021	3	2022
-- NRE Contract Award (Dec 2021)	1	2022	1	2022

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems				<b>Project (Number/Name)</b> 675092 / JTC/SIL MUSE			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
675092: JTC/SIL MUSE	-	3.521	3.574	3.593	0.000	3.593	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The Multiple Unified Simulation Environment (MUSE) is the DoD flight simulation/training system of choice for many Unmanned Aircraft Systems (UAS), RPA, and airborne platforms. MUSE is also known as the Air Force Synthetic Environment for Reconnaissance and Surveillance (AFSERS) in its Air Force training application. The MUSE/AFSERS is a software suite that simulates UAS/RPA (e.g., MQ-9) systems, tailored air vehicle & data links, and visualization systems used for payload product outputs-including Full Motion Video (FMV), Fixed Frame Imagery (FFI), Ground Moving Target Indicator (GMTI) data, and Link 16 (J2.2 and J3.5) tracking messages. Outputs are compliant with applicable DoD standards and are continually tested against actual ground data processors to ensure DoD systems interoperability.

The Services and Combatant Commanders have a requirement for training with a system that provides a real-time simulation environment containing multiple domain systems that can be integrated with larger force-on-force simulations. The MUSE creates a realistic operational environment supporting military utility assessment, architecture, and employment concept development. Training, Tactics, Techniques and Procedures (TTP) refinement, practice Processing, Exploitation and Dissemination (PED) of multi-domain information. Conduct emerging concepts experimentation, optimizing Command, Control, Communications, and Computing (C4) with warfighting exercises and experiments. MUSE is the preferred UAS/RPA simulation system used by US Combatant Commanders and Joint Services to support command and battle staff C4 training.

The MUSE also creates a realistic operational environment that supports: an embedded training capability for new UAS/RPA system Program Managers; tools to minimize acquisition and life cycle cost and schedule impacts. MUSE conducts emerging concepts experimentation, future systems exploration, systems integration, and technology insertion; applications for Joint and Service-specific warfighting exercises; and C4 training optimization.

MUSE is currently used by all Services and most unified commands simulating MQ-1, MQ-9, RQ-4, MQ-1C, M/RQ-5, RQ-7, national and commercial satellite systems, P-3, E-8 and the U-2 during warfighting exercises. The AFSERS provides National Imagery Transmission Format (NITF) information for simulated data collection systems, supporting PED training. The MUSE is also used as a mission rehearsal tool for current, on-going military combat operations. Most of the MUSE/AFSERS software suite components are also used in multiple airborne platform system training devices. Including the MQ-9 [Medium Altitude Long Endurance Tactical (MALET) JSIL Aircrew Trainer (MJAT)] and RQ-4 [Global Hawk Sensor Operator Part Task Trainer (GHSOPPT), and Global Hawk Weapon System Trainer (WST)].

The Joint Technology Center/Systems Integration Laboratory (JTC/SIL) is the training center of excellence supporting UAS and RPA programs for the Services. JTC/SIL provides the system engineering, test and integration, interoperability, rapid technology insertion to address MUSE training requirements. The JTC/SIL combines the UAS/RPA knowledge of communications standards (such as STANAGs 4586, 4607, 4545 and 4609) with Hardware in the Loop (HIL) testing, MUSE, integrating with other DoD modeling and simulation (M&S) architectures. For those airborne assets normally not available for training, the JTC/SIL provides surrogate systems and interfaces. The JTC/SIL contributes to the distributed training environments, virtually linking participants from various locations worldwide, and are routinely supported

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 675092 / JTC/SIL MUSE
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within the MUSE architecture. The JTC/SIL continues to develop leading edge technologies supporting the rapidly evolving UAS/RPA training requirements required to support NDS future fighting force.

MUSE project funds may be utilized to cover the GCWG Secretariat, studies and analysis activities, supporting current program planning, execution, and future program planning.

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

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

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p><b>Title:</b> Air Force Synthetic Environment for Reconnaissance and Surveillance (AFSERS) Development</p> <p><b>Description:</b> DoD's simulation/training system of choice for Intelligence Surveillance and Reconnaissance (ISR) systems, sensors, and platforms. Includes AFSERS, Common Ground Station Interface, and infrastructure support.</p> <p><b>FY 2021 Plans:</b> JTC/SIL:</p> <ul style="list-style-type: none"> <li>- Continue development and release of MUSE/AFSERS RPA and ISR simulation capability supporting theater level exercises such as Dong Maeng (formerly Ulchi Freedom Guardian and Key Resolve), Yama Sakura, Talisman Saber, Pacific Sentry, Austere Challenge, and associated events.</li> <li>- Continue incorporation of mandated Cyber Security updates.</li> <li>- Complete the re-architecture of Vignette Planning &amp; Rehearsal Software (ViPRS) capability to include transitioning it to be web browser accessible, developing an after action report (AAR) capability, and more realistic attrition.</li> <li>- Continue architecture software optimization and modularization to facilitate extensibility and scalability.</li> <li>- Begin prototype development of an improved image generator based upon the results of the image generator trade study conducted during FY20.</li> <li>- Fully integrate the high fidelity SAR model into the MUSE/AFSERS baseline which provides realistic SAR imagery based upon material encoded terrain.</li> <li>- Fully integrate MTI/SAR sensor cross-cuing capability in MUSE/AFSERS.</li> <li>- Develop and integrate low-cost, fixed-wing support to RPA operations.</li> <li>- Integrate a Vehicle and Dismount Exploitation Radar (VADER) sensor model in MUSE/AFSERS.</li> <li>- Begin development of the Long Range Radar (LRR) sensor MUSE/AFSERS model.</li> <li>- Develop IFF Modes 4, 5, &amp; S in MUSE/AFSERS.</li> </ul>	3.521	3.574	3.593	-	3.593

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		Date: May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 675092 / JTC/SIL MUSE

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
- Continue integration testing with designated federations (ASCCE, JLVC, JLCCTC) ensuring joint interoperability with services and JS/J7 capabilities. - Assess services and Joint Staff emerging environments and the impact to MUSE/AFSERS integration and interoperability  <b>FY 2022 Base Plans:</b> JTC/SIL: - Will continue support and release of MUSE/AFSERS RPA and ISR simulation capability supporting theater level exercises such as Dong Maeng (formerly Ulchi Freedom Guardian and Key Resolve), Yama Sakura, Talisman Saber, Pacific Sentry/Fury, Austere Challenge, and associated events. - Continue incorporation of mandated Cyber Security updates. - Continue support of CAFDMO SPRs - Continue architecture software optimization and modularization to facilitate extensibility and scalability. - Continue integrate the high fidelity SAR model into the MUSE/AFSERS baseline which provides realistic imagery based upon material encoded terrain. - Continue integration testing with designated federations (ASCCE,) ensuring joint interoperability with services and JS/J7 capabilities. - Perform DMON Integration: Support CAFDMO SPRs for AFSERS; Integration/Testing at Distributed Training Centers - Develop and integrate Electronic Warfare (EW) modeling and simulation capabilities to include GPS Denied - Enhance and integrate UAS Swarming modeling and simulation  <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Small funding Increase from FY21 to FY22 was due to inflation.					
<b>Accomplishments/Planned Programs Subtotals</b>	3.521	3.574	3.593	-	3.593

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE 07 PE 0305204A: Tactical Unmanned Aerial Vehicles	4.954	3.905	0.000	-	0.000	-	-	-	-	-	-
<b>Remarks</b>											



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Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force		Date: May 2021
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305206F / Airborne Reconnaissance Systems	Project (Number/Name) 675092 / JTC/SIL MUSE

**D. Acquisition Strategy**

This is an enterprise services effort, jointly funded and centrally managed by the US Army. JTC/SIL falls under US Army Futures Command. US Army PE 0305204A funding ending after FY 2021. Additional continual Army funding expected from PEO STRI, JSJ7, exercise events, and other external Army users. AFLCMC/WIN MIPRs funds in support of Unmanned Aircraft Systems modeling and simulation efforts. The Air Force POC is Dr. Lillian-Campbell from AF Agency for Modeling & Simulation which falls under HAF/A3T.



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 675092 / JTC/SIL MUSE

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>JTC/SIL MUSE</b>	
AFSERS Development	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 675092 / JTC/SIL MUSE

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>JTC/SIL MUSE</b>				
AFSERS Development	1	2020	4	2022

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 675291 / Gorgon Stare
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
675291: <i>Gorgon Stare</i>	-	15.000	0.000	0.000	0.000	0.000	-	-	-	-	-	-
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 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 draft Capabilities Development Document (CDD). The acquisition strategy for this Air Force podded sensor suite solution is sustainment of the currently fielded capabilities with any upgrades implemented via validated -1067s, Urgent Operational Needs, or requirements as documented in the program CDD.

Development efforts conducted with FY 2017 Congressionally-added funds further progressed efforts associated with BLOS, to include first article testing for phase 1 and a limited BLOS capability delivered to the field in FY 2019. Development efforts conducted with FY 2018 Congressional added funds included further development of the next phase of BLOS to enable freedom of maneuverability and development of system imagery improvements. Development efforts conducted with FY 2019 Congressionally added funds included completion of BLOS Phase II system design and aircraft certification to enable full freedom on maneuverability (anticipate fielding in FY22), completing Phase I of imagery improvements and continuation of data automation through Area of Interest (AOI) tagging and tracking efforts. Development efforts conducted with FY2020 Congressionally added funds included the continuation of the following capabilities: Tagging and Tracking Full Field of View (FFoV), Electro-optical (EO)/Infrared (IR) Co-Collect, Airborne Tip and Cue, and Image Quality Enhancements Phase II.

Development efforts to be conducted with FY 2021 Congressionally added funds include the continuation of EO/IR Co-Collect, FFoV tagging and tracking, and Airborne Tip and Cue Phase II capabilities.

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

The acquisition program manager has the authority to redirect funding as necessary to meet Gorgon Stare current and emerging Combatant Commander requirements to better meet the war fighting objectives.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Gorgon Stare weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.000M was expended for civilian pay expenses in this program element, and in FY21 \$0.000M is forecasted for civilian pay expenses in this program element.

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

<b>Congressional Add:</b> Gorgon Stare	<b>FY 2020</b>	<b>FY 2021</b>
	15.000	0.000

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 675291 / Gorgon Stare
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021
<b>FY 2020 Accomplishments:</b> Continued development efforts for the following capabilities: FFOV Tagging and Tracking, EO/IR Co-Collect, Airborne Tip and Cue Phase II, and Image Quality Enhancements Phase II.		
<b>FY 2021 Plans:</b> Development efforts to be conducted with the \$10M of FY 2021 Congressionally added funds include the continuation of EO/IR Co-Collect, FFOV tagging and tracking, and Airborne Tip and Cue Phase II capabilities.		
<b>Congressional Adds Subtotals</b>	15.000	0.000

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APAF 05 PRDTB3: MQ-9 UAS Payloads	19.800	63.500	0.000	40.800	40.800	-	-	-	-	-	-
• APAF 06 PRDTB3: Gorgon Stare	1.500	10.700	0.000	6.800	6.800	-	-	-	-	-	-

**Remarks**

**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 645th 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, or requirements as documented in the program CDD.



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 675291 / Gorgon Stare

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>Gorgon Stare</b>	
EO/IR Co-Collect	[REDACTED]
Tagging and Tracking Full Field of View (FFoV)	[REDACTED]
Airborne Tip and Cue Phase II	[REDACTED]
Image Quality Enhancements Phase II	[REDACTED]



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 675291 / Gorgon Stare

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Gorgon Stare</b>				
EO/IR Co-Collect	3	2020	4	2022
Tagging and Tracking Full Field of View (FFoV)	4	2020	3	2022
Airborne Tip and Cue Phase II	1	2021	4	2022
Image Quality Enhancements Phase II	4	2020	2	2022

**Note**  
Gorgon Stare will continue operations as required using sustainment funding.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems				<b>Project (Number/Name)</b> 676025 / Data Compression			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
676025: Data Compression	-	6.935	9.528	11.523	0.000	11.523	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

RDUCE provides efficient and integrated compression of airborne Intelligence, Surveillance, and Reconnaissance (ISR) sensor data, maximizing the use of limited bandwidth and delivering more data to the tactical user in the field. RDUCE develops, tests, and implements new sensor data compression algorithms for current and emerging airborne ISR sensors. The program develops compression capabilities for manned and unmanned airborne platforms, associated ground stations, and the Distributed Common Ground System (DCGS). Outputs will meet standard certification for use within the Department of Defense and Intelligence Community (IC) Geospatial Intelligence (GEOINT), Signals Intelligence (SIGINT), and Measurement and Signatures Intelligence (MASINT) compression applications.

Activities also include continuous studies, analysis and updates to support program planning and execution.

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

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<b>Title:</b> Data Compression	6.935	9.528	11.523	-	11.523
<b>Description:</b> The Data Compression effort provides the warfighter capabilities to efficiently compress ISR data and to enable dissemination in near real time to tactical users through bandwidth limited dissemination systems. The program focuses on current and emerging ISR sensors, including incorporation into open architectures like Common Open Architecture Radar Programs (COARPs), Future Airborne Capability Environment (FACE), and Sensor Open System Architecture (SOSA). The algorithms can be leveraged for any platform. For example, the HSI algorithm was selected by NASA to be included in an experimental system on the ISS. Outputs will meet standards certification for use within the DoD Geospatial Intelligence, Signals Intelligence and Measurement and Signatures Intelligence data compression applications.					
<b>FY 2021 Plans:</b>					
- Provide continuous updates and integration support for the mature TRL modalities (SAR, HSI, SAR Phase History)					
- Finalize SAR Phase history standard for formal adoption					
- Continue development of LIDAR and SIGINT modalities					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 676025 / Data Compression

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<ul style="list-style-type: none"> <li>- Identify platform/sensor partners for initial test/integration</li> <li>- Begin feature updates to address any issues or previously uncaptured use cases to ensure the compression algorithms are operationally relevant</li> <li>- Begin studies and initial development of EO/IR compression algorithms</li> <li>- Support integration of SAR compression algorithm into DRACO using a software suite referenced as SAR Clean-up AI/ML Reduction (SCAR) Package</li> <li>- Begin SIGzip standards development for formal adoption</li> </ul> <p><b>FY 2022 Base Plans:</b></p> <ul style="list-style-type: none"> <li>- Will continue development of EO/IR compression algorithms.</li> <li>- Will complete initial development of LIDAR and SIGzip modalities.</li> <li>- Will identify platform/sensor partners for initial test/integration across all sensor modes</li> <li>- Will update to address any issues or previously uncaptured use cases to ensure the compression algorithms are operationally relevant</li> <li>- Will complete SIGzip standards development for formal adoption</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Increase, Project 676025-Data Compression due to additional sensor modes in FY21/22/23.</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	6.935	9.528	11.523	-	11.523

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

N/A

**Remarks**

**D. Acquisition Strategy**

Data Compression program is conducted by Air Force Life Cycle Management Center/ Intelligence, Surveillance, and Reconnaissance and Special Operations Forces (AFLCMC/WIN). Acquisition strategy is to develop data compression hardware/software, and data compression standards for various ISR applications to include airborne, ground stations, data storage facilities, and exploitation tools. RDUCE will utilize existing contracts with full and open competition where appropriate. Integration will be accomplished by the requisite program offices.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date: May 2021**

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 676025 / Data Compression
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LIDAR	Various	Various : Various	-	1.000	Feb 2020	1.000	Nov 2020	1.715	Mar 2022	-		1.715	-	-	-
SIGzip	Various	Various : Various	-	2.100	Jan 2020	1.000	Feb 2021	1.000	Mar 2022	-		1.000	-	-	-
EO/IR	Various	Various : Various	-	0.100	May 2020	0.500	Mar 2021	1.200	Apr 2022	-		1.200	-	-	-
<b>Subtotal</b>			-	3.200		2.500		3.915		-		3.915	-	-	N/A

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Standardization Development	C/CPAF	Various : Various	-	1.000	Dec 2019	-		-		-		-	-	-	-
Standardization Development (FLEX)	C/CPAF	Various : Various	-	-		0.600	Apr 2021	0.500	Feb 2022	-		0.500	-	-	-
Standardization Development (SARzip)	C/CPAF	Various : Various	-	-		0.600	Apr 2021	0.500	Feb 2022	-		0.500	-	-	-
Standardization Development (zPHD)	C/CPAF	Various : Various	-	-		0.500	Apr 2021	0.500	Feb 2022	-		0.500	-	-	-
New Mode Phase I	C/CPAF	Various : Various	-	-		0.100	Jan 2021	-		-		-	-	-	-
<b>Subtotal</b>			-	1.000		1.800		1.500		-		1.500	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ADDA Lab	C/CPAF	Various : Various	-	1.750	Jan 2020	0.795	Mar 2021	0.796	Feb 2022	-		0.796	-	-	-
COMPASE Lab	C/CPAF	Various : Various	-	0.100	Jan 2020	0.200	Feb 2021	0.250	Jan 2022	-		0.250	-	-	-
Integration Activities	C/CPAF	Various : Various	-	-		3.249	Nov 2020	4.050	Jan 2022	-		4.050	-	-	-
<b>Subtotal</b>			-	1.850		4.244		5.096		-		5.096	-	-	N/A





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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305206F / Airborne Reconnaissance Systems	<b>Project (Number/Name)</b> 676025 / Data Compression

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>RDUCE</i></b>				
LIDAR	1	2020	4	2022
EO/IR	3	2020	4	2022
SIGINT	2	2020	4	2022
COMPASE Lab	1	2020	4	2022
ADDA Lab	1	2020	4	2022
Standardization Development	1	2020	4	2020
Standardization Development (SARzip)	2	2021	4	2022
Standardization Development (FLEX)	2	2021	4	2022
Standardization Development (zPHD)	2	2021	4	2022

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305207F / <i>Manned Reconnaissance Systems</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	11.787	14.684	14.799	0.000	14.799	-	-	-	-	-	-
674754: <i>RC-135 Systems</i>	-	11.787	14.684	14.799	0.000	14.799	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

RC-135 operational systems development and enhancement activities support 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 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 645th Aeronautical Systems Group (645 AESG). The 645 AESG (a.k.a. BIG SAFARI) 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 2022 budget includes developmental planning, execution and support for the RC-135V/W RIVET JOINT Baselines 13 and 14 (BL-13 and BL-14), the RC-135U COMBAT SENT Baseline 6 (BL-6), and the RC-135S COBRA BALL BL-6 and BL-7 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 and assessed annually as part of the fleet sustainment responsibilities.

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), CNS/ATM avionics upgrades such as new autopilot, 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. RIVET JOINT BL-14 upgrades consist of, but are not limited to, scale able processor improvements, ELINT digital receiver, Millimeter Wave capability, augmented Remote Maintenance.

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

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305207F / <i>Manned Reconnaissance Systems</i>
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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.

COBRA BALL BL-7 developmental enhancements consist of, but are not limited to, redesign of the FISINT collection system, and software upgrades to optimize scan patterns against specific target sets.

Ground Systems Baseline upgrades add the capabilities found in the corresponding RIVET JOINT Baseline upgrades (i.e., RIVET JOINT BL-12 corresponds to Ground System BL-12, RIVET JOINT BL-13 corresponds to Ground System BL-13, RIVET JOINT BL-14 corresponds to Ground System BL-14) to the Ground Systems to ensure crews receive training on the appropriate mission system configurations.

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

This program element may include necessary civilian pay expenses required to manage, execute, and deliver RC-135 capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY19 \$0.0M and in \$FY20 0.0M was expended for civilian pay expenses in this program element.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	11.787	14.711	15.021	0.000	15.021
Current President's Budget	11.787	14.684	14.799	0.000	14.799
Total Adjustments	0.000	-0.027	-0.222	0.000	-0.222
• 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	-0.027	-0.222	0.000	-0.222

**Change Summary Explanation**

FY21 reduction- undistributed reduction, excess to need

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Manned Reconnaissance Systems	11.787	14.684	14.799

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305207F / <i>Manned Reconnaissance Systems</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022
<p><b>Description:</b> Non-recurring engineering (NRE) for Baseline system developments and enhancements to improve mission capabilities of the RIVET JOINT BL-14 and BL-15, COMBAT SENT BL-6, COBRA BALL BL-7, and Ground Systems BL-13 and BL-14.</p> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>• Continue Engineering Analysis</li> <li>• Continue NRE and other efforts associated with the integration and modification of the RC-135 primary mission equipment</li> <li>• Continue Specialized Mission Systems development for the collection of both air and ground signals.</li> </ul> <p><b>FY 2022 Plans:</b></p> <p>Will initiate contracts to:</p> <ul style="list-style-type: none"> <li>• Continue Engineering Analysis</li> <li>• Continue NRE and other efforts associated with the integration and modification of the RC-135 primary mission equipment</li> <li>• Continue Specialized Mission Systems development for the collection of both air and ground signals.</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b></p> <p>Minor increase in funding due to inflation.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	11.787	14.684	14.799

<b>D. Other Program Funding Summary (\$ in Millions)</b>											
Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• APAF 05 Line Item DARP01: RC-135	227.673	191.332	211.637	-	211.637	-	-	-	-	-	-
• APAF 06 Line Item DARP01: <i>Initial Spares/Repair Parts</i>	83.572	51.282	52.304	-	52.304	-	-	-	-	-	-
• APAF 07 Line Item DARP01: <i>Aircraft Support Equipment &amp; Facilities</i>	0.000	0.000	0.000	-	0.000	-	-	-	-	-	-
• OPAF 04 Line Item 846070: <i>DARP RC-135</i>	80.654	27.663	27.645	-	27.645	-	-	-	-	-	-
• RDTE 07 PE 0304260F: <i>Airborne SIGINT Enterprise</i>	33.396	45.066	45.274	-	45.274	-	-	-	-	-	-

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305207F / <i>Manned Reconnaissance Systems</i>
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**D. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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**Remarks**

**E. Acquisition Strategy**

The RC-135 RIVET JOINT, COBRA BALL, and COMBAT SENT configured aircraft are maintained and kept technologically relevant through an incremental baseline 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), 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.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305207F / <i>Manned Reconnaissance Systems</i>	<b>Project (Number/Name)</b> 674754 / <i>RC-135 Systems</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Product Development	SS/CPAF	Not specified. : TBD	-	0.000		0.000		0.000		-		0.000	-	-	-
Operational Systems Development	SS/ Various	L3Harris Technologies : Greenville, TX	-	11.787	Dec 2019	14.684	Dec 2020	14.799	Dec 2021	-		14.799	-	-	-
<b>Subtotal</b>			-	11.787		14.684		14.799		-		14.799	-	-	N/A

**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.

	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	-	11.787	14.684	14.799	-	14.799	-	-	N/A

**Remarks**



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**Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305207F / <i>Manned Reconnaissance Systems</i>	<b>Project (Number/Name)</b> 674754 / <i>RC-135 Systems</i>
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	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	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 Systems Baseline 14 Development, Integration, Test and Fielding	
Ground Systems Baseline 15 Development, Integration, Test and Fielding	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305207F / <i>Manned Reconnaissance Systems</i>	<b>Project (Number/Name)</b> 674754 / <i>RC-135 Systems</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Baseline Spiral Development</b>				
RIVET JOINT Baseline 12 Integration, Test and Fielding	1	2020	2	2020
RIVET JOINT Baseline 13 Integration, Test and Fielding	1	2020	2	2023
RIVET JOINT Baseline 14 Development	2	2020	2	2022
RIVET JOINT Baseline 14 Integration, Test and Fielding	2	2022	1	2026
RIVET JOINT Baseline 15 Development	4	2022	4	2024
RIVET JOINT Baseline 15 Integration, Test and Fielding	4	2024	4	2026
RIVET JOINT Baseline 16 Development	1	2025	4	2026
COMBAT SENT Baseline 6 Development	1	2020	4	2020
COMBAT SENT Baseline 6 Integration, Test and Fielding	2	2020	4	2023
COMBAT SENT Baseline 7 Development	1	2024	3	2026
COBRA BALL Baseline 6 Integration, Test and Fielding	1	2020	3	2020
COBRA BALL Baseline 7 Development	1	2020	3	2020
COBRA BALL Baseline 7 Integration, Test and Fielding	3	2020	4	2023
COBRA BALL Baseline 14 Development	4	2022	3	2024
COBRA BALL Baseline 14 Integration, Test and Fielding	3	2024	4	2026
Ground Systems Baseline 13 Development, Integration, Test and Fielding	1	2020	2	2020
Ground Systems Baseline 14 Development, Integration, Test and Fielding	2	2020	2	2023
Ground Systems Baseline 15 Development, Integration, Test and Fielding	4	2022	1	2026

**Note**

Ground systems include the RIVET JOINT 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



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**Exhibit R-4A, RDT&E Schedule Details:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b>	<b>R-1 Program Element (Number/Name)</b>	<b>Project (Number/Name)</b>
3600 / 7	PE 0305207F / <i>Manned Reconnaissance Systems</i>	674754 / <i>RC-135 Systems</i>

configuration changes and enhancements are incorporated first into the MCTSs and OFTs, and then integrated into GDPS, MPS, and ACES. Delivery of the enhancements to the MCTSs 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:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	25.009	14.126	24.568	0.000	24.568	-	-	-	-	-	-
674826: <i>Common Imagery Ground / Surface Systems</i>	-	25.009	14.126	24.568	0.000	24.568	-	-	-	-	-	-

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

Air Force Distributed Common Ground System (AF DCGS) is the Combat Air Force (CAF) weapon system 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, federated 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 and supports the "kill chain" across the full range of military operations. Currently, AF DCGS is composed of eight core sites (two active duty worldwide, three active duty regional and three Air National Guard regional), three remote Air Force Forces (AF FOR) sites, six SIGINT Distributed Mission Sites (four collocated with National Mission Partner), three Air National Guard full-motion video sites, three support sites, three training sites, and three integration and test sites. AF DCGS currently supports ongoing operations from forward deployed and in-garrison CONUS and OCONUS-based locations. AF DCGS provides integrated ISR by providing quality, fused Geospatial Intelligence (GEOINT), Signals Intelligence (SIGINT), and Measurement and Signature Intelligence (MASINT) tailored to the warfighter for all levels of conflict.

In alignment with DoD and AF direction, AF DCGS is migrating to an open architecture (OA DCGS) to rapidly incorporate new technologies and tools to easily integrate new and/or improved sensor capabilities, as well as provide improved mission applications to meet emerging and urgent operational needs. AF DCGS integrates commercial-off-the-shelf and government-off-the-shelf services and applications to the maximum extent possible to fulfill operational requirements and data sharing requirements across the DoD DCGS community. The next iteration will involve transitioning to a mission-assured hybrid cloud (mix of private on premise and public cloud) architecture.

Program management consists of five ACAT III efforts: GEOINT Transformation, SIGINT Transformation, Multi-INT, Network Infrastructure Transformation, and DCGS Reference Imagery Transition (DRT)

1. GEOINT Transformation: Rapidly develop, integrate and test new GEOINT capabilities, enables quick/seamless integration of new sensors, data types, sensor planning, and command and control (C2) capabilities and migrates GEOINT-specific applications into the open architecture framework. Leverages mission partner methods and tools to the maximum extent possible.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>
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2. SIGINT Transformation: Rapidly develop, integrate and test new SIGINT capabilities, enables quick/seamless integration of new sensors, data types, sensor planning, command and control (C2) capabilities and migrates SIGINT-specific applications into the open architecture framework. Leverages mission partner methods and tools to the maximum extent possible.

3. Multi-INT-1: Rapidly develop, integrate and test new and updated enterprise applications, to include voice/video/chat communications, collaboration and situational awareness, multi-INT fusion, and data analytics capabilities (to include Artificial Intelligence/Machine Learning (AI/ML)) into the open architecture framework. Also includes Intelligent Modeling and Predictive Analysis of Cyberspace Targeting (IMPACT) program, which develops concepts, Tactics/Techniques/Procedures (TTPs) and technologies for synchronizing ISR and non-kinetic capabilities. Addressees program office test and evaluation activities.

4. Network Infrastructure Transformation: Modernizes the AF DCGS infrastructure to a cyber-resilient, open, scalable, commercial-based, architecture, improving data ingest, transfer, and storage capabilities, collaboration, and content driven discovery. OA DCGS Platform as a Service, along with migration to a hub-based architecture and public cloud represents the AF DCGS mission-assured hybrid cloud (mix of private on premise and public cloud) architecture.

5. \*DRT: The Air Force DCGS Reference Imagery Transition (DRT) effort provides data ingest, transfer, and storage capabilities for NGA reference imagery data.

Note:\*No additional RDT&E or Investment Funding planned in FY20 or outyears; ACAT will be closed once the capability is installed at all sites

This program element may include necessary civilian pay expenses required to manage, execute, and deliver AF DCGS weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 0.00M was expended for civilian pay expenses in this program element, and in FY21 0.00M is forecasted for civilian pay expenses in this program element

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	25.009	14.152	25.933	0.000	25.933
Current President's Budget	25.009	14.126	24.568	0.000	24.568
Total Adjustments	0.000	-0.026	-1.365	0.000	-1.365
• 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	-0.026	-1.365	0.000	-1.365

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

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

**R-1 Program Element (Number/Name)**  
PE 0305208F / *Distributed Common Ground/Surface Systems*

**Change Summary Explanation**

The FY 2022 funding request was reduced by \$1.365M to account for the availability of prior year execution balances.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>				<b>Project (Number/Name)</b> 674826 / <i>Common Imagery Ground / Surface Systems</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
674826: <i>Common Imagery Ground / Surface Systems</i>	-	25.009	14.126	24.568	0.000	24.568	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

Program management consists of five ACAT III efforts: GEOINT Transformation, SIGINT Transformation, Multi-INT, Network Infrastructure Transformation, and DCGS Reference Imagery Transition (DRT)

1. GEOINT Transformation: Rapidly develop, integrate and test new GEOINT capabilities, enables quick/seamless integration of new sensors, data types, sensor planning, and command and control (C2) capabilities and migrates GEOINT-specific applications into the open architecture framework. Leverages mission partner methods and tools to the maximum extent possible.
2. SIGINT Transformation: Rapidly develop, integrate and test new SIGINT capabilities, enables quick/seamless integration of new sensors, data types, sensor planning, command and control (C2) capabilities and migrates SIGINT-specific applications into the open architecture framework. Leverages mission partner methods and tools to the maximum extent possible.
3. Multi-INT-1: Rapidly develop, integrate and test new and updated enterprise applications, to include voice/video/chat communications, collaboration and situational awareness, multi-INT fusion, and data analytics capabilities (to include Artificial Intelligence/Machine Learning (AI/ML)) into the open architecture framework. Also includes Intelligent Modeling and Predictive Analysis of Cyberspace Targeting (IMPACT) program, which develops concepts, Tactics/Techniques/Procedures (TTPs) and technologies for synchronizing ISR and non-kinetic capabilities. Addressees program office test and evaluation activities.
4. Network Infrastructure Transformation: Modernizes the AF DCGS infrastructure to a cyber-resilient, open, scalable, commercial-based, architecture, improving data ingest, transfer, and storage capabilities, collaboration, and content driven discovery. OA DCGS Platform as a Service, along with migration to a hub-based architecture and public cloud represents the AF DCGS mission-assured hybrid cloud (mix of private on premise and public cloud) architecture.
5. \*DRT: The Air Force DCGS Reference Imagery Transition (DRT) effort provides data ingest, transfer, and storage capabilities for NGA reference imagery data.

**NOTE:**

\*ACAT will be closed once the capability is installed at all sites.

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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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>	<b>Project (Number/Name)</b> 674826 / <i>Common Imagery Ground / Surface Systems</i>
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver AF DCGS weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F.

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Title:</b> GEOINT Transformation</p> <p><b>Description:</b> The GEOINT Transformation effort rapidly integrates new GEOINT capabilities, enables quick/seamless integration of new sensors, data types, sensor planning, and command and control (C2) capabilities and migrates GEOINT-specific applications into the open architecture framework. Leverages mission partner methods and tools to the maximum extent possible.</p> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>• Continue High Altitude (HA) and Full Motion Video (FMV) Agile Release Trains to rapidly develop and integrate new GEOINT-specific capabilities on OA DCGS.</li> </ul> <p><b>FY 2022 Plans:</b></p> <ul style="list-style-type: none"> <li>• Will continue High Altitude (HA) and Full Motion Video (FMV) Agile Release Trains to rapidly develop, integrate and test new GEOINT-specific capabilities on OA DCGS.</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Increase for development of improved High Altitude GEOINT operator exploitation capabilities in HA GEOINT Agile Release Train</p>	0.500	0.500	2.000
<p><b>Title:</b> SIGINT Transformation</p> <p><b>Description:</b> The SIGINT Transformation effort rapidly integrates new SIGINT capabilities, enables quick/seamless integration of new sensors, data types, sensor planning, command and control (C2) capabilities and migrates SIGINT-specific applications into the open architecture framework. Leverages mission partner methods and tools to the maximum extent possible.</p> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>• Continue SIGINT Modernization Agile Release Train to rapidly develop and integrate new SIGINT-specific capabilities into OA DCGS.</li> </ul> <p><b>FY 2022 Plans:</b></p> <ul style="list-style-type: none"> <li>• Will continue SIGINT Modernization Agile Release Train to rapidly develop and integrate new SIGINT-specific capabilities into OA DCGS.</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Increase for additional development of National Mission Partner Gateway SIGINT capabilities in the SIGINT Modernization Agile Release Train</p>	2.899	3.153	6.230
<p><b>Title:</b> Multi-INT Transformation</p>	21.110	9.973	14.338

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>	<b>Project (Number/Name)</b> 674826 / <i>Common Imagery Ground / Surface Systems</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Description:</b> The Multi-INT effort rapidly develops and integrates new and updated enterprise applications, to include voice/video/chat communications, collaboration and situational awareness, multi-INT fusion, and data analytics capabilities (to include Artificial Intelligence/Machine Learning (AI/ML)) into the open architecture framework. Also includes Intelligent Modeling and Predictive Analysis of Cyberspace Targeting (IMPACT) program, which develops concepts, Tactics/Techniques/Procedures (TTPs) and technologies for synchronizing ISR and non-kinetic capabilities. Addressees program office test and evaluation activities.</p> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>• Continue to rapidly develop and integrate new Multi-INT and data analytics capabilities into OA DCGS</li> <li>• Continue agile development and fielding of IMPACT program capabilities</li> <li>• Continue development of the Enterprise Collaboration Capability (Voice portion)</li> </ul> <p><b>FY 2022 Plans:</b></p> <ul style="list-style-type: none"> <li>• Will continue to rapidly develop and integrate new Multi-INT and data analytics capabilities into OA DCGS</li> <li>• Will continue agile development and fielding of IMPACT program capabilities</li> <li>• Will continue development of the Enterprise Collaboration Capability (Voice portion)</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Increase for development of improved data analytics capabilities, development of improved enterprise collaboration capability, and additional developmental test activities</p>				
<p><b>Title:</b> Network Infrastructure Transformation</p> <p><b>Description:</b> The Network Infrastructure Transformation effort modernizes the AF DCGS infrastructure to a cyber-resilient, open, scalable, commercial-based, architecture, improving data ingest, transfer, and storage capabilities, collaboration, and content driven discovery. OA DCGS Platform as a Service, along with migration to a hub-based architecture and public cloud represents the AF DCGS mission-assured hybrid cloud (mix of private on premise and public cloud) architecture.</p> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>• Continue to develop and integrate open architecture, mission-assured hybrid-cloud infrastructure and enterprise services.</li> </ul> <p><b>FY 2022 Plans:</b></p> <ul style="list-style-type: none"> <li>• Will continue to develop and integrate open architecture, mission-assured hybrid-cloud infrastructure and enterprise services.</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Increase for development of additional Open Architecture Enterprise Services</p>		0.500	0.500	2.000
<b>Accomplishments/Planned Programs Subtotals</b>		25.009	14.126	24.568



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>	<b>Project (Number/Name)</b> 674826 / <i>Common Imagery Ground / Surface Systems</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF 04 Line Item, 846080: <i>DCGS-AF</i>	96.137	117.940	136.296	-	136.296	-	-	-	-	-	-

**Remarks**

**D. Acquisition Strategy**

AF DCGS acquisition strategy is to use approved lean and agile industry practices and leverage to the maximum extent possible commercial off the shelf, government off the shelf, and mission partner capabilities to continuously develop and field new and improved operational capabilities hosted on its open, hybrid cloud environment to meet mission requirements. 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 five ACAT III efforts: GEOINT Transformation, SIGINT Transformation, Multi-INT-1, Network Infrastructure Transformation, and DCGS Reference Imagery Transition (DRT).

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>	<b>Project (Number/Name)</b> 674826 / <i>Common Imagery Ground / Surface Systems</i>
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GEOINT Transformation	Various	Various : Various	-	0.500	May 2020	0.500	May 2021	2.000	May 2022	-		2.000	-	-	-
SIGINT Transformation	Various	Various : Various	-	2.400	Apr 2020	2.038	Dec 2020	4.880	Dec 2021	-		4.880	-	-	-
Multi-Intelligence	Various	Various : Various	-	16.259	Mar 2020	5.720	Dec 2020	9.783	Mar 2022	-		9.783	-	-	-
Network Infrastructure Transformation	Various	Various : Various	-	0.500	Jun 2020	0.500	Jun 2021	2.000	Jun 2022	-		2.000	-	-	-
<b>Subtotal</b>			-	19.659		8.758		18.663		-		18.663	-	-	N/A

**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.

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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-Intelligence	Various	Various : Various	-	0.251	Jan 2020	1.318	Jan 2021	1.405	Jan 2022	-		1.405	-	-	-
<b>Subtotal</b>			-	0.251		1.318		1.405		-		1.405	-	-	N/A

<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PMA	Various	Various : Various	-	5.099	Dec 2019	4.050	Dec 2020	4.500	Dec 2021	-		4.500	-	-	-
<b>Subtotal</b>			-	5.099		4.050		4.500		-		4.500	-	-	N/A

**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.



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**Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force** **Date: May 2021**

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>	<b>Project (Number/Name)</b> 674826 / <i>Common Imagery Ground / Surface Systems</i>
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FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b><i>AF Distributed Common Ground System</i></b>	
GEOINT Transformation HA and FMV Agile Release Trains (ART)	
SIGINT Transformation ART	
Multi-INT Transformation Correlation and Fusion ART	
Multi-INT Transformation: Enterprise Voice Communication Capability (ECC)	
Multi-INT Transformation: IMPACT (SUTER)	
Network Infrastructure Transformation: OA Hybrid Cloud Services	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305208F / <i>Distributed Common Ground/Surface Systems</i>	<b>Project (Number/Name)</b> 674826 / <i>Common Imagery Ground / Surface Systems</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>AF Distributed Common Ground System</i></b>				
GEOINT Transformation HA and FMV Agile Release Trains (ART)	1	2020	4	2022
SIGINT Transformation ART	1	2020	4	2022
Multi-INT Transformation Correlation and Fusion ART	1	2020	4	2022
Multi-INT Transformation: Enterprise Voice Communication Capability (ECC)	3	2020	4	2022
Multi-INT Transformation: IMPACT (SUTER)	2	2020	4	2022
Network Infrastructure Transformation: OA Hybrid Cloud Services	1	2020	4	2022

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	1,175.698	191.733	163.291	83.124	0.000	83.124	-	-	-	-	-	-
675145: <i>RQ-4 Block 30</i>	551.869	30.761	0.000	0.000	0.000	0.000	-	-	-	-	-	-
675149: <i>RQ-4 Capability Enhancements</i>	379.035	160.472	163.291	83.124	0.000	83.124	-	-	-	-	-	-
67RTIP: <i>MP-RTIP</i>	244.794	0.500	0.000	0.000	0.000	0.000	-	-	-	-	-	-

**Program MDAP/MAIS Code:** 252  
**Project MDAP/MAIS Code(s):** 293

**Note**

The sum of all Prior Years is actually \$2,291.016 million more than the represented total due to several projects ending.

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

USAF plans to begin divestment of the Block 20 aircraft in FY21 and the Block 30 aircraft in FY22. To maximize value to the USAF and DoD, efforts will be pivoted to focus on supporting the Block 40 fleet and Block 30 closeout actions.

This program element funds related Air Force projects sharing the RQ-4 platform in common: the RQ-4 Block 30, the RQ-4 Block 40, RQ-4 Capability Enhancements, and Multi-Platform Radar Technology Insertion Program (MP-RTIP). The RQ-4 Block 30 and Block 40 projects support the development and testing of the ACAT 1C RQ-4 capability and the initiation of the major modification ACAT programs. The majority of the modernization funding was transferred to the Capability Enhancement project (675149) to support upgrades and modifications, including established ACAT I and II programs, 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 Systems (UAS) Command and Control Initiative (UCI) or the DoD's Unmanned Control Segment standards (UCS) and Open Mission Systems (OMS). Ground Segment Modernization Program (GSMP) 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) Ground Segment/Communications System, and (4) Common-Airborne Sense and Avoid (C-ABSAA). In FY17 the Ground Segment/Communications System project (675147) ended. In FY18 the RQ-4 Block 40 project (675146) ended. Prior year funds in the amount of 2,031.377M were accounted for in project 675144, 85.375M were accounted for in project 675147, and 174.264M were accounted for in project 675146.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver RQ-4 UAV capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 4.165M expended and in FY21 4.891M is forecasted for civilian pay expenses in this program element.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	191.733	134.589	29.283	0.000	29.283
Current President's Budget	191.733	163.291	83.124	0.000	83.124
Total Adjustments	0.000	28.702	53.841	0.000	53.841
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	28.702			
• 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	53.841	0.000	53.841

**Change Summary Explanation**

USAF plans to begin divestment of the Block 20 aircraft in FY21 and the Block 30 aircraft in FY22. To maximize value to the USAF and DoD, efforts will be pivoted to focus on supporting the Block 40 fleet and Block 30 closeout actions.

FY21 Congressional add of \$28.7M for Waypoint Modification solution.



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV				<b>Project (Number/Name)</b> 675145 / RQ-4 Block 30			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
675145: RQ-4 Block 30	551.869	30.761	0.000	0.000	0.000	0.000	-	-	-	-	-	-
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 2021, PE 0305220F, RQ-4 UAV, Project 675145, RQ-4 Block 30, efforts were transferred to PE 0305220F, RQ-4 UAV, Project 675149, RQ-4 Capability Enhancements, in order to close out Block 30 efforts and focus on supporting the Block 40 fleet.

**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 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.

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<b>Title:</b> RQ-4 Block 30 Development and Demonstration	11.800	0.000	0.000	0.000	0.000
<b>Description:</b> 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.					
<b>FY 2021 Plans:</b> - N/A					
<b>FY 2022 Base Plans:</b> N/A					
<b>FY 2022 OCO Plans:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force				<b>Date:</b> May 2021	
<b>Appropriation/Budget Activity</b> 3600 / 7		<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV		<b>Project (Number/Name)</b> 675145 / RQ-4 Block 30	
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>					
N/A					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A					
<b>Title:</b> RQ-4 MS-177 Sensor Integration					
<b>Description:</b> Integration of MS-177 multispectral sensor into Block 30					
<b>FY 2021 Plans:</b> N/A					
<b>FY 2022 Base Plans:</b> N/A					
<b>FY 2022 OCO Plans:</b> N/A					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A					
<b>Title:</b> RQ-4 Infrastructure					
<b>Description:</b> RQ-4 Infrastructure includes systems engineering, program management, test and evaluation, and fielding support for all RQ-4 projects as well as periodic Operational Flight Program updates and releases, studies, development testing, and Other Government Costs (OGC). This funding was previously included in the RQ-4 Block 30 Development and Demonstration and Block 30 Government Test and Non-Prime Support Accomplishments/Planned Programs, including funding for the 412 TW at Edwards AFB, AFOTEC, JTIC DCGS and other interoperability partners.					
<b>FY 2021 Plans:</b> - N/A					
<b>FY 2022 Base Plans:</b> N/A					
<b>FY 2022 OCO Plans:</b> N/A					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b>					
	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
	0.000	0.000	0.000	0.000	0.000
	18.961	0.000	0.000	0.000	0.000

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675145 / RQ-4 Block 30

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Decrease in funding is due to BPAC 675145 ending					
<b>Title:</b> Block 30 Government Test and Non-Prime Support	0.000	0.000	0.000	0.000	0.000
<b>Description:</b> 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.					
<b>FY 2021 Plans:</b> - N/A					
<b>FY 2022 Base Plans:</b> N/A					
<b>FY 2022 OCO Plans:</b> N/A					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A					
<b>Accomplishments/Planned Programs Subtotals</b>	30.761	0.000	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
<b>Line Item</b>											
• APAF 05 Line Item HAWK00: RQ-4 Mods	1.704	0.000	0.000	-	0.000	-	-	-	-	-	-
• APAF 07 Line Item RQ4DIS: RQ-4 Post Production Support	47.246	0.000	0.000	-	0.000	-	-	-	-	-	-

**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), Collins Aerospace.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675145 / RQ-4 Block 30

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-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date: May 2021**

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675145 / RQ-4 Block 30
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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	323.131	11.800	Jan 2020	-		-		-		-	-	-	346.557
RQ-4 MS-177 Sensor Integration	SS/ Various	Various : Various	149.237	0.000		0.000		0.000		0.000		0.000	-	-	212.033
RQ-4 Infrastructure	Various	Various : Various	18.806	13.961	Mar 2020	0.000		0.000		0.000		0.000	-	-	147.214
<b>Subtotal</b>			491.174	25.761		0.000		0.000		0.000		0.000	-	-	N/A

**Remarks**  
 Target Value of the Global Hawk EMD, IDIQ, and EPIC Contracts are not segregated by Budget Project Number.  
 Target Value of RQ-4 Infrastructure Contracts are not segregated by Budget Project Number.

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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	3.516	0.000		0.000		0.000		0.000		0.000	-	-	3.516
<b>Subtotal</b>			3.516	0.000		0.000		0.000		0.000		0.000	-	-	N/A

**Remarks**  
 Target Value of the Global Hawk effort is not segregated by Budget Project Number.

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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	40.626	5.000	Jan 2020	0.000		0.000		0.000		0.000	-	-	50.789
<b>Subtotal</b>			40.626	5.000		0.000		0.000		0.000		0.000	-	-	N/A

**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: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675145 / RQ-4 Block 30
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<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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	12.526	0.000		0.000		0.000		0.000		0.000	-	-	12.526
PMA: Other Government Costs	Various	Various : Dayton, OH	4.027	0.000		0.000		0.000		0.000		0.000	-	-	6.060
<b>Subtotal</b>			16.553	0.000		0.000		0.000		0.000		0.000	-	-	N/A

**Remarks**  
Target Value of the Global Hawk effort is not segregated by Budget Project Number.

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	551.869	30.761	0.000	0.000	0.000	0.000	-	-	N/A

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675145 / RQ-4 Block 30
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FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>RQ-4 Block 30</b>	
Enhanced Weather Capability Development	
ASIP Inc 1 Development	
RQ-4 Infrastructure & Test	

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675145 / RQ-4 Block 30
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>RQ-4 Block 30</b>				
Enhanced Weather Capability Development	1	2020	2	2020
ASIP Inc 1 Development	1	2020	3	2020
RQ-4 Infrastructure & Test	1	2020	4	2020



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV				<b>Project (Number/Name)</b> 675149 / RQ-4 Capability Enhancements			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
675149: RQ-4 Capability Enhancements	379.035	160.472	163.291	83.124	0.000	83.124	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**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 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). This project will include systems engineering/ program management, configuration and data management, test and evaluation, management services, Deficiency Report (DR)/Military Intelligence Program (MIP) Investigations, studies and analysis and fielding support for Block 30, Block 40, and Ground Segment/Communication Systems.

Activities include airspace and interoperability and communication enhancements and updates, periodic Operational Flight Program updates and releases, airframe and software upgrades, effort to bring early production aircraft to current operational configurations, deficiency report resolution across RQ-4 fleet, sensor enhancements including data distribution and storage, and alternate sensor upgrades including the MS-177, ISR Payload Adapter, enhanced communications 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, Authority to Operate surety enhancements, 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, increased power generation, additional radar modes, reliability and maintainability improvements, Ground Segment Modernization Program (GSMP) 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. This funding also addresses DMS resolution for other mission critical equipment.

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 fielding. 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 in the DoD Information Network (DoDIN).

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675149 / RQ-4 Capability Enhancements
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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.

USAF plans to begin divestment of the Block 20 aircraft in FY21 and the Block 30 aircraft in FY22. To maximize value to the USAF and DoD, efforts will be pivoted to focus on supporting the Block 40 fleet and Block 30 closeout actions.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver RQ-4 UAV weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605831F. In FY20 \$4.165M expended and in FY21 \$4.891M is estimated for civilian pay expenses in this program element.

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 Systems (UAS) Command and Control Initiative (UCI) or the DoD's Unmanned Control Segment standards (UCS) and Open Mission Systems (OMS). Ground Segment Modernization Program (GSMP) will incorporate UCI and UCS standards.

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

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p><b>Title:</b> RQ-4 Ground Segment Modernization Program (GSMP)</p> <p><b>Description:</b> 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><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>- Completing Developmental Test of 1st of 2 planned SW releases.</li> <li>- Will complete integration and begin DT of 2nd SW release.</li> </ul> <p><b>FY 2022 Base Plans:</b></p> <ul style="list-style-type: none"> <li>-Will complete Development Test of 2nd of 2 planned SW releases.</li> <li>-Will begin Operational Test and Evaluation of system.</li> </ul> <p><b>FY 2022 OCO Plans:</b></p>	101.381	81.500	37.601	0.000	37.601

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675149 / RQ-4 Capability Enhancements
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
N/A					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding decreased due to concluding developmental testing of GSMP.					
<b>Title:</b> RQ-4 MS-177 Sensor Integration	18.140	0.000	0.000	0.000	0.000
<b>Description:</b> Integration of MS-177 multispectral sensor into Block 30					
<b>FY 2021 Plans:</b> -N/A					
<b>FY 2022 Base Plans:</b> -N/A					
<b>FY 2022 OCO Plans:</b> N/A					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A					
<b>Title:</b> RQ-4 Infrastructure	40.951	81.791	45.523	0.000	45.523
<b>Description:</b> RQ-4 Infrastructure includes system engineering, program management, test and evaluation, and fielding support for all RQ-4 projects as well as periodic Operational Flight Program (OFP) updates and releases, development testing, and Other Government Costs (OGC). This funding was previously included in the RQ-4 Capability Enhancements Accomplishment/Planned Program, including funding for the 412th TW at Edwards AFB, AFOTEC, JTIC DCGS and other interoperability partners. This supports Waypoint Modification - Dynamic Mission Operations (DYNAMO).					
<b>FY 2021 Plans:</b> - Supporting Developmental Testing of GSMP					
<b>FY 2022 Base Plans:</b> - Will support two phases of Developmental Testing of GSMP - Will support Operational Testing of GSMP - Will support Enterprise Services/Flight Test Services and Comm System Upgrades to aircraft and ground stations					
<b>FY 2022 OCO Plans:</b>					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675149 / RQ-4 Capability Enhancements
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
N/A					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> - Funding decreased due to divestiture of Block 20 aircraft and planned divestiture of Block 30 aircraft.					
<b>Accomplishments/Planned Programs Subtotals</b>	160.472	163.291	83.124	0.000	83.124

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• APAF 05 Line Item HAWK00: RQ-4 Mods	1.704	3.350	3.205	-	3.205	-	-	-	-	-	-
• APAF 07 Line Item RQ4DIS: RQ-4 Post Production Support	47.246	1.750	24.592	-	24.592	-	-	-	-	-	-

**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), Collins Aerospace.

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-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675149 / RQ-4 Capability Enhancements
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<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
RQ-Capability Enhancements	SS/ Various	Northrop Grumman Integrated Systems : San Diego, CA	2.380	0.000		0.000		0.000		0.000		0.000	-	-	2.380
Integrated Functional Capability 9	SS/CPIF	Northrop Grumman Integrated Systems : San Diego, CA	7.771	0.000		0.000		0.000		0.000		0.000	-	-	7.771
RQ-4 Ground Segment Modernization Program (GSMP)	SS/CPIF	Northrop Grumman Integrated Systems : San Diego, CA	205.511	101.381	Jan 2020	81.489	Mar 2021	37.601	Oct 2021	-		37.601	-	-	414.785
RQ-4 MS-177 Sensor Integration	SS/ Various	Various : San Diego, CA	72.463	18.140	Jan 2020	0.000		0.000		-		0.000	-	-	212.033
RQ-4 Infrastructure	Various	Various : Various	51.322	22.751	Mar 2020	64.302	Mar 2021	26.053	Oct 2021	-		26.053	-	-	203.878
RQ-4 Block 40 ISR Payload Adapter Design Study	SS/TBD	NGAS : San Diego, CA	8.000	0.000		0.000		0.000		0.000		0.000	-	-	8.000
<b>Subtotal</b>			347.447	142.272		145.791		63.654		0.000		63.654	-	-	N/A

**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 \$43.414M of funding in Budget Project Number 675147, RQ-4 Grnd Segment/Comm System  
 Target Value of MS-177 contract includes \$121.431M of funding in Budget Project Number 675145, RQ-4 Block 30  
 Target Value of RQ-4 Infrastructure is not segregated by Budget Project Number.

<b>Support (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Non Prime Technical Support	Various	Various : Dayton, OH	2.117	0.900	Jan 2020	1.290	Jan 2021	1.290	Jan 2022	-		1.290	-	-	-
<b>Subtotal</b>			2.117	0.900		1.290		1.290		-		1.290	-	-	N/A

**Remarks**  
 Target Value of the RQ-4 effort is not segregated by Budget Project Number.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675149 / RQ-4 Capability Enhancements
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<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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	21.555	5.360	Jan 2020	5.342	Feb 2021	10.342	Oct 2021	-		10.342	-	-	-
<b>Subtotal</b>			21.555	5.360		5.342		10.342		-		10.342	-	-	N/A

**Remarks**  
Target Value of the RQ-4 effort is not segregated by Budget Project Number.

<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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	5.484	4.700	Nov 2019	4.200	Feb 2021	3.500	Oct 2021	-		3.500	-	-	-
PMA: Other Government Costs	Various	Various : Dayton, OH	2.432	7.240	Oct 2019	6.668	Oct 2020	4.338	Oct 2021	-		4.338	-	-	-
<b>Subtotal</b>			7.916	11.940		10.868		7.838		-		7.838	-	-	N/A

**Remarks**  
Target Value of the RQ-4 effort is not segregated by Budget Project Number.

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	379.035	160.472	163.291	83.124	0.000	83.124	-	-	N/A

**Remarks**  
Target Value of GSMP contract includes \$43.414M of funding in Budget Project Number 675147 Ground Segment/Comm System

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**Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force** **Date: May 2021**

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675149 / RQ-4 Capability Enhancements
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FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b><i>RQ-4 Capability Enhancements</i></b>																												
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																												
RQ-4 Infrastructure & Test																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 675149 / RQ-4 Capability Enhancements

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>RQ-4 Capability Enhancements</b>				
Sensor Enhancements & Upgrades (MS-177) Development	1	2020	4	2020
Ice Protection System Risk Reduction & Analysis	1	2020	4	2020
Ground Segment Maintenance/Upgrades Development	1	2020	4	2022
Ground Segment Modernization Program Development	1	2020	1	2022
Comms Systems Maintenance/Upgrades Development	1	2020	4	2022
RQ-4 Infrastructure & Test	1	2020	4	2022



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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV				<b>Project (Number/Name)</b> 67RTIP / MP-RTIP			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
67RTIP: MP-RTIP	244.794	0.500	0.000	0.000	0.000	0.000	-	-	-	-	-	-
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 MP-RTIP modernization and integration efforts for the RQ-4 Block 40 Platform. MP-RTIP modernization studies and development insertion include the implementation of Maritime Modes (MM), Maritime Inverse SAR (MISAR), product improvements and other advanced capabilities. GH Program Office will continue integration of radar capabilities to include Maritime Modes integration into RQ-4 aircraft and ground systems.

Activities also include studies and analysis supporting current and future program planning and future modes development based on user requirements.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver MPRTIP weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605831F.

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

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<b>Title:</b> Multi-Platform Radar Tech Insertion Program (MP-RTIP)	0.500	0.000	0.000	0.000	0.000
<b>Description:</b> MP-RTIP development and integration					
<b>FY 2021 Plans:</b> N/A					
<b>FY 2022 Base Plans:</b> N/A					
<b>FY 2022 OCO Plans:</b>					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 67RTIP / MP-RTIP
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
N/A					
<i><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b></i> N/A					
<b>Accomplishments/Planned Programs Subtotals</b>	0.500	0.000	0.000	0.000	0.000

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APAF 05 Line Item HAWK00: RQ-4 Mods	1.704	40.468	12.443	-	12.443	-	-	-	-	-	-
• APAF 07 Line Item RQ4DIS: RQ-4 Post Production Support	47.246	32.585	25.070	-	25.070	-	-	-	-	-	-
• RDTE 07 PE 0305238F: NATO AGS	32.567	36.731	20.795	-	20.795	-	-	-	-	-	-

**Remarks**

**D. Acquisition Strategy**

- Will complete transition to sustainment and GH Program Office will have responsibility for future radar development.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 67RTIP / MP-RTIP
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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	196.996	0.500		0.000		0.000		0.000		0.000	-	-	-
<b>Subtotal</b>			196.996	0.500		0.000		0.000		0.000		0.000	-	-	N/A

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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, NV	0.105	0.000		0.000		0.000		0.000		0.000	-	-	-
Logistics Planning	SS/CPFF	Northrop Grumman Integrated Systems : El Segundo, CA	3.667	0.000		0.000		0.000		0.000		0.000	-	-	-
<b>Subtotal</b>			3.772	0.000		0.000		0.000		0.000		0.000	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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, NV	9.536	0.000		0.000		0.000		0.000		0.000	-	-	-
<b>Subtotal</b>			9.536	0.000		0.000		0.000		0.000		0.000	-	-	N/A

<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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, NV	30.698	0.000		0.000		0.000		0.000		0.000	-	-	-
PMA: Other Gov't Cost	Various	Various : Boston, MA	3.792	0.000		0.000		0.000		0.000		0.000	-	-	-
<b>Subtotal</b>			34.490	0.000		0.000		0.000		0.000		0.000	-	-	N/A

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 67RTIP / MP-RTIP
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	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	244.794	0.500	0.000	0.000	0.000	0.000	-	-	N/A

**Remarks**  
Funds are required in FY20 to close out the entire MP-RTIP SDD contract #F19628-00-C-0100.

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**Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 67RTIP / MP-RTIP
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FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>MP-RTIP</b>	
SDD MP-RTIP Radar Transition to RQ-4 Block 40 Program Office	
Radar Mode Integration & Mode Development (IFC 9/10)	
SDD Contract Close Out	

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305220F / RQ-4 UAV	<b>Project (Number/Name)</b> 67RTIP / MP-RTIP
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>MP-RTIP</i></b>				
SDD MP-RTIP Radar Transition to RQ-4 Block 40 Program Office	1	2020	2	2020
Radar Mode Integration & Mode Development (IFC 9/10)	1	2020	4	2020
SDD Contract Close Out	2	2020	3	2020

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305221F / <i>Network-Centric Collaborative Targeting</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	10.757	15.022	17.224	0.000	17.224	-	-	-	-	-	-
675197: <i>NCCT Core Technology</i>	-	10.757	15.022	17.224	0.000	17.224	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

Network Centric Collaborative Targeting (NCCT) is the Air Force program of record for geo-location and is responsible for developing the fusion engine supporting the horizontal and/or vertical integration of Intelligence, Surveillance and Reconnaissance (ISR) sensor systems. The result of such integration is a multi-intelligence (multi-INT) sensor network. Operationally, NCCT Core Technologies provide a tactical collaborative multi-INT geolocation capability employed against high-value targets. NCCT software supports Machine-to-Machine (M2M) cross-cueing and Internet Protocol (IP) connectivity to coordinate collection activities across the NCCT network. NCCT correlation and fusion software ingests collection data to produce a single, composite track (geolocation and identification) in near real-time 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 technologies to emerging network centric technologies, global web-enabled services, while satisfying DoD standards and Information Assurance requirements.

NCCT Core Technology includes network management software, a network messaging standard, correlation and fusion software, software supporting tactical-to-national Signals Intelligence (SIGINT) Concept of Operations (CONOPS), multi-level security hardware and software items and operator interfaces. Development funds support software modifications required for technology modernization specific to network and fusion architecture design, data fusion algorithms and cyber security, while keeping pace with evolving adversary tactics, techniques, and procedures (TTPs). FY 2022 funding will be dedicated to completing the transition of NCCT Core Technology to a cloud-enabled architecture across the enterprise to support integration with Advanced Battle Management System (ABMS) and the Sensing Grid, developing new multi-INT use cases, and the continuation of rapid software deliveries based on continuous user feedback.

Due to the rapidly changing threat environment and operational demand from platforms leveraging NCCT capabilities, the acquisition program manager has the authority to redirect funding as necessary to meet currently stated and/or emerging operational requirements.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver NCCT weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY19 \$0M and in FY20 \$0M was expended for civilian pay expenses in this program element.

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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force				<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 0305221F / <i>Network-Centric Collaborative Targeting</i>				
<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	
Previous President's Budget	10.757	15.049	17.761	0.000	17.761	
Current President's Budget	10.757	15.022	17.224	0.000	17.224	
Total Adjustments	0.000	-0.027	-0.537	0.000	-0.537	
• Congressional General Reductions	0.000	-0.027				
• 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	-0.537	0.000	-0.537	
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>				<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Core Technology				10.757	15.022	17.224
<b>Description:</b> Accomplishments and planned efforts include development and upgrade of NCCT Core Technology; technical support to users, fielding new user capabilities, and management activities						
<b>FY 2021 Plans:</b> Continue the transition of NCCT Core Technology to a cloud-enabled architecture across the enterprise to enable integration with ABMS and the Sensing Grid, integrating with other intelligence phenomenologies, developing new multi-INT use cases, and the continuation of rapid software deliveries based on continuous user feedback and DevSecOps.						
<b>FY 2022 Plans:</b> FY 2022 funding will be dedicated to completing the transition of NCCT Core Technology to a cloud-enabled architecture across the enterprise to support integration with Advanced Battle Management System (ABMS) and the Sensing Grid, developing new multi-INT use cases, and the continuation of rapid software deliveries based on continuous user feedback.						
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding increased due to an internal program rephasing from FY20 to FY22 and FY23						
<b>Accomplishments/Planned Programs Subtotals</b>				10.757	15.022	17.224



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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305221F / <i>Network-Centric Collaborative Targeting</i>
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**D. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF 03 Line Item 832070: <i>Intelligence Comm Equipment</i>	3.148	2.997	3.225	-	3.225	-	-	-	-	-	-

**Remarks**

**E. 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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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305221F / <i>Network-Centric Collaborative Targeting</i>	<b>Project (Number/Name)</b> 675197 / <i>NCCT Core Technology</i>

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>Core Technology</b>	
V5 Series Field Upgrades	
V6 Development, Integration, and Test	
V6 Series Field Upgrades	
V7 Development, Integration, and Test	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305221F / <i>Network-Centric Collaborative Targeting</i>	<b>Project (Number/Name)</b> 675197 / <i>NCCT Core Technology</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Core Technology</b>				
V5 Series Field Upgrades	1	2020	2	2022
V6 Development, Integration, and Test	1	2020	2	2022
V6 Series Field Upgrades	3	2022	4	2022
V7 Development, Integration, and Test	3	2022	4	2022

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305238F / NATO AGS
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	32.567	36.664	19.473	0.000	19.473	-	-	-	-	-	-
676001: NATO AGS	-	32.567	36.664	19.473	0.000	19.473	-	-	-	-	-	-
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 the processing and exploitation of Intelligence, Surveillance, and Reconnaissance (ISR) data.

The AGS program includes: air and ground segment acquisitions, operations of the NATO AGS Management Agency (NAGSMA), development of operations and support 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 element may include necessary civilian pay expenses required to manage, execute, and deliver NATO AGS system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.000M was expended for civilian pay expenses in this program element, and in FY21 \$0.000M is forecasted for civilian pay expenses in this program element.

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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305238F / NATO AGS
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	32.567	36.731	0.795	0.000	0.795
Current President's Budget	32.567	36.664	19.473	0.000	19.473
Total Adjustments	0.000	-0.067	18.678	0.000	18.678
• 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	-0.067	18.678	0.000	18.678

**Change Summary Explanation**

Funding increased due to contract award for maritime modes and program protection integration and testing.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
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<b>Title:</b> Design / Development of NATO Alliance Ground Surveillance (AGS)	5.848	0.254	4.384
<b>Description:</b> U.S. contribution to NATO for AGS development acquisition and initial fielding. Supports configuration changes at a system level and air vehicle exportability modifications.			
<b>FY 2021 Plans:</b> - Supporting U.S. Government's contribution to NATO AGS Management Agency (NAGSMA) closeout costs.			
<b>FY 2022 Plans:</b> - Will continue to support U.S. Government's contribution to NATO AGS Management Agency (NAGSMA) closeout costs.			
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> - Funding increased due to costs associated with final contract closeout and transition to operations.			
<b>Title:</b> Design/Development of Maritime Modes	24.682	23.463	13.261
<b>Description:</b> 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.			
<b>FY 2021 Plans:</b>			

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 0305238F / NATO AGS		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p>- Continues development of Maritime Modes Capability and additional configuration changes. Includes pre-contract negotiations and final award with Northrop Grumman. Continues software development and integration on aircraft.</p> <p><b>FY 2022 Plans:</b></p> <p>- Will integrate new software into ground systems for test. Will integrate and test software on remaining NATO AGS aircraft.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b></p> <p>- Funding decreased due to progress towards completion of Maritime Modes effort.</p>				
<p><b>Title:</b> Technical Support for NATO Alliance Ground Surveillance (AGS)</p> <p><b>Description:</b> Provide engineering and logistics support for NATO AGS development, fielding, deferred capabilities, and obsolescence studies.</p> <p><b>FY 2021 Plans:</b></p> <p>- Continues engineering, logistics, and program office support for Maritime Modes development and fielding. Support evaluation of fielded aircraft to inform studies on sustainment requirements.</p> <p><b>FY 2022 Plans:</b></p> <p>- Will continue engineering, logistics, and program office support for Maritime Modes development and fielding. Will support evaluation of fielded aircraft to inform studies on sustainment requirements.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b></p> <p>- Funding increased due to greater level of effort needed for fielding of final configuration.</p>		1.002	0.103	1.778
<p><b>Title:</b> Test and Evaluation Support for NATO Alliance Ground Surveillance (AGS)</p> <p><b>Description:</b> Provide testing and evaluation via the Air Force Test Center.</p> <p><b>FY 2021 Plans:</b></p> <p>- Continuing flight test support to Maritime Modes development and initial fielding.</p> <p><b>FY 2022 Plans:</b></p> <p>- Will conduct Maritime Modes flight testing.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b></p> <p>- Funding decreased due to completion of flight testing on initial aircraft.</p>		1.035	12.844	0.050
<b>Accomplishments/Planned Programs Subtotals</b>		32.567	36.664	19.473

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305238F / NATO AGS
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**D. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE 07 PE 0305220F: RQ-4 UAV	191.733	163.291	83.124	-	83.124	-	-	-	-	-	-

**Remarks**

**E. Acquisition Strategy**

Acquisition of the AGS system is being accomplished via a single delivery strategy. The system has been delivered via a fixed price direct commercial sale contract between Northrop Grumman Integrated System Sector International, Incorporated (NGISSII) & NATO, which was signed on 20 May 2012. The program is managed by the NATO AGS Management Agency (NAGSMA). A cost-plus incentive fee US contract is in place for the integration and testing of Maritime Modes.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305238F / NATO AGS	<b>Project (Number/Name)</b> 676001 / NATO AGS
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	5.848	Oct 2019	0.254	Dec 2020	4.384	Dec 2021	-		4.384	-	-	-
Maritime Modes Design / Development	SS/CPIF	AFLCMC/HB : WPAFB, OH	-	24.682	Dec 2019	23.463	Dec 2020	13.261	Dec 2021	-		13.261	-	-	-
<b>Subtotal</b>			-	30.530		23.717		17.645		-		17.645	-	-	N/A

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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, OH	-	1.002	Dec 2019	0.103	Dec 2020	1.778	Dec 2021	-		1.778	-	-	-
<b>Subtotal</b>			-	1.002		0.103		1.778		-		1.778	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	1.035	Oct 2019	12.844	Dec 2020	0.050	Dec 2021	-		0.050	-	-	-
<b>Subtotal</b>			-	1.035		12.844		0.050		-		0.050	-	-	N/A

			Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			-	32.567	36.664	19.473	-	19.473	-	-	N/A

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**Exhibit R-3, RDT&E Project Cost Analysis:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305238F / NATO AGS	<b>Project (Number/Name)</b> 676001 / NATO AGS
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	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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**Remarks**  
 The Industrial Structure consists of Northrop Grumman (Northrop Grumman Integrated Systems Sector International, Incorporated - 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 Advisory & Assistance Services to NATO. 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 MITRE Engineering, U.S. Navy's Triton program office support, U.S. government travel, and supplies.

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**Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305238F / NATO AGS	<b>Project (Number/Name)</b> 676001 / NATO AGS
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FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>NATO AGS</b>																												
Design and Development - NATO AGS																												
Aircraft #1 Ferry Flight to Main Ops Base (November 2019)																												
Aircraft #2 Delivery to NATO (December 2019)																												
Aircraft #3 & #4 Delivery to NATO (July 2020)																												
Aircraft #5 Delivery to NATO (October 2020)																												
System Level Performance Verification (December 2019 - March 2021)																												
IOC (March 2021)																												
FOC (December 2023)																												
Test & Eval Support to NATO AGS																												
Flight Test - NATO AGS (September 2019 - September 2020)																												
Design & Development - Maritime Modes																												
Tech Support - NATO AGS																												
Maritime Mode Test Support																												

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**Exhibit R-4A, RDT&E Schedule Details: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305238F / NATO AGS	<b>Project (Number/Name)</b> 676001 / NATO AGS
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>NATO AGS</b>				
Design and Development - NATO AGS	1	2020	4	2022
Aircraft #1 Ferry Flight to Main Ops Base (November 2019)	1	2020	1	2020
Aircraft #2 Delivery to NATO (December 2019)	1	2020	1	2020
Aircraft #3 & #4 Delivery to NATO (July 2020)	4	2020	4	2020
Aircraft #5 Delivery to NATO (October 2020)	1	2021	1	2021
System Level Performance Verification (December 2019 - March 2021)	1	2020	2	2021
IOC (March 2021)	2	2021	2	2021
FOC (December 2023)	1	2024	1	2024
Test & Eval Support to NATO AGS	1	2020	1	2021
Flight Test - NATO AGS (September 2019 - September 2020)	1	2020	4	2020
Design & Development - Maritime Modes	1	2020	1	2023
Tech Support - NATO AGS	1	2020	4	2023
Maritime Mode Test Support	2	2020	4	2022

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305240F / <i>Support to DCGS Enterprise</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	37.774	33.486	40.421	0.000	40.421	-	-	-	-	-	-
674826: <i>Common Imagery Ground / Surface Systems</i>	-	15.382	1.088	2.330	0.000	2.330	-	-	-	-	-	-
675265: <i>Common Imagery Processor (CIP)</i>	-	22.392	32.398	38.091	0.000	38.091	-	-	-	-	-	-

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

This Program Element funds the Imagery Processing effort which consists of the Virtual Imagery Processing Capability (VIP-C) program and associated Imagery Processing Research and Development.

1) The Imagery Processing effort develops the Virtual Imagery Processing Capability (VIP-C) within the DCGS architecture. The VIP-C provides end-to-end image processing to include raw data ingest, data format standardization to facilitate exploitation, secondary image processing, metadata conditioning, and image quality enhancements. Current efforts are focused on 1) ensuring new sensors being fielded and associated data types can be processed and 2) increasing investment in the Machine Assisted Geospatial Intelligence (GEOINT) Exploitation (MAGE) capability.

2)The DCGS Enterprise Interoperability effort 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.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.00M and in FY21 \$0.00M was expended for civilian pay expenses in this program element.

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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305240F / <i>Support to DCGS Enterprise</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	37.774	33.547	14.496	0.000	14.496
Current President's Budget	37.774	33.486	40.421	0.000	40.421
Total Adjustments	0.000	-0.061	25.925	0.000	25.925
• 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	-0.061	25.925	0.000	25.925

**Change Summary Explanation**

In FY 2022, \$18.065 million was added to the program to further improve imagery processing and the Machine Assisted Geospatial Intelligence (GEOINT) Exploitation (MAGE) capabilities. In addition, BY funding totals include \$7.86 million requested for Direct War and/or Enduring Requirements costs.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305240F / Support to DCGS Enterprise	<b>Project (Number/Name)</b> 674826 / Common Imagery Ground / Surface Systems
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
674826: Common Imagery Ground / Surface Systems	-	15.382	1.088	2.330	0.000	2.330	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

This project element funds the Common Imagery Ground / Surface Systems enterprise support capabilities. This includes support to OUSD(I) and AF DCGS priority efforts.

The funding 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.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.00M and in FY21 \$0.00M was expended for civilian pay expenses in this program element.

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

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p><b>Title:</b> Distributed Common Ground / Surface System (DCGS) Integration Backbone and Test/Community Support for the DCGS Enterprise</p> <p><b>Description:</b> Develop, modernize, integrate, test and manage the DIB and provide test/community support to the DCGS enterprise.</p> <p><b>FY 2021 Plans:</b> None due to transfer of funds to DIA's Common Data Fabric (CDF) effort.</p> <p><b>FY 2022 Base Plans:</b> N/A</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A</p>	13.075	0.000	0.000	-	0.000
<p><b>Title:</b> DCGS Enterprise Interoperability</p> <p><b>Description:</b> Provide support to OUSD(I), AF DCGS and NATO Interoperability Enterprise efforts.</p>	2.307	1.088	2.330	-	2.330

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305240F / Support to DCGS Enterprise	<b>Project (Number/Name)</b> 674826 / Common Imagery Ground / Surface Systems

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<p><b><i>FY 2021 Plans:</i></b> Continue to support to OUSD(I), AF DCGS and NATO Interoperability Enterprise efforts.</p> <p><b><i>FY 2022 Base Plans:</i></b> Will continue to support OUSD(I), AF DCGS and NATO Interoperability Enterprise efforts.</p> <p><b><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i></b> Funding increase due to increase in Support to DCGS Enterprise IPT activity.</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	15.382	1.088	2.330	-	2.330

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

N/A

**Remarks**

**D. Acquisition Strategy**

The Air Force uses an evolutionary, incremental acquisition approach with development cycles and sprints to develop, field, and upgrade the system and structure contracts for the improved capabilities through full and open competition to the maximum extent possible. Additionally, strategic partnerships and agreements with National Laboratories and other agencies will be utilized.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305240F / Support to DCGS Enterprise	<b>Project (Number/Name)</b> 674826 / Common Imagery Ground / Surface Systems
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	8.729	Feb 2020	-		-		-		-	-	-	-
<b>Subtotal</b>			-	8.729		-		-		-		-	-	-	N/A

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
HCIC & IA	C/Various	Various : Various	-	0.173	Jan 2020	-		-		-		-	-	-	-
DCGS Enterprise Interoperability	C/Various	Various : Various	-	2.307	Apr 2020	1.088	Apr 2021	2.330	Apr 2022	-		2.330	-	-	-
<b>Subtotal</b>			-	2.480		1.088		2.330		-		2.330	-	-	N/A

<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
A&AS	C/CPAF	Various : Various	-	3.326	Feb 2020	-		-		-		-	-	-	-
Program Management Administration	C/CPAF	Various : Various	-	0.847	Oct 2020	-		-		-		-	-	-	-
<b>Subtotal</b>			-	4.173		-		-		-		-	-	-	N/A

			Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			-	15.382	1.088	2.330	-	2.330	-	-	N/A

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305240F / Support to DCGS Enterprise	<b>Project (Number/Name)</b> 674826 / Common Imagery Ground / Surface Systems

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>DIB</b>	
DIB Next Generation Interoperability Version	[REDACTED]

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305240F / Support to DCGS Enterprise	<b>Project (Number/Name)</b> 674826 / Common Imagery Ground / Surface Systems

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>DIB</i></b>				
DIB Next Generation Interoperability Version	1	2020	4	2020

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305240F / Support to DCGS Enterprise	<b>Project (Number/Name)</b> 675265 / Common Imagery Processor (CIP)
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
675265: Common Imagery Processor (CIP)	-	22.392	32.398	38.091	0.000	38.091	-	-	-	-	-	-
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 include further developing the virtual software capability to improve processing across the enterprise and testing, development, and demonstrations integrating updated and new/emerging sensors into DCGS. In addition, the project involves increasing capability through the Machine Assisted Geospatial Intelligence (GEOINT) Exploitation (MAGE) effort.

BY funding totals include \$7.86 million requested for Direct War and/or Enduring Requirements costs.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.00M and in FY21 \$0.00M was expended for civilian pay expenses in this program element.

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

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<b>Title:</b> Imagery Processor	22.392	32.398	38.091	0.000	38.091
<b>Description:</b> Continue developing VIP-C to keep pace with growing sensor baseline and enhance imagery data quality.					
<b>FY 2021 Plans:</b> - Continue to upgrade and improve VIP-C to enable better geo-coordinate accuracy, facilitate automated intelligence discovery and integrate new algorithms.					
- Continue MAGE research and development by leveraging Department of Energy and Air Force Research Laboratory expertise. This includes identification of targets through machine learning algorithms, use and refinement of test harness, validation of new algorithms, and generation test data and methods.					
<b>FY 2022 Base Plans:</b>					

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305240F / Support to DCGS Enterprise	<b>Project (Number/Name)</b> 675265 / Common Imagery Processor (CIP)

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
- Will continue to upgrade and improve VIP-C to enable better geo-coordinate accuracy, facilitate automated intelligence discovery and integrate new algorithms. This includes development integrating into a Cloud infrastructure and cyber defense.					
- Will continue MAGE research and development by leveraging Department of Energy and Air Force Research Laboratory expertise. This includes identification of targets through machine learning algorithms, use and refinement of test harness, validation of new algorithms, and generation of test data and methods.					
<b><i>FY 2022 OCO Plans:</i></b> FY22 OCO Funds will further MAGE research and development by leveraging Department of Energy and Air Force Research Laboratory expertise. This includes identification of targets through machine learning algorithms, use and refinement of test harness, validation of new algorithms, and generation of test data and methods.					
<b><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i></b> Funding was increased to further develop and improve imagery processing and MAGE capabilities.					
<b>Accomplishments/Planned Programs Subtotals</b>	22.392	32.398	38.091	0.000	38.091

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPAF 04 Line Item 846080: DCGS-AF	21.918	22.288	124.774	-	124.774	-	-	-	-	-	-

**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.



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**Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305240F / Support to DCGS Enterprise	<b>Project (Number/Name)</b> 675265 / Common Imagery Processor (CIP)
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	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>Virtual Imagery Processing Capability</b>	
Software Release (3.54)	
Machine Assisted GEOINT Exploitation Investment	
Software Release (3.56)	
Software Release (3.58)	
Software Release (3.60)	
Software Release (3.x)	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305240F / Support to DCGS Enterprise	<b>Project (Number/Name)</b> 675265 / Common Imagery Processor (CIP)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Virtual Imagery Processing Capability</i></b>				
Software Release (3.54)	1	2020	2	2020
Machine Assisted GEOINT Exploitation Investment	2	2020	4	2022
Software Release (3.56)	2	2020	4	2020
Software Release (3.58)	4	2020	1	2021
Software Release (3.60)	1	2021	4	2021
Software Release (3.x)	3	2021	4	2022



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305600F / <i>International Intelligence Technology and Architectures</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	13.515	17.283	14.473	0.000	14.473	-	-	-	-	-	-
675898: <i>International Intelligence Technology and Arc</i>	-	13.515	17.283	14.473	0.000	14.473	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

International Intelligence Technology and Architectures (IITA) oversees, manages, and provides the United States (US) component of the multi-national US Battlefield Information Collection and Exploitation Systems - Extended (US BICES-X). The continued development effort of IITA will provide a collaborative environment and intelligence sharing enterprise required for processing and disseminating critical intelligence information across Department of Defense (DoD), Combat Support Agencies (CSA), North Atlantic Treaty Organization (NATO), allied and coalition forces and multiple Combatant Commands (CCMD) for the Office of the Under Secretary of Defense, Intelligence and Security (OUSD(I&S)).

The US BICES RDT&E activities include the following:

- 1) Assessing new and existing intelligence sharing technologies being developed within DoD and the intelligence community.
- 2) Defining which technologies can significantly advance intelligence sharing capabilities of US and Allied/Coalition forces.
- 3) Integrating technologies into the current US BICES-X Enterprise and emerging US international intelligence architectures and systems consistent with the Defense Intelligence Information Enterprise (DI2E) Framework and Mission Partner Environment (MPE) supporting global operations.

US BICES-X responds to CCMDs and military services to develop solutions for enhanced intelligence information sharing capabilities and provisions US BICES-X equipment to US and allied/partner location. IITA is assessing potential impacts of new intelligence architectures to support the CCMDs and services. The IITA program also includes the continued integration and expansion of the US BICES-X Enterprise into the DoD's Distributed Common Ground/Surface System (DCGS) across the Services; the DoD intelligence document exploitation system (Harmony), Multi-Domain Dissemination System of Joint Worldwide Intelligence Communications System (JWICS), Secure Internet Protocol Router Network (SIPRNET) access to US BICES, and Full Motion Video (FMV).

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 and provide increased database information via Distributed Common Ground System Family of Systems.
- Expand available intelligence disciplines (Geospatial Intelligence, Signal Intelligence, and potentially Human Intelligence) to support US and allied/coalition forces.
- Support increased intelligence advanced analytics tools, Joint Intelligence Operation Center-IT and DI2E developments to 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 enhance a federated Trusted Network Environment (TNE) that incorporates Foreign Partner information sharing networks globally to support the National Defense Strategy.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305600F / <i>International Intelligence Technology and Architectures</i>
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- Develop multi-level security intelligence bi-laterals and multi-laterals to meet Combatant Commander Integrated Priority Lists.
- Expand capabilities for bi-lateral and multi-lateral federated TNEs in support of CCMD requirements.

BY funding totals include \$3.648M request for the Pacific Defense Initiative 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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	13.515	13.635	13.690	0.000	13.690
Current President's Budget	13.515	17.283	14.473	0.000	14.473
Total Adjustments	0.000	3.648	0.783	0.000	0.783
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	3.648			
• 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	0.783	0.000	0.783

**Change Summary Explanation**

N/A

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Title:</b> International Intelligence Technology and Architectures</p> <p><b>Description:</b> Research and development in emerging and maturing technologies and capabilities for modernizing and transforming US BICES/US BICES-X for improved agility, scalability, access, cybersecurity, and data and information sharing tools and infrastructure.</p> <p><b>FY 2021 Plans:</b> Developed US BICES-X capabilities to include further integration of TNE into the MPE, and development and testing of coalition ISR coalition capabilities. These efforts enable the modernization and transformation of the US BICES/BICES-X worldwide enterprise to enable instantiation or interconnection of any partner network to support any operation.</p> <p><b>FY 2022 Plans:</b></p>	13.515	17.283	14.473

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305600F / <i>International Intelligence Technology and Architectures</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022
Continuing to develop US BICES-X capabilities including further integration of TNE into the MPE, and development and testing of coalition ISR coalition capabilities. These efforts will enable the modernization and transformation of the US BICES/BICES-X worldwide enterprise to enable instantiation or interconnection of any partner network to support any operation.			
<b><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i></b> Funding increased to accelerate the development of functionalities requested by customers, i.e. single sign-on, FMV, and chat.			
<b>Accomplishments/Planned Programs Subtotals</b>	13.515	17.283	14.473

<b>D. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• O&M PE 0305600F: <i>Int'l Intel Tech Architecture</i>	119.674	135.228	141.388	-	141.388	-	-	-	-	-	-
• OPAF 03 Line item 832050: <i>International Intelligence Technology and Architecture</i>	11.386	10.783	5.809	-	5.809	-	-	-	-	-	-

**Remarks**

**E. Acquisition Strategy**  
Utilize existing General Dynamics Mission Systems (GDMS) contract number FA8240-18-D-0360. The contract is structured as an Indefinite Delivery Indefinite Quantity (IDIQ) contract with a period of performance beginning 1 April 2018 through 31 March 2024. US BICES also utilizes the Air Force Research Laboratory as required for all third-party lab-based security assessments of TNE upgrade releases.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305600F / <i>International Intelligence Technology and Architectures</i>	<b>Project (Number/Name)</b> 675898 / <i>International Intelligence Technology and Arc</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
TNE Development	Various	AFRL, GDMS AZ, TX : Rome, NY	-	13.515	Jan 2020	17.283	Jan 2021	14.473	Feb 2022	-		14.473	-	-	-
<b>Subtotal</b>			-	13.515		17.283		14.473		-		14.473	-	-	N/A
<b>Project Cost Totals</b>			-	13.515		17.283		14.473		-		14.473	-	-	N/A

**Remarks**  
N/A



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305600F / <i>International Intelligence Technology and Architectures</i>	<b>Project (Number/Name)</b> 675898 / <i>International Intelligence Technology and Arc</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Trusted Network Environment (TNE) Software Version 4.1 features Webapplication programming interface (API), advanced search, user notifications, user-editable GAL, 2nd phase OS upgrade</i></b>				
TNE	4	2020	2	2021
<b><i>Trusted Network Environment Software Version 4.2 features UX enhancements, Cross-Domain VDI, VoIP/Video HD/VTC enhancements, 3rd phase OS upgrade</i></b>				
TNE	1	2020	4	2021
<b><i>Trusted Network Environment Software Version 4.3 features UX enhancements, FMV, chat peer federation, support for mission applications, 1st phase single sign-on, final phase OS upgrade</i></b>				
TNE	3	2020	2	2022
<b><i>Trusted Network Environment Software Version 5.0 features cloud-based implementation and virtualized connection methods, and updates to FMV</i></b>				
TNE	3	2021	2	2026

**Note**

- GAL - Global Address List
- OS - Operating System
- VDI - Virtual Desktop Infrastructure
- VoIP - Voice of IP
- UX - User Experience
- FMV - Full Motion Video
- HD/VTC - High Definition / Video Teleconferencing

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305881F / <i>Rapid Cyber Acquisition</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	4.223	4.254	4.326	0.000	4.326	-	-	-	-	-	-
670374: <i>Electronic Combat Spt, C3 Protection/Multi-Mission, Technology and Spt</i>	-	4.223	4.254	4.326	0.000	4.326	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

The Rapid Cyber Acquisition (RCA) initiative provides new cyber capabilities in response to a continuously evolving threat environment. The delivery of capabilities to Combatant and Joint Force Commanders, in mission relevant timeframes (0-60 days), enhances the nation's ability to operate within the highly-dynamic cyberspace domain.

The RCA initiative expedites cyber development and modifications of USAF cyber capabilities through the integration with and technical support to other Service and Government Agency activities to leverage select Air Force-developed technologies and/or operational capabilities. RCA develops material or non-material cyber solutions and the tools and environment necessary to conduct rapid prototyping, integration, and transition activities of cyber capabilities. Activities include but are not limited to development of software/hardware systems, integration and transition of lab-developed cyber capabilities, developmental testing, operational evaluation, manpower, studies, analysis, pilots, demonstrations, and risk reduction efforts for emerging technologies.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Rapid Cyber Acquisition capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.000M was expended for civilian pay expenses in this program element, and in FY21 \$0.000M is forecasted for civilian pay expenses in this program element.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade

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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305881F / <i>Rapid Cyber Acquisition</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	4.383	4.262	4.545	0.000	4.545
Current President's Budget	4.223	4.254	4.326	0.000	4.326
Total Adjustments	-0.160	-0.008	-0.219	0.000	-0.219
• Congressional General Reductions	0.000	-0.008			
• 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	-0.160	0.000			
• Other Adjustments	0.000	0.000	-0.219	0.000	-0.219

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<b>Title:</b> Rapid Cyber Acquisition (RCA)	4.223	4.254	4.326	0.000	4.326
<b>Description:</b> Provides dynamic research and development activities to leverage funding from cyber operations requirements owners to conduct quick look assessments, solution design, rapid prototyping, testing, and quick reaction fielding of cyber capabilities.					
<b>FY 2021 Plans:</b>					
- Continue to provide professional and technical subject matter expertise to deliver direction and guidance for offensive cyber operations and computer network exploitation information systems to support the Air Force's cyber mission objectives					
- Continue to maintain multidisciplinary targeting, conduct target systems analysis, and execute developmental planning in support of the USAF cyber mission					
- Continue to design cyber solutions to meet specific combatant command, AF major command, and other agency requirements					
- Continue to utilize a highly skilled rapid reaction team to prototype and deliver cyber capability and perform quick look operational and technical assessments					
- Continue provide an enhanced secure lab capability to support research, prototyping, development, and testing of cyber warfare capabilities					
<b>FY 2022 Base Plans:</b>					



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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305881F / <i>Rapid Cyber Acquisition</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<ul style="list-style-type: none"> <li>- Will maintain multidisciplinary targeting, conduct target systems analysis, and execute developmental planning in support of the USAF cyber mission</li> <li>- Will design cyber solutions to meet specific combatant command, AF major command, and other agency requirements</li> <li>- Will utilize a highly skilled rapid reaction team to prototype and deliver cyber capability and perform quick look operational and technical assessments</li> <li>- Will provide an enhanced secure lab capability to support research, prototyping, development, and testing of cyber warfare capabilities</li> </ul> <p><b>FY 2022 OCO Plans:</b> N/A</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	4.223	4.254	4.326	0.000	4.326

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

N/A

**Remarks**

**E. Acquisition Strategy**

The Rapid Cyber Acquisition (RCA) initiative utilizes a tailorable acquisition strategy that facilitates rapid delivery of material and nonmaterial solutions to solve operational cyber requirements. This approach allows flexibility for solutions to enter the acquisitions process at any phase of the acquisition life cycle. RCA provides the rapid development environment and secure DevOps capacity to meet urgent operational needs/requirements.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305881F / <i>Rapid Cyber Acquisition</i>	<b>Project (Number/Name)</b> 670374 / <i>Electronic Combat Spt, C3 Protection/Multi-Mission, Technology and Spt</i>
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Rapid Cyber Acquisition Development	Various	Various : Various	-	-		-		4.226	Nov 2021	-		4.226	-	-	0.000
<b>Subtotal</b>			-	-		-		4.226		-		4.226	-	-	N/A

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Cyber Capabilities Support Office (CCSO) Interagency Personnel Agreement (IPA)	SS/FFP	MIT Lincoln Laboratory : Lexington, MA	-	0.389	Dec 2019	0.301	Nov 2020	-		-		-	-	-	0.389
Due Diligence Research & Analysis	SS/CPFF	Novetta solutions : Mclean, VA	-	0.157	Mar 2020	-		-		-		-	-	-	-
Cyber Capability Design	C/FFP	X8 Solutions, Inc : Oak Hill, VA	-	1.750	Nov 2019	1.331	Mar 2021	-		-		-	-	-	1.750
Internal Development	SS/CPFF	JHU Applied Physics Lab : Baltimore, MD	-	1.568	Apr 2020	1.522	Feb 2021	-		-		-	-	-	1.728
<b>Subtotal</b>			-	3.864		3.154		-		-		-	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Joint Information Range Development Environment (CCSO Lab Environment)	SS/CPFF	Novetta Solutions : Mclean, VA	-	0.359	May 2020	1.100	May 2021	-		-		-	-	-	0.359
Rapid Cyber Acquisition	MIPR	47 CTS : San Antonio, TX	-	-		-		0.100	Oct 2021	-		0.100	-	-	-
<b>Subtotal</b>			-	0.359		1.100		0.100		-		0.100	-	-	N/A





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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305881F / <i>Rapid Cyber Acquisition</i>	<b>Project (Number/Name)</b> 670374 / <i>Electronic Combat Spt, C3 Protection/Multi-Mission, Technology and Spt</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Cyber Capability Support Office (CCSO)</b>				
CCSO Technical Direction	1	2020	4	2021
Due Diligence Research and Analysis	1	2020	4	2021
Cyber Capability Design	1	2020	4	2021
Internal Development	1	2020	4	2021
JIOR Development Environment (CCSO Lab Environment)	1	2020	4	2021
<b>Rapid Cyber Acquisition</b>				
RCA Activities	1	2022	4	2022

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305984F / <i>Personnel Recovery Command &amp; Ctrl (PRC2)</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	2.057	2.203	2.567	0.000	2.567	-	-	-	-	-	-
675221: <i>Personnel Recovery Command and Control (PRC2)</i>	-	2.057	2.203	2.567	0.000	2.567	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**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 (PR). 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 the 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, inter-operable 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. Annex A to the Personnel Recovery Mission Version 3.0 is the requirement document for initial and full operational capability (IOC/FOC) criteria.

The system collects, stores and delivers personnel/identity biometric data, emergency locator beacon registrations, Isolated Personnel (IP) 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 PR across the 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 FY 2022, Personnel Recover Mission Manager (PRMM) modifications will continue to use an Agile development, security, and operations (DevSecOps) strategy to develop, test and have field-ready PRMM versions in two week increments (sprints) with capability to field by individual story. The modifications will improve/validate IP events/alerts and enable case files for Defense Prisoner of War/Missing Personnel Office (DPMO) and Joint Personnel Recovery Agency (JPRA). PRMM modifications will reflect the requirements and priorities identified by Air Combat Command (ACC) as the personnel recovery environment evolves to meet the needs of the warfighter and personnel recovery efforts.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 0.000M was expended for civilian pay expenses in this program element, and in FY21 0.000M is forecasted for civilian pay expenses in this program element.

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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305984F / <i>Personnel Recovery Command &amp; Ctrl (PRC2)</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	2.133	2.207	2.605	0.000	2.605
Current President's Budget	2.057	2.203	2.567	0.000	2.567
Total Adjustments	-0.076	-0.004	-0.038	0.000	-0.038
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-0.004			
• 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	-0.076	0.000			
• Other Adjustments	0.000	0.000	-0.038	0.000	-0.038

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<b>Title:</b> PRC2 - PRMM Development	1.933	2.007	2.392	0.000	2.392
<b>Description:</b> PRC2 will use an Agile development, security, and operations (DevSecOps) strategy to test and field tools and services for planning and managing search and rescue efforts, and disseminate the related information for personnel recovery.					
<b>FY 2021 Plans:</b> - Will develop, test and have field-ready PRMM versions X.X.X.B through X.X.X.C in two-week increments with capability to field by individual story; development effort will encompass changes to a more Map Centric and user intuitive design, and an interface with Common Distress Reporting System (CDRS) to provide various user interface upgrades and application improvements for Personnel Recovery Coordination					
<b>FY 2022 Base Plans:</b> - Will develop, test and have field-ready PRMM versions X.X.X.C through X.X.X.D in two-week increments with capability to field by individual story; development effort will encompass changes to a more Map Centric and user intuitive design, and an interface with Common Distress Reporting System (CDRS) to provide various user interface upgrades and application improvements for Personnel Recovery Coordination					
<b>FY 2022 OCO Plans:</b> N/A					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b>					



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305984F / <i>Personnel Recovery Command &amp; Ctrl (PRC2)</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Funding increased due to sprints.					
<b>Title:</b> PRC2 - PRMM Test and Evaluation	0.124	0.196	0.175	0.000	0.175
<b>Description:</b> Test and Evaluation					
<b>FY 2021 Plans:</b> - Will test and field PRMM Versions X.X.X.B through X.X.X.C					
<b>FY 2022 Base Plans:</b> - Will test and field PRMM Versions X.X.X.C through X.X.X.D					
<b>FY 2022 OCO Plans:</b> N/A					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A					
<b>Accomplishments/Planned Programs Subtotals</b>	2.057	2.203	2.567	0.000	2.567

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPAF 03 834520: <i>Theater Battle Mgt C2 System</i>	0.323	0.347	0.369	-	0.369	-	-	-	-	-	-

**Remarks**

**E. Acquisition Strategy**  
 PRC2 product support is provided to the program office by the 517th Software Engineering Squadron (517 SWES), Hill AFB Utah, in accordance with a memorandum of agreement and on a fee for service basis. This strategy to utilize the 517 SWES for agile product development and sustainment was reviewed and approved by the Air Force Program Executive Officer for Digital, and implemented in mid-FY 2014. The work done by the 517 SWES includes, but is not limited to, modernization development, sustainment support services, and software maintenance of the PRC2 system.

**UNCLASSIFIED**

**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305984F / <i>Personnel Recovery Command &amp; Ctrl (PRC2)</i>	<b>Project (Number/Name)</b> 675221 / <i>Personnel Recovery Command and Control (PRC2)</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
PRC2 - PRMM Agile Software Development	PO	Ogden ALC : Hill AFB, UT	-	1.923	Dec 2019	1.997	Dec 2020	2.382	Dec 2021	0.000		2.382	-	-	-
<b>Subtotal</b>			-	1.923		1.997		2.382		0.000		2.382	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
PRC2 - PRMM Test and Evaluation	PO	45th Test Squadron : Eglin AFB, FL	-	0.124	Dec 2019	0.196	Dec 2020	0.175	Dec 2021	0.000		0.175	-	-	-
<b>Subtotal</b>			-	0.124		0.196		0.175		0.000		0.175	-	-	N/A

<b>Management Services (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
PRC2 - PRMM Program Support	TBD	Various : Hill AFB, UT	-	0.010	Mar 2020	0.010	Mar 2021	0.010	Mar 2022	0.000		0.010	-	-	-
<b>Subtotal</b>			-	0.010		0.010		0.010		0.000		0.010	-	-	N/A

<b>Project Cost Totals</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
	-	2.057	2.203	2.567	0.000	2.567	-	-	N/A

**Remarks**

**UNCLASSIFIED**

<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305984F / <i>Personnel Recovery Command &amp; Ctrl (PRC2)</i>	<b>Project (Number/Name)</b> 675221 / <i>Personnel Recovery Command and Control (PRC2)</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b><i>Personnel Recovery Command &amp; Control (PRC2)</i></b>																												
PRMM Ver X.X.X.A - X.X.X.B Development, Testing and Fielding	██████████																											
PRMM Ver X.X.X.B - X.X.X.C Development, Testing and Fielding									██████████																			
PRMM Ver X.X.X.C - X.X.X.D Development, Testing and Fielding													██████████															

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305984F / <i>Personnel Recovery Command &amp; Ctrl (PRC2)</i>	<b>Project (Number/Name)</b> 675221 / <i>Personnel Recovery Command and Control (PRC2)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Personnel Recovery Command &amp; Control (PRC2)</i></b>				
PRMM Ver X.X.X.A - X.X.X.B Development, Testing and Fielding	2	2020	2	2021
PRMM Ver X.X.X.B - X.X.X.C Development, Testing and Fielding	2	2021	2	2022
PRMM Ver X.X.X.C - X.X.X.D Development, Testing and Fielding	2	2022	4	2022

**UNCLASSIFIED**

**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0307577F / <i>Intelligence Mission Data (IMD)</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	8.614	6.266	6.169	0.000	6.169	-	-	-	-	-	-
675306: <i>Analysis Enterprise</i>	-	7.820	6.266	6.169	0.000	6.169	-	-	-	-	-	-
675307: <i>TARGETING ENTERPRISE RESEARCH</i>	-	0.794	0.000	0.000	0.000	0.000	-	-	-	-	-	-

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

Intelligence Mission Data (IMD) encompasses many key intelligence data efforts used to support intel data-dependent programs, including fifth generation aircraft capabilities. The term IMD encompasses Red (adversary military systems), White (commercial systems), Blue (U.S. military systems), and Grey (neutral military systems) Characteristics & Performance; Models & Simulation; Signatures; Geospatial Intelligence; electronic Warfare systems and Operational Order of Battle mission data. Supports fighter/bomber operational reconnaissance and integration/acquisition, focusing but not limited to leveraging fifth generation aircraft capabilities to support CAF-wide requirements; reducing costs and gaps while increasing support to an ever-growing customer-base.

The PE funds: Planning & direction, collection, processing & exploitation, analysis & production, and dissemination & Evaluation (PCPAD-E) to support intel data-dependent programs.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Intelligence Mission Data capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.0M was expended and in FY21 \$0.0M is forecasted for civilian pay expenses in this program element.

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 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>
Previous President's Budget	8.614	6.277	6.591	0.000	6.591
Current President's Budget	8.614	6.266	6.169	0.000	6.169
Total Adjustments	0.000	-0.011	-0.422	0.000	-0.422
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-0.011			
• 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	-0.422	0.000	-0.422

**UNCLASSIFIED**

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0307577F / <i>Intelligence Mission Data (IMD)</i>	

**Change Summary Explanation**

FY21 reduction - excess to need

**UNCLASSIFIED**

**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0307577F / <i>Intelligence Mission Data (IMD)</i>	<b>Project (Number/Name)</b> 675306 / <i>Analysis Enterprise</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
675306: <i>Analysis Enterprise</i>	-	7.820	6.266	6.169	0.000	6.169	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**Note**

Product Development  
 IMD Production Tools Development Contract Type : \*Contract Type are primarily Time and Material with some Firm Fixed Price.

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

Intelligence Mission Data efforts in BPAC 675306 fund RDT&E to enable Advanced Non-cooperative Target Recognition (NCTR) collection, Operational Reconnaissance and traditional ELINT capabilities, advanced all-source analysis and production of IMD across EWIR, C&P, M&S, and Signatures to inform acquisition efforts, enable combat ID and ensure survivability for air superiority and global strike platforms.

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

	FY 2020	FY 2021	FY 2022
<b>Title:</b> IMD Production Tools	7.820	6.266	6.169
<b>Description:</b> Creation of automated tools to process data and develop improved analysis, production, and dissemination tools to support centralized data warehousing & data discover-ability enabling streamlined rapid reprogramming for operational & acquisition end users.			
<b>FY 2021 Plans:</b> Continue development of automated tools to disseminate measurement and signatures information, EWIR, C&P, M&S, including developing and integrating automation machine learning to develop, document, and deliver models of advanced threat systems.			
<b>FY 2022 Plans:</b> Continue development of automated tools.			
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Increased contract costs.			
<b>Accomplishments/Planned Programs Subtotals</b>	7.820	6.266	6.169

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0307577F / <i>Intelligence Mission Data (IMD)</i>	<b>Project (Number/Name)</b> 675306 / <i>Analysis Enterprise</i>

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF 03 030577F: <i>Intelligence Mission Data</i>	0.000	0.476	0.000	-	0.000	-	-	-	-	-	-

**Remarks**

**D. Acquisition Strategy**

N/A



**UNCLASSIFIED**

**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0307577F / <i>Intelligence Mission Data (IMD)</i>	<b>Project (Number/Name)</b> 675306 / <i>Analysis Enterprise</i>
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Product Development	TBD	AFMC : WPAFB, OH	-	0.000		0.000		0.000		-		0.000	-	-	-
IMD Production Tools Development	Various	NASIC : WPAFB, OH	-	7.820	Feb 2020	6.266	Feb 2021	6.169		-		6.169	-	-	-
<b>Subtotal</b>			-	7.820		6.266		6.169		-		6.169	-	-	N/A
<b>Project Cost Totals</b>			-	7.820		6.266		6.169		-		6.169	-	-	N/A

**Remarks**  
Contract award is expected 90 days after budget authority for FY22.

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0307577F / <i>Intelligence Mission Data (IMD)</i>	<b>Project (Number/Name)</b> 675306 / <i>Analysis Enterprise</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b><i>NCTR and IMD Tool Development</i></b>																												
SIGINT/EWIR Tools Development																												
SIGNATURE Tool Development																												
C&P Tool Development																												
M&S Tool Development																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0307577F / <i>Intelligence Mission Data (IMD)</i>	<b>Project (Number/Name)</b> 675306 / <i>Analysis Enterprise</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>NCTR and IMD Tool Development</i></b>				
SIGINT/EWIR Tools Development	1	2020	4	2025
SIGNATURE Tool Development	1	2020	4	2025
C&P Tool Development	1	2020	4	2025
M&S Tool Development	3	2020	4	2020

**UNCLASSIFIED**

**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0307577F / Intelligence Mission Data (IMD)	<b>Project (Number/Name)</b> 675307 / TARGETING ENTERPRISE RESEARCH
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
675307: TARGETING ENTERPRISE RESEARCH	-	0.794	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY 2018, PE 0207431F, Combat Air Intelligence Systems, Intelligence Mission Data efforts were transferred to the new PE 37577F for 2018, Intelligence Mission Data (IMD), in order to provide better oversight of IMD research and development.

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

Intelligence Mission Data efforts in BPAC 675307, Targeting Enterprise Research, fund RDT&E for Operational Reconnaissance Capabilities; Tactical Data Recorder; Advanced Non-cooperative Target Recognition (NCTR) Collection. These tools enable the collection, storage, and dissemination of Ops Recce data gathered during operational missions by currently fielded air platforms. In addition, the Advanced NCTR collection sensor supports CAF-wide requirements for improved ID capabilities.

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

	FY 2020	FY 2021	FY 2022
<b>Title:</b> Operational Reconnaissance Electronic Warfare Capabilities	0.794	0.000	0.000
<b>Description:</b> RDT&E efforts to develop recording, storage, and dissemination systems for Ops Recce data gathered during operational missions.			
<b>FY 2021 Plans:</b> Will continue RDT&E efforts to develop recording, storage, and dissemination systems for Ops Recce data gathered during non-ISR operational missions. These include but are not limited to data off-boarding and radar warning receiver performance assessment.			
<b>FY 2022 Plans:</b> N/A			
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> No funding in FY21 or FY22			
<b>Accomplishments/Planned Programs Subtotals</b>	0.794	0.000	0.000

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0307577F / <i>Intelligence Mission Data (IMD)</i>	<b>Project (Number/Name)</b> 675307 / <i>TARGETING ENTERPRISE RESEARCH</i>
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF 03 Line Item 832070: <i>Intelligence Comm Equipment</i>	0.000	0.514	0.000	-	0.000	-	-	-	-	-	-

**Remarks**

**D. Acquisition Strategy**

Capabilities will be developed and integrated onto various platforms using an incremental acquisition approach. The projects will be executed, contracting with appropriate vendor(s) to deliver capability while encouraging competition where possible.





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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0307577F / <i>Intelligence Mission Data (IMD)</i>	<b>Project (Number/Name)</b> 675307 / <i>TARGETING ENTERPRISE RESEARCH</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Ops Recce Projects</i></b>				
Ops Recce Projects	1	2020	4	2020
Data Offboarding	1	2020	4	2020
Data Offboarding - Analysis	1	2020	4	2020
Data Offboarding Demo	1	2020	4	2020
Sensor Development	1	2020	4	2020
Sensor Development - SW Development	1	2020	2	2020
Sensor Development - Demo and Analysis	1	2020	4	2020



**UNCLASSIFIED**

**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401115F / C-130 Airlift Squadron
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	89.532	41.896	9.752	0.000	9.752	-	-	-	-	-	-
672030: <i>C-130H MUOS/SATURN Radio</i>	-	15.800	0.000	0.393	0.000	0.393	-	-	-	-	-	-
675250: <i>C-130H Avionics Modernization Program (AMP) Increment 2</i>	-	73.732	41.896	9.359	0.000	9.359	-	-	-	-	-	-

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

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.

Provides weapon system modifications and upgrades to meet USAF mission requirements for the C-130 fleet, to include LC-130Hs owned by the National Science Foundation (NSF), but operated and maintained by the Air National Guard (ANG) to meet USAF mission requirements. Unique NSF modification and upgrades designed to meet NSF requirements will be separately funded by the NSF.

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, studies and risk reduction efforts, trial kit buy and installation, technical order development validation and verification, spares and peculiar support equipment in support of trial kit installs, Systems Integration Laboratory (SIL) development, type 1 training and C-130H aircrew and maintenance training systems and course ware development efforts, program office support and other efforts necessary to fulfill program requirements.

The development and fielding of the MUOS/SATURN Radio program (Project 672030) will be executed under the AMP Increment 2 program (Project 675250). The MUOS/Saturn Radio program updates radios due to future DMS/integration issues and the incorporation of MUOS/SATURN capabilities. The funding is required for the Non-Recurring Effort associated with integration, testing, Technical Orders, Engineering drawing's, Trial Kit Installations, Verification Kit Installations, and spectrum authorization.

In order to meet the American Mid-Band Initiative, the Station Keeping Equipment (SKE) replacement program will develop and field a new/upgraded formation flight system to C-130H variants. C-130H AMP Increment 2 RDT&E will include studies in order to determine the integration impact the C-130H AMP Increment 2 program will have on the SKE replacement program, whose baseline includes the C-130H AMP Increment 2.

**UNCLASSIFIED**

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401115F / C-130 Airlift Squadron
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This funding includes Rapid Global Mobility (RGM) platform related activities including but not limited to prototyping, capability development, process activities, planning analysis and systems engineering activities.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver the C-130 Airlift Squadron weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 0.737M was expended for civilian pay expenses in this program element, and in FY21 0.803M is forecasted for civilian pay expenses in this program element.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	101.425	41.973	24.370	0.000	24.370
Current President's Budget	89.532	41.896	9.752	0.000	9.752
Total Adjustments	-11.893	-0.077	-14.618	0.000	-14.618
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	-0.077			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-9.963	0.000			
• SBIR/STTR Transfer	-1.930	0.000			
• Other Adjustments	0.000	0.000	-14.618	0.000	-14.618

**Change Summary Explanation**

FY 2020 funding was reduced by \$11.893 million due to Above Threshold Reprogramming action of \$9.963 million and for \$1.930 million for Small Business Innovation Research.

FY 2022 funding request was reduced by \$14.618 million to account for the availability of prior year execution balances and economic adjustments.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401115F / C-130 Airlift Squadron	<b>Project (Number/Name)</b> 672030 / C-130H MUOS/SATURN Radio
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
672030: C-130H MUOS/SATURN Radio	-	15.800	0.000	0.393	0.000	0.393	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The development and fielding of the MUOS/SATURN Radio program will be executed under the AMP Increment 2 program. The MUOS/Saturn Radio program updates radios due to future Diminishing Manufacturing Source (DMS)/integration issues and the incorporation of MUOS/SATURN capabilities. The funding is required for the Non-Recurring Effort associated with integration, testing, TO's, Engineering drawing's, TKI, VKI, and spectrum authorization.

Provides weapon system modifications and upgrades to meet USAF mission requirements for the C-130 fleet, to include LC-130Hs owned by the National Science Foundation (NSF), but operated and maintained by the Air National Guard (ANG) to meet USAF mission requirements. Unique NSF modification and upgrades designed to meet NSF requirements will be separately funded by the NSF.

The C-130H MUOS/SATURN Radio program modifies up to 155 C-130H USAF-owned aircraft consisting of H3s, H2.5s, H2s, and LC-130H aircraft. The modification effort will have up to four prototype aircraft representative of variations in the mission designs and required for accomplishment of the Engineering and Manufacturing Development (EMD) phase with the remaining aircraft modified in the production phase.

This funding includes Rapid Global Mobility (RGM) platform related activities including but not limited to prototyping, capability development, process activities, planning analysis and systems engineering activities.

The program may also include any Contractor Manpower Equivalent (CME)/A&AS support deemed necessary to support the program objectives.

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

	FY 2020	FY 2021	FY 2022
<b>Title:</b> C-130H MUOS/SATURN Radio	15.800	0.000	0.393
<b>Description:</b> The development and fielding of the MUOS/SATURN Radio program will be executed under the AMP Increment 2 program.			
<b>FY 2021 Plans:</b> N/A			
<b>FY 2022 Plans:</b> Program support to incorporate the ARC-210 Radio into the AMP Inc 2 product baseline.			
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b>			

**UNCLASSIFIED**

<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401115F / C-130 Airlift Squadron	<b>Project (Number/Name)</b> 672030 / C-130H MUOS/SATURN Radio
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022
Funding increased due to support for ARC-210 integration.			
<b>Accomplishments/Planned Programs Subtotals</b>	15.800	0.000	0.393

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• RDTE 07 0401115F: C-130 Airlift Squadron	73.732	41.896	9.359	-	9.359	-	-	-	-	-	-

**Remarks**  
The development and fielding of the MUOS/SATURN Radio program will be executed under Project 675250, C-130H AMP Increment 2.

**D. Acquisition Strategy**  
The MUOS/SATURN Radio effort was added to the C-130H AMP Increment 2 contract through an Undefinitized Contract Action (UCA) 3rd quarter of 2020 and a definitive contract modification 1st quarter of 2021. Current efforts are primarily focused on the Engineering and Manufacturing Development (EMD). The C-130H AMP Increment 2 contract was awarded 3rd quarter of 2019.



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**Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401115F / C-130 Airlift Squadron	<b>Project (Number/Name)</b> 672030 / C-130H MUOS/SATURN Radio
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FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>C-130H MUOS/SATURN Radio</b>	
MUOS/SATURN RADIO transfer to AMP Increment 2	■

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401115F / C-130 Airlift Squadron	<b>Project (Number/Name)</b> 672030 / C-130H MUOS/SATURN Radio

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>C-130H MUOS/SATURN Radio</b>				
MUOS/SATURN RADIO transfer to AMP Increment 2	2	2020	2	2020

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0401115F / C-130 Airlift Squadron				<b>Project (Number/Name)</b> 675250 / C-130H Avionics Modernization Program (AMP) Increment 2			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
675250: C-130H Avionics Modernization Program (AMP) Increment 2	-	73.732	41.896	9.359	0.000	9.359	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**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 updates radios due to future Diminishing Manufacturing Sources (DMS)/integration issues and incorporation of MUOS/SATURN radio capabilities. It also addresses select obsolescence and 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.

Provides weapon system modifications and upgrades to meet USAF mission requirements for the C-130 fleet, to include LC-130Hs owned by the National Science Foundation (NSF), but operated and maintained by the Air National Guard (ANG) to meet USAF mission requirements. Unique NSF modification and upgrades designed to meet NSF requirements will be separately funded by the NSF.

RDT&E efforts include but are not limited to software development, design, integration, development and operational test, studies and risk reduction efforts, trial kit buy and installation, technical order development validation and verification, peculiar support equipment and spares in support of trial kit installs, SIL development, type 1 training, and C-130H aircrew and maintenance training systems and courseware development efforts, program office support and other efforts required to fulfill requirements.

The C-130H AMP Increment 2 program modifies up to 155 C-130H USAF owned aircraft consisting of H3s, H2.5s, H2s, and LC-130H aircraft. The modification effort will have up to four prototype aircraft representative of variations in the mission designs and required for accomplishment of the Engineering and Manufacturing Development (EMD) phase with the remaining aircraft modified in the production phase.

The development and fielding of the MUOS/SATURN program will be executed under the AMP Increment 2 program. The MUOS radio funding is required for the Non-Recurring Effort associated with integration, testing, Technical Order's, Engineering drawings, Trial Kit Installations, Verification Kit Installations, and spectrum authorization.

This funding includes Rapid Global Mobility (RGM) platform related activities including but not limited to prototyping, capability development, process activities, planning analysis and systems engineering activities.

The FY 2022 funding request was reduced by \$14.618 million to account for the availability of prior year execution balances and other economic adjustments.



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401115F / C-130 Airlift Squadron	<b>Project (Number/Name)</b> 675250 / C-130H Avionics Modernization Program (AMP) Increment 2

This program element may include necessary civilian pay expenses required to manage, execute, and deliver the C-130 Airlift Squadron weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.737M was expended for civilian pay expenses in this program element, and in FY21 \$0.803M is forecasted for civilian pay expenses in this program element.

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> C-130H Avionics Modernization Program (AMP) Increment 2	73.732	41.896	9.359
<b>Description:</b> The program is currently executing the Engineering and Manufacturing Development (EMD) phase activities.			
<b>FY 2021 Plans:</b> Continuation of EMD activities to include but are not limited to software development, design, integration, development and operational test, program office support, studies and risk reduction efforts, trial kit buy and installation, technical order development validation and verification, peculiar support equipment and spares in support of trial kit installs, SIL development, type 1 training, and C-130H aircrew and maintenance training systems and courseware development efforts and other efforts required to fulfill program requirements.			
<b>FY 2022 Plans:</b> Continuation of EMD activities to include but are not limited to software development, design, integration, development and operational test, program office support, studies and risk reduction efforts, trial kit buy and installation, technical order development validation and verification, peculiar support equipment and spares in support of trial kit installs, SIL development, type 1 training, and C-130H aircrew and maintenance training systems and courseware development efforts and other efforts required to fulfill program requirements. The program also begins the transition to LRIP.			
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding request was reduced due to ramp down of EMD development and integration activities prior to transition to LRIP.			
<b>Accomplishments/Planned Programs Subtotals</b>	73.732	41.896	9.359

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APAF 05 Line Item C13000: C-130	-	0.000	20.004	-	20.004	-	-	-	-	-	-
• APAF 06 Line Item 000999: Initial Spares/Repair Parts	-	0.000	0.419	-	0.419	-	-	-	-	-	-

**Remarks**

The C-130H Avionics Modernization Program (AMP) Increment 2 procurement funding begins in FY22.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401115F / C-130 Airlift Squadron	<b>Project (Number/Name)</b> 675250 / C-130H Avionics Modernization Program (AMP) Increment 2

**D. Acquisition Strategy**

C-130H AMP Increment 2 contract was awarded 3rd quarter of 2019. Current efforts are primarily focused on the Engineering and Manufacturing Development (EMD) activities under a Fixed-Price Incentive (Firm) contract structure.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force												Date: May 2021				
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>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
C-130H AMP Increment 2 EMD Contract	C/FPIF	L3Harris : Waco, TX	-	63.482	Nov 2019	27.926	Nov 2020	0.331	Nov 2021	-		0.331	-	-	91.739	
Joint Mission Planning System	C/FPIF	TBD : TBD	-	1.700	Jun 2020	3.000		0.000		-		0.000	-	-	4.700	
<b>Subtotal</b>			-	65.182		30.926		0.331		-		0.331	-	-	N/A	
<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
Other Government Costs	TBD	Not specified. : TBD	-	3.777	Apr 2020	-		-		-		-	-	-	3.777	
Direct Cite Civilian Pay	C/CPAF	Not specified. : TBD	-	0.737		0.803		-		-		-	-	-	0.960	
<b>Subtotal</b>			-	4.514		0.803		-		-		-	-	-	N/A	
<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
C-130H AMP Increment 2 Development Testing	PO	TBD : TBD	-	0.400	Dec 2019	3.900	Nov 2020	4.500	Nov 2021	-		4.500	-	-	8.800	
<b>Subtotal</b>			-	0.400		3.900		4.500		-		4.500	-	-	N/A	
<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
C-130H AMP Increment 2 PMA Contractor Services	Various	Not Specified : TBD	-	3.486	Jan 2020	6.117	Feb 2021	4.055	Feb 2022	-		4.055	-	-	14.238	
C-130H AMP Increment 2 PMA - Government Cost	Various	Not Specified : TBD	-	0.150	Oct 2019	0.150	Oct 2020	0.473	Oct 2021	-		0.473	-	-	0.773	

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401115F / C-130 Airlift Squadron	<b>Project (Number/Name)</b> 675250 / C-130H Avionics Modernization Program (AMP) Increment 2
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Management Services (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
<b>Subtotal</b>			-	3.636		6.267		4.528		-		4.528	-	-	N/A
<b>Project Cost Totals</b>			-	73.732		41.896		9.359		-		9.359	-	-	N/A

**Remarks**  
 FINANCIAL PERFORMANCE: AMP Increment 2 is evaluated against traditional Research and Development (R&D) program expenditure benchmarks. Unlike many traditional R&D programs, however, the AMP Increment 2 EMD phase contract is an FPIF contract with progress payments. Twenty percent of incurred costs are withheld until the end of the contract, when they are liquidated. Mandatory funding obligations and progress payment withholds will cause the program to lag traditional expenditure benchmarks, painting an inaccurate portrait of overall program health.



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401115F / C-130 Airlift Squadron	<b>Project (Number/Name)</b> 675250 / C-130H Avionics Modernization Program (AMP) Increment 2

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>C-130H AMP Increment 2</b>				
Design/Integration	1	2020	4	2023
Preliminary Design Review	2	2020	3	2020
Critical Design Review	4	2020	4	2020
Delta Critical Design Review	2	2021	2	2021
Design/Integration Training Development	1	2020	4	2023
Development Testing	4	2021	4	2022
Functional Configuration Audit	4	2022	4	2022
Milestone C	4	2022	4	2022

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401119F I C-5 Airlift Squadrons (IF)
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	9.883	30.560	17.507	0.000	17.507	-	-	-	-	-	-
671307: <i>C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)</i>	-	9.883	30.560	17.507	0.000	17.507	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

C-5M Replace multi-functional controls and display (RMCD) program is a comprehensive effort to ensure appropriate RMCD Line Replaceable Units (LRU) are developed and installed on the C-5M allowing aircraft operation in accordance with civil airspace access mandates for both US National Airspace System (NAS) and international civil airspace. The C-5M RMCD program ensures system standardization and interoperability with other DoD systems to the maximum extent possible and directly supports airworthiness certification. The purpose of the program is to find a suitable replacement for the current Multi-functional Display Unit (MFDU) LRUs while maintaining existing interfaces to legacy equipment and providing for future growth opportunities. Additionally, the replacement LRUs must have the Ethernet load capability to reduce Operational Flight Programs (OFP) load times, and the program will implement a power solution for Mission Planning Equipment (MPE). Operational Flight Programs (OFP) updates/aggregation are required to support the latest aircraft display technologies and will be designed to ensure seamless integration into the platform. Aircraft wiring will be replaced/upgraded as required. Use of mixed displays (current and new) is not permissible due to human factors considerations. It is anticipated equipment will be predominately commercial off-the-shelf or non-developmental items.

The RMCD program is a modification to mitigate the obsolescence of the current control and display units. This effort centers around modifying the current display units to obtain sufficient capacity/capability to support integration of new system capabilities with margin for growth by upgrading displays and correcting any mission essential deficiencies identified during development, including additions of an Ethernet loading capability and a power solution for the MPE. This modification may include software development, data, cyber security, testing, installation, spares, Systems Integration Lab (SIL), program support, etc.

The modification helps to maintain aircraft availability as the new multi-functional controls and displays replaces the current controls and displays, which are experiencing severe diminishing manufacturing source (DMS) issues. Failure to upgrade the displays to support aircraft availability will create a significant operational impact to the support of Geographic Combatant Command (GCCs) and maintaining U.S. National objectives.

Funding supports program management administration, studies and analysis, risk reduction efforts, Advisory and Assistance Services (A&AS), change orders, and other government costs such as travel, directorate support, government furnished equipment (GFE), and over and above costs. Funding also provides Diminishing Manufacturing Sources (DMS) through studies and analysis.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401119F / <i>C-5 Airlift Squadrons (IF)</i>
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver the C-5 Airlift Squadrons (IF) weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY 2020 \$0.000 million was expended for civilian pay expenses in this program element, and in FY 2021 \$0.000 million is forecasted for civilian pay expenses in this program element.

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

This program is in Budget Activity 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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	10.223	32.560	22.600	0.000	22.600
Current President's Budget	9.883	30.560	17.507	0.000	17.507
Total Adjustments	-0.340	-2.000	-5.093	0.000	-5.093
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-2.000			
• 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	-0.337	0.000			
• Other Adjustments	-0.003	0.000	-5.093	0.000	-5.093

**Change Summary Explanation**

FY 2021 funding reduced by \$2.0 million due to Congressional Directed Reduction for Unjustified Program Management and Administration (PMA) growth.

FY 2022 funding request was reduced by \$5.093 million to account for the availability of prior year execution balances and economic adjustments.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> C-5 Replace Multi-Functional Controls and Display	9.883	30.560	17.507
<b>Description:</b> Replace Multi-Functional Controls and Display replacement will enable the C-5M to achieve wartime mission requirements by maintaining fleet availability (mission capable rate) and Program Management and Administration (PMA).			
<b>FY 2021 Plans:</b>			



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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401119F / <i>C-5 Airlift Squadrons (IF)</i>	

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
OTA Hardware Prototype development and Phase 0 Risk Reduction/Agile Software Partnering to provide a certified hardware solution for EMD integration. This effort will include organic software development and IV&V support.  <b>FY 2022 Plans:</b> Continue organic software development. Blue Label Software released in FY2022. Award EMD contract for hardware, software, test, and trainers support. EMD will include Agile Software Development partnering, integration, data management, systems engineering, logistics, and program support to modify 2 AMC aircraft.  <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding decreased due to ramping down of Phase 0 Risk Reduction/Agile Software Partnering.			
<b>Accomplishments/Planned Programs Subtotals</b>	9.883	30.560	17.507

<b>D. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APAF 05 C00500: C-5	56.326	50.279	17.583	0.000	17.583	-	-	-	-	-	-
• APAF 05 0401119F: <i>C-5 Airlift Squadrons</i>	0.574	0.000	0.000	0.000	0.000	-	-	-	-	-	-
• APAF 06 0401119F: <i>C-5 Airlift Squadrons</i>	2.053	0.409	0.000	0.000	0.000	-	-	-	-	-	-
• APAF 05 0401897F: <i>TRAINING</i>	0.000	0.000	7.848	0.000	7.848	-	-	-	-	-	-

**Remarks**

**E. Acquisition Strategy**  
The Acquisition Strategy Panel (ASP) package was approved 4 April 20. Program utilized Other Transaction Authority (OTA) to procure prototype hardware; utilize an organic software development effort and award a sole source contract to the prime contractor for EMD integration of hardware, software, test, and training support. Two aircraft will be modified during EMD. Delta ASP approved October 8, 2020 to incorporate a Phase 0 Sole Source Contract effort with Lockheed Martin Aerospace for EMD risk reduction and Agile Software Development Partnering.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force												Date: May 2021			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 7				PE 0401119F / C-5 Airlift Squadrons (IF)				671307 / C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)							
Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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
Phase 0 / Integration Contract - LMA	SS/CPIF	Lockheed Martin : Marietta, GA	-	-		16.010	May 2021	6.511	Nov 2021	-		6.511	-	-	-
Organic Software Development	PO	AFMC 578 SWES/ MXDPAA : Robins AFB, GA	-	5.098	Jun 2020	2.200		0.936	Nov 2021	-		0.936	-	-	-
Other Transaction Authority (OTA)	SS/FP	SOSSEC, Inc : Salem, NH	-	2.559	Mar 2021	2.062		-		-		-	-	-	-
<b>Subtotal</b>			-	7.657		20.272		7.447		-		7.447	-	-	N/A
Support (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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
Change Orders	Various	TBD : TBD	-	1.371	Feb 2021	0.188		0.721		-		0.721	-	-	-
Technical Deliverables	Various	TBD : TBD	-	0.321		-		-		-		-	-	-	-
PMA - OGC's	Various	WPAFB/RobinsAFB : TBD	-	0.534		4.758		1.265		-		1.265	-	-	-
<b>Subtotal</b>			-	2.226		4.946		1.986		-		1.986	-	-	N/A
Test and Evaluation (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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
Contractor Test/SIL	Various	TBD : TBD	-	-		-		2.256	Nov 2021	-		2.256	-	-	-
SIL	PO	AFLCMC/WLS : Robins AFB, GA	-	-		0.635		1.940	Nov 2021	-		1.940	-	-	-
<b>Subtotal</b>			-	-		0.635		4.196		-		4.196	-	-	N/A



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401119F / C-5 Airlift Squadrons (IF)	<b>Project (Number/Name)</b> 671307 / C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b><i>Replace Multi-Functional Control &amp; Display</i></b>																												
Program Start			■																									
ASP			■																									
OTA H/W Contract Award							■	■	■	■																		
Milestone B									■																			
SIL									■	■																		
Phase 0 / Integration Contract							■	■	■	■	■	■	■	■	■													
PDR										■																		
CDR											■																	
DT&E													■	■														
Milestone C																								■				

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401119F / C-5 Airlift Squadrons (IF)	<b>Project (Number/Name)</b> 671307 / C-5 REPLACE MULTIFUNCT CONTROL AND DISPLAY (RMCD)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Replace Multi-Functional Control &amp; Display</i></b>				
Program Start	3	2020	3	2020
ASP	3	2020	3	2020
OTA H/W Contract Award	2	2021	1	2022
Milestone B	1	2022	1	2022
SIL	1	2022	2	2022
Phase 0 / Integration Contract	3	2021	1	2024
PDR	2	2022	2	2022
CDR	3	2022	3	2022
DT&E	1	2023	2	2023
Milestone C	1	2024	1	2024

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401130F / <i>C-17 Aircraft (IF)</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	20.653	9.935	16.360	0.000	16.360	-	-	-	-	-	-
672569: <i>C-17A Aircraft</i>	-	20.653	9.935	16.360	0.000	16.360	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

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 air/land operations. The C-17 will perform its airlift mission well into this century.

C-17 Research, Development, Test & Evaluation (RDT&E) funding efforts support, but are not limited to: Aircraft performance improvements, aircraft mission execution 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; software development, test and integration; block development/change management; proposal preparation for new projects; cost estimating and engineering/acquisition studies not related to requirements generation.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver the C-17 Aircraft (IF) weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY 2020 \$0.534 million was expended for civilian pay expenses in this program element, and in FY 2021 \$0.737 million is forecasted for civilian pay expenses in this program element.

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

In FY22 the efforts are: Roll-On Conference Capsule (ROCC) and Beyond Line of Sight (BLOS) which will be covered in more detail on subsequent pages.

This funding includes Rapid Global Mobility (RGM) platform-related rapid capability development process activities including early planning, analysis and systems engineering activities which provide linkages between operational needs, system performance requirements, technology needs and opportunities, potential lifecycle costs and enabling the technical foundation for material development.

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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401130F / C-17 Aircraft (IF)
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	21.101	9.991	9.616	0.000	9.616
Current President's Budget	20.653	9.935	16.360	0.000	16.360
Total Adjustments	-0.448	-0.056	6.744	0.000	6.744
• 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	-0.448	0.000			
• Other Adjustments	0.000	-0.056	6.744	0.000	6.744

**Change Summary Explanation**

FY 2020 funding decrease for \$0.448 million for Small Business Innovation Research.

FY 2022 funding request increase for \$6.744 million for BLOS requirements as transitions into combined DT/OT&E.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Beyond Line of Sight (BLOS)	19.441	8.719	15.360
<b>Description:</b> 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 modernizations and Comm Mod. It includes support for on-going flight test, software labs, system engineering, program management and engineering/acquisition studies not related to requirements generation.			
<b>FY 2021 Plans:</b> BLOS effort continues with major design milestones occurring and completes development and test activities.			
<b>FY 2022 Plans:</b> BLOS effort continues with major design milestones occurring for efforts related to Test & Evaluation, Lab H/W & S/W Qualification.			
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding increased due to BLOS effort transition into combined DT/OT&E and major design milestones.			
<b>Title:</b> Roll-On Conference Capsule (ROCC)	1.212	1.216	1.000



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401130F / <i>C-17 Aircraft (IF)</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022
<p><b>Description:</b> ROCC is a program to replace current Silver Bullet Capsules and 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, the development phase of the ROCC, (formerly referred to as the Silver Bullet Replacement (SBR) program) will require non-recurring engineering, manufacture of the first article and testing. 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.</p> <p><b>FY 2021 Plans:</b> ROCC development effort continues in FY21 to include flight test, software labs, system engineering, program management and engineering/acquisition studies support.</p> <p><b>FY 2022 Plans:</b> Continuation of ROCC development efforts to include flight test, software labs, system engineering, program management and engineering/acquisition studies support.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding decrease due to anticipated completion of ROCC development efforts.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	20.653	9.935	16.360

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

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• APAF 05 Line Item C01700: C-17A	55.916	44.798	59.570	-	59.570	-	-	-	-	-	-
• APAF 07 Line Item C01700: C-17A	132.634	0.000	0.000	-	0.000	-	-	-	-	-	-
• APAF 06 Line Item 000999: <i>Initial Spares/Repair Parts</i>	8.602	47.774	21.090	-	21.090	-	-	-	-	-	-
• OPAF 03 Line Item 834070: <i>Mobility Command and Control</i>	10.817	-	-	-	-	-	-	-	-	-	-

**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

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b>	<b>R-1 Program Element (Number/Name)</b>
3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	PE 0401130F / <i>C-17 Aircraft (IF)</i>

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.



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**Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401130F / C-17 Aircraft (IF)	<b>Project (Number/Name)</b> 672569 / C-17A Aircraft
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FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>C-17</b>	
Beyond Line of Sight (BLOS) (ACAT III)	
Roll-On Conference Capsules (ROCC) (ACAT III)	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401130F / C-17 Aircraft (IF)	<b>Project (Number/Name)</b> 672569 / C-17A Aircraft

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>C-17</b>				
Beyond Line of Sight (BLOS) (ACAT III)	1	2020	4	2023
Roll-On Conference Capsules (ROCC) (ACAT III)	1	2020	4	2022

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401132F / C-130J Program
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	6.919	10.656	14.112	0.000	14.112	-	-	-	-	-	-
675061: C-130J	0.000	6.919	10.656	7.607	0.000	7.607	-	-	-	-	-	-
675305: C-130J Prog	0.000	0.000	0.000	6.505	0.000	6.505	-	-	-	-	-	-

**Program MDAP/MAIS Code:** 220

**Note**  
 In FY 2022, PE 0401132F, (C-130J Program), Project 675061, (C-130J) efforts were transferred to, Project 675610, (C-130J Prog), in order to create a follow on ACAT III program to separate Communications Modernization from the C-130J ACAT I program.

**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" or Enhancement and Deficiencies (EnD) updates. Content/requirements for block modifications is documented in International Program Directives (IPDs) and as determined in the Cooperative Systems and Software Upgrade Requirements Management (COSSURM) prioritized requirements process. This project will integrate the common-core capabilities developed under this program into the C-130J.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver the C-130J weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.000M was expended for civilian pay expenses in this program element, and in FY21 \$0.000M is forecasted for civilian pay expenses in this program element.

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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401132F / C-130J Program
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	8.640	10.674	14.324	0.000	14.324
Current President's Budget	6.919	10.656	14.112	0.000	14.112
Total Adjustments	-1.721	-0.018	-0.212	0.000	-0.212
• 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	-1.500	0.000			
• SBIR/STTR Transfer	-0.221	0.000			
• Other Adjustments	0.000	-0.018	-0.212	0.000	-0.212

**Change Summary Explanation**

FY20 funding was reduced by \$1.721 million due to a below threshold reprogramming and Small Business Innovative Research (SBIR).



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0401132F / C-130J Program				<b>Project (Number/Name)</b> 675061 / C-130J			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
675061: C-130J	0.000	6.919	10.656	7.607	0.000	7.607	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**Note**

In FY 2022, PE 0401132F, (C-130J Program), Project 675061, (C-130J) efforts were transferred to, Project 675610, (C-130J Prog), in order to create a follow on ACAT III program to separate Communications Modernization from the C-130J ACAT I program.

**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 also provides RDT&E funding for required capabilities that are grouped as "Block" upgrades or "Capability" or Enhancement and Deficiencies (EnD) updates. Content/requirements for these efforts is documented in International Program Directives (IPDs) as determined through the Cooperative Systems and Software Upgrade Requirements Management (COSSURM) process or other approved C-130J Joint User Group (JUG) processes. Activities required to complete development and integration of the common-core capabilities for all United States' variants are included in this project. In addition, this project includes early acquisition and engineering studies and initiatives related to the C-130J such as, but not limited to, capability gap resolution, emerging technology assessments, exploration and adaptation, systems integration assessments and technology transition.

This project also provides RDT&E funding for requirements that are outside of the "Block" upgrades, "Capability" updates, "Enhancement and Deficiencies" (EnD) updates, or COSSURM process. These efforts may include, but are not limited to, communication, data link, Global Positioning Systems (GPS), electronic warfare, formation flight system, and mission support system updates. The requirements are identified and concurred between the C-130J Program Office and Air Mobility Command (AMC). Requirements are documented through the C-130J Program Office approval process.

This project provides RDT&E funding for studies and risk reduction activities and Program Management Administration (PMA).

This project includes RDT&E funding for the following C-130J aircraft variants: C-130J stretch aircraft, C-130J short aircraft, EC-130J aircraft, WC-130J aircraft, HC-130J aircraft, MC-130J aircraft, and AC-130J aircraft.

This project included RDT&E funding for Rapid Global Mobility (RGM) platform related activities including, but not limited to, prototyping, capability development, process activities, planning analysis, and systems engineering activities.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401132F / C-130J Program	<b>Project (Number/Name)</b> 675061 / C-130J
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This program includes funding for Mobile User Objective System (MUOS), which began in FY 2020 under project 675061. In FY21, the name of this effort changed to Communication Modernization. Development and integration of the new radio and communication systems including, but not limited to, Mobile User Objective System (MUOS), Second-generation Anti-jam Tactical UHF Radio for NATO (SATURN), Joint Range Extension Application Protocols (JREAP) to modernize Military Satellite Communication System (MILSATCOM), Ultra High Frequency (UHF), High Frequency (HF), special mission processing, and data link messaging. These systems will provide secure, global Line of Sight (LOS) and Beyond Line of Sight (BLOS) satellite voice and data connectivity utilizing modern satellite constellations. Furthermore, these systems will also be integrated into other C-130J capabilities, such as Radio Frequency (RF) components including ALR-69A and DRFM (Digital Radio Frequency Memory Countermeasure). Starting in FY22, funding for this effort will continue under project 675305.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver the C-130J weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.000M was expended for civilian pay expenses in this program element, and in FY21 \$0.000M is forecasted for civilian pay expenses in this program element.

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

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p><b>Title:</b> Block 8.1</p> <p><b>Description:</b> 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. Major avionics platforms impacted include, but are not limited to, Flight Management System (FMS)Software, Mission Computer (MC) Software, Bus Interface Unit (BIU) software, special mission processing, and Maintenance Management System (MMS).</p> <p><b>FY 2021 Plans:</b> Continue de-confliction of Block 8.1 Dynamic Retasking Capability (DRC) and begin Block 8.1 TKI for WC variant.</p> <p><b>FY 2022 Base Plans:</b> Continue Block 8.1 TKI for WC variant.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding increased due to phasing of Block 8.1 TKI effort for WC variant.</p>	4.326	3.156	5.532	-	5.532
<p><b>Title:</b> Test &amp; Evaluation</p> <p><b>Description:</b> Test and evaluation planning, conduct and support for developmental and operational testing of Block 8.1.</p> <p><b>FY 2021 Plans:</b></p>	0.000	0.750	0.060	-	0.060

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401132F / C-130J Program	<b>Project (Number/Name)</b> 675061 / C-130J
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
Continuation of test planning and support for integration efforts. <b>FY 2022 Base Plans:</b> Anticipated minimal CMU2 testing requirements for FY22. <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding decreased due to no new current planned test and evaluation requirements.					
<b>Title:</b> Capability Management Update (CMU) <b>Description:</b> CMU 1 and 2 refine and build on 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. Major systems software impacted includes, but not limited to, FMS Software, MC Software, BIU software, and MMS. <b>FY 2021 Plans:</b> Continuation of software development for Capability Management Update (CMU) 1 and CMU 2 efforts which will be fielded as Block 8.1.1 and 8.1.2 respectively. <b>FY 2022 Base Plans:</b> Continuation of software development for Capability Management Update (CMU) 1 and CMU 2 efforts which will be fielded as Block 8.1.1 and 8.1.2 respectively. <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding decreased due to CMU phasing adjustments.	1.153	1.600	1.045	-	1.045
<b>Title:</b> Communication Modernization <b>Description:</b> Development and integration of the new radio and communication systems including, but not limited to, Mobile User Objective System (MUOS), Second-generation Anti-jam Tactical UHF Radio for NATO (SATURN), Joint Range Extension Application Protocols (JREAP) to modernize Military Satellite Communication System (MILSATCOM), Ultra High Frequency (UHF), High Frequency (HF), special mission processing, and data link messaging. These systems will provide secure, global Line of Sight (LOS) and Beyond Line of Sight (BLOS) satellite voice and data connectivity utilizing modern satellite constellations. Furthermore, these systems will also be integrated into other C-130J capabilities, such as Radio Frequency (RF) components including ALR-69A and DRFM (Digital Radio Frequency Memory Countermeasure). Starting in FY22, funding for this effort will continue under Project 675305. <b>FY 2021 Plans:</b>	0.741	4.700	0.000	-	0.000

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401132F / C-130J Program	<b>Project (Number/Name)</b> 675061 / C-130J

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Development of new radio systems to modernize MILSATCOM. <b>FY 2022 Base Plans:</b> N/A <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding decreased due to transfer of funding to Project 675305 beginning in FY 2022.					
<b>Title:</b> Cooperative Systems and Software Upgrade Requirements Management (COSSURM) <b>Description:</b> Continuing effort to collect potential requirements for inclusion into a Capability Management Update, or Enhancement and Deficiencies (EnD) Common Non-Recurring Engineering (CNRE) effort. <b>FY 2022 Base Plans:</b> Continuation of CMU/EnD COSSURM requirements review and analysis. <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding increased due to defining EnD requirements for review and analysis.	-	-	0.170	-	0.170
<b>Title:</b> Other AMC Initiatives <b>Description:</b> C-130J initiatives/studies. <b>FY 2021 Plans:</b> Mission Planning software and updates continue. <b>FY 2022 Base Plans:</b> Continuation of Mission Planning and software updates. <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding increased due phasing efforts and identified initiatives.	0.699	0.450	0.800	-	0.800
<b>Accomplishments/Planned Programs Subtotals</b>	6.919	10.656	7.607	-	7.607

<b>C. Other Program Funding Summary (\$ in Millions)</b>			<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>					<b>Cost To Complete</b>	<b>Total Cost</b>
<b>Line Item</b>	<b>FY 2020</b>	<b>FY 2021</b>				<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>		
• APAF 05 Line Item C1300J: C-130J Mods	128.399	134.090	113.127	-	113.127	-	-	-	-	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401132F / C-130J Program	<b>Project (Number/Name)</b> 675061 / C-130J
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**C. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APAF 02 Line Item C130J0: C-130J	742.156	8.412	8.585	-	8.585	-	-	-	-	-	-

**Remarks**

**D. 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 began in FY12. Subsequently, C-130J modifications will be grouped into smaller updates known as Capability Management Updates (CMU) or Enhancement and Deficiencies (EnD). 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 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 and CMU efforts. Retrofit of a Block on the aircraft is the responsibility of each nation.

To meet the Federal Aviation Administration 2020 mandate, the USAF installed 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.

In order to meet four DoD technology refresh mandates before end of year 2024, the communications modernization program will develop and field a federated and integrated communications system to Blocks 6.0 and 8.1 C-130J variants.

In order to meet the American Mid-Band Initiative, the Station Keeping Equipment (SKE) replacement program will develop and field a new/upgraded formation flight system to Block 6.0 and 8.1 C-130J variants.

In order to comply with FAA mandated frequency remapping and NSA mandated crypto-modernization, the aircraft Link 16 receiver transmitter will need to be upgraded to a next generation receiver. One example of the next generation receiver is the MIDS-JTRS terminal.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401132F / C-130J Program	<b>Project (Number/Name)</b> 675061 / C-130J
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<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
C-130J Block 8.1, Air Force Life Cycle Mgmt Ctr (AFMC), WPAFB, OH	SS/CPAF	Lockheed Martin Information Sytems : Marietta, GA	0.000	1.979	Nov 2019	2.174	Dec 2020	4.694	Feb 2022	-		4.694	-	-	180.030
C-130J Capability Management Upgrades (CMU), Air Force Life Cycle Mgmt Ctr (AFMC), WPAFB, OH	SS/CPFF	Lockheed Martin Aero : Marietta, GA	0.000	0.066	Nov 2019	0.600	May 2021	0.000		-		0.000	-	-	20.480
C-130J AMC-Initiatives, Air Force Life Cycle Mgmt Ctr (AFMC), WPAFB, OH	SS/CPAF	Lockheed Martin Aero : Marietta, GA	0.000	0.669	Nov 2019	0.450	Dec 2020	0.800		-		0.800	-	-	14.730
C-130J Communication Modernization, Air Force Life Cycle Mgmt Ctr (AFMC), WPAFB, OH	SS/CPAF	Lockheed Martin Aero : Marietta, GA	0.000	0.300	Aug 2020	4.700	Aug 2021	0.000		-		0.000	-	-	-
<b>Subtotal</b>			0.000	3.014		7.924		5.494		-		5.494	-	-	N/A

**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.

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Test and Evaluation	C/CPAF	Not specified. : TBD	0.000	0.685		-		-		-		-	-	-	-
C-130J Block 8.1 testing	PO	EGLIN AFB : Eglin, FL	0.000	0.000	Nov 2019	0.750	Jan 2021	0.060		-		0.060	-	-	7.490
<b>Subtotal</b>			0.000	0.685		0.750		0.060		-		0.060	-	-	N/A

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401132F / C-130J Program	<b>Project (Number/Name)</b> 675061 / C-130J
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<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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 : NV	0.000	0.402	Mar 2020	1.079	Mar 2021	1.045	Mar 2022	-		1.045	-	-	15.014
C-130J COSSURM	TBD	RAF : NV	0.000	0.000		-		0.170		-		0.170	-	-	16.548
C-130J Support	TBD	N/A : OH	0.000	2.818	Mar 2020	0.903	Mar 2021	0.838	Mar 2022	-		0.838	-	-	15.014
<b>Subtotal</b>			0.000	3.220		1.982		2.053		-		2.053	-	-	N/A

**Remarks**  
The current COSSURM contract is managed by the United Kingdom Royal Air Force (RAF) with the USG taking over as the primary contracting authority in FY23.

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	0.000	6.919	10.656	7.607	-	7.607	-	-	N/A

**Remarks**

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**Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401132F / C-130J Program	<b>Project (Number/Name)</b> 675061 / C-130J
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FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>C-130J</b>	
Block 8.1 Development	
Block 7.0/ 8.1 Trial Kit Installation (TKI) WC	
CMU	
Communication Modernization	



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**Exhibit R-4A, RDT&E Schedule Details:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401132F / C-130J Program	<b>Project (Number/Name)</b> 675061 / C-130J
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>C-130J</b>				
Block 8.1 Development	1	2020	4	2022
Block 7.0/ 8.1 Trial Kit Installation (TKI) WC	4	2021	4	2025
CMU	1	2020	1	2025
Communication Modernization	1	2020	4	2021

**Note**  
Communication Modernization program continues under project 675305, starting in FY22.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0401132F / C-130J Program				<b>Project (Number/Name)</b> 675305 / C-130J Prog			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
675305: C-130J Prog	0.000	0.000	0.000	6.505	0.000	6.505	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**Note**

In FY 2022, PE 0401132F, (C-130J Program), Project 675061, (C-130J) efforts were transferred to, Project 675610, (C-130J Prog), in order to create a follow on ACAT III program to separate Communications Modernization from the C-130J ACAT I program.

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

This program includes funding for Mobile User Objective System (MUOS), which began in FY 2020 under project 675061. In FY21, the name of this effort changed to Communication Modernization. Development and integration of the new radio and communication systems including, but not limited to, Mobile User Objective System (MUOS), Second-generation Anti-jam Tactical UHF Radio for NATO (SATURN), Joint Range Extension Application Protocols (JREAP) to modernize Military Satellite Communication System (MILSATCOM), Ultra High Frequency (UHF), High Frequency (HF), special mission processing, and data link messaging. These systems will provide secure, global Line of Sight (LOS) and Beyond Line of Sight (BLOS) satellite voice and data connectivity utilizing modern satellite constellations. Furthermore, these systems will also be integrated into other C-130J capabilities, such as Radio Frequency (RF) components including ALR-69A and DRFM (Digital Radio Frequency Memory Countermeasure). Starting in FY22, funding for this effort will continue under project 675305.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver C-130J weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 0.000M was expended for civilian pay expenses in this program element, and in FY21 0.000M is forecasted for civilian pay expenses in this program element.

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<b>Title:</b> Communication Modernization	0.000	0.000	6.505	0.000	6.505
<b>Description:</b> Development and integration of the new radio and communication systems including, but not limited to, Mobile User Objective System (MUOS), Second-generation Anti-jam Tactical UHF Radio for NATO (SATURN), Joint Range Extension Application Protocols (JREAP) to modernize Military Satellite Communication System (MILSATCOM), Ultra High Frequency (UHF), High Frequency (HF), special mission processing, and data link messaging. These systems will provide secure, global Line of Sight (LOS) and Beyond Line of Sight (BLOS) satellite voice and data connectivity utilizing modern satellite constellations. Furthermore, these systems will also be integrated into other C-130J capabilities, such as Radio Frequency (RF) components including ALR-69A and DRFM (Digital Radio Frequency Memory Countermeasure (DRFM). Starting in FY22, funding for this effort will continue under project 675305.					
<b>FY 2021 Plans:</b>					

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401132F / C-130J Program	<b>Project (Number/Name)</b> 675305 / C-130J Prog
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
N/A					
<b>FY 2022 Base Plans:</b> Continue development of new radio systems to modernize MILSATCOM.					
<b>FY 2022 OCO Plans:</b> N/A					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding increased due transfer from project 675061 (C-130J) to project 675305 (C-130J Prog).					
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	0.000	6.505	0.000	6.505

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

N/A

**Remarks**

**D. Acquisition Strategy**

In order to meet four DoD technology refresh mandates before end of year 2024, the communication modernization program will develop and field a federated and integrated communications system to Block 6.0 and 8.1 C-130J variants.



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**Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401132F / C-130J Program	<b>Project (Number/Name)</b> 675305 / C-130J Prog
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FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>C-130J</b>	
Communication Modernization	[REDACTED]

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401132F / C-130J Program	<b>Project (Number/Name)</b> 675305 / C-130J Prog
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>C-130J</b>				
Communication Modernization	1	2022	3	2025

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401134F / <i>Large Aircraft IR Countermeasures (LAIRCM)</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	5.247	5.497	5.540	0.000	5.540	-	-	-	-	-	-
674942: <i>Large Aircraft Infrared Counter Measures (LAIRCM)</i>	-	5.247	5.497	5.540	0.000	5.540	-	-	-	-	-	-
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 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 is currently installed on 54+ aircraft types and over 1200 aircraft.

The baseline program development is complete. Follow-on efforts are addressing integration onto new aircraft types and existing LAIRCM platforms, design changes to address Reliability Maintainability & Availability and system improvements to counter new and emerging threats.

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 Testing; 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 infrared countermeasures (IRCM).

**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 (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.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401134F / <i>Large Aircraft IR Countermeasures (LAIRCM)</i>
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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 element may include necessary civilian pay expenses required to manage, execute, and deliver the LAIRCM weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY 2020 \$0.000 million was expended for civilian pay expenses in this program element, and in FY 2021 \$0.000 million is forecasted for civilian pay expenses in this program element.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	5.424	5.507	5.624	0.000	5.624
Current President's Budget	5.247	5.497	5.540	0.000	5.540
Total Adjustments	-0.177	-0.010	-0.084	0.000	-0.084
• 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	-0.177	0.000			
• Other Adjustments	0.000	-0.010	-0.084	0.000	-0.084

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<b>Title:</b> LAIRCM Threat Analysis	3.151	4.675	4.711	0.000	4.711



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401134F / <i>Large Aircraft IR Countermeasures (LAIRCM)</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
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<p><b>Description:</b> 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><b>FY 2021 Plans:</b> Continue to work on Threat Analysis in the Guided Weapons Evaluation Facility (GWEF), to include purchase of assets, and efforts with Air Force Research Laboratory (AFRL).</p> <p><b>FY 2022 Base Plans:</b> Continue to work on Threat Analysis in the Guided Weapons Evaluation Facility (GWEF), to include purchase of assets, Jam Code Live Fire Missile Testing (LFMT), and efforts with Air Force Research Laboratory (AFRL).</p> <p><b>FY 2022 OCO Plans:</b> N/A</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Increased due to economic adjustments</p>					
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<p><b>Title:</b> LAIRCM Modeling, Simulation and Emulation Testing</p> <p><b>Description:</b> Activities that verify and validate the information obtained from threat analysis activities.</p> <p><b>FY 2021 Plans:</b> Will continue to work in Modeling, Simulation and Emulation Tests. This is a continued effort from LAIRCM Development from previous years.</p> <p><b>FY 2022 Base Plans:</b> Will continue to work in Modeling, Simulation and Emulation Tests. This is a continued effort from LAIRCM Development from previous years.</p> <p><b>FY 2022 OCO Plans:</b> N/A</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Increased due to economic adjustments</p>	0.487	0.822	0.829	0.000	0.829
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<p><b>Title:</b> LAIRCM Studies and Analysis</p> <p><b>Description:</b> Includes logistics, programmatic, and engineering studies and analysis activities to ensure continued system viability and sustainability and compliance with acquisition directives. These activities may</p>	1.609	0.000	0.000	0.000	0.000
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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401134F / <i>Large Aircraft IR Countermeasures (LAIRCM)</i>
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**C. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
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. Includes all Operational Data Collections including the purchase of required collection hardware, wiring to interface with the LAIRCM system on aircraft, and threat/system analysis on collected data.					
<b>FY 2021 Plans:</b> N/A					
<b>FY 2022 Base Plans:</b> N/A					
<b>FY 2022 OCO Plans:</b> N/A					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A					
<b>Accomplishments/Planned Programs Subtotals</b>	5.247	5.497	5.540	0.000	5.540

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APAF 05 Line Item LAIRCM: <i>Large Aircraft Infrared Countermeasures</i>	97.093	56.320	57.001	-	57.001	-	-	-	-	-	-

**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), the 46th Test Squadron, and the Guided Weapon Evaluation Facility (GWEF) to conduct threat analysis research and Modeling, Simulation, and Emulation Testing. AFRL provides hardware-in-the-loop developmental test simulation capability on a level-of-effort (LOE) basis. The current LAIRCM contract may be used to award the various study efforts.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force												Date: May 2021			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 7				PE 0401134F / Large Aircraft IR Countermeasures (LAIRCM)				674942 / Large Aircraft Infrared Counter Measures (LAIRCM)							
Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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
LAIRCM ETA Studies and Analysis	Various	Various : Various, IL	-	1.609	Feb 2020	-		-		-		-	-	-	-
<b>Subtotal</b>			-	1.609		-		-		-		-	-	-	N/A
Support (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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
LAIRCM ETA Letterkenny Munitions Support	MIPR	LEMCO : Chambersburg, PA	-	0.025	Mar 2020	-		-		-		-	-	-	-
<b>Subtotal</b>			-	0.025		-		-		-		-	-	-	N/A
Test and Evaluation (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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
LAIRCM ETA Threat Analysis/Guided Weapon Evaluation Facility	PO	GWEF : Eglin AFB, FL	-	0.650	Mar 2020	0.758	Apr 2021	-		-		-	-	-	-
LAIRCM ETA Modeling, Simulation and Emulation Test	MIPR	AFRL/RYF-Omni Sentinel : WPAFB, OH	-	0.373	Dec 2019	0.550	Dec 2020	0.559	Dec 2021	-		0.559	-	-	-
LAIRCM ETA Threat Analysis/Air Force Research Laboratory (AFRL)	MIPR	AFRL/RYF-DIME : WPAFB, OH	-	2.436	Nov 2019	3.427	Nov 2020	2.311	Nov 2021	-		2.311	-	-	-
LAIRCM ETA NG System Cabling/Live Fire	SS/TBD	NGC : Rolling Meadows, IL	-	0.040	Oct 2020	0.492	Apr 2021	2.300	Jan 2022	-		2.300	-	-	-
LAIRCM ETA Threat Analysis/Asset Buy	MIPR	United States Army : Huntsville, AL	-	-		-		0.100	Apr 2022	-		0.100	-	-	-
<b>Subtotal</b>			-	3.499		5.227		5.270		-		5.270	-	-	N/A

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401134F / Large Aircraft IR Countermeasures (LAIRCM)	<b>Project (Number/Name)</b> 674942 / Large Aircraft Infrared Counter Measures (LAIRCM)
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<b>Management Services (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
LAIRCM ETA Government Travel	Various	Government Employees : WPAFB, OH	-	0.114		0.270		0.270		-		0.270	-	-	-
<b>Subtotal</b>			-	0.114		0.270		0.270		-		0.270	-	-	N/A

**Remarks**  
N/A

	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	-	5.247	5.497	5.540	-	5.540	-	-	N/A

**Remarks**



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401134F / <i>Large Aircraft IR Countermeasures (LAIRCM)</i>	<b>Project (Number/Name)</b> 674942 / <i>Large Aircraft Infrared Counter Measures (LAIRCM)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>LAIRCM</b>				
Threat Analysis	1	2020	4	2024
Modeling , Simulation, and Emulation Testing	1	2020	4	2024
Studies and Analysis	1	2020	4	2024

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401218F / KC-135s
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	0.000	4.583	3.564	0.000	3.564	-	-	-	-	-	-
675261: <i>KC-135 Upgrades</i>	-	0.000	4.583	3.564	0.000	3.564	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

The KC-135 currently utilizes the legacy V/UHF satellite system, UHF Follow-On (UFO), to communicate with their controlling Command & Control (C2) agencies and other warfighters. This program adds to the current system by providing Beyond Line Of Sight (BLOS) and Line Of Sight (LOS) capability for secure voice and C2 data communications exchange between MAF aircraft and C2 agencies and is capable of operating with new crypto algorithms being developed under the VINSON/ANDVT Crypto Modernization (VACM) Program.

This program has 4 combined 1067s to meet the requirement:

AF Form 1067 AMC 10-050 Crypto - KC-135 currently uses the ARC-210 Gen 3 (RT-1794) radios to provide secure and non-secure voice communications. The ARC-210 Gen 3 requires replacement due to Diminishing Manufacturing Sources issues and due to NSA Crypto Modernization requirements. This 1067 covers the requirement to replace KC-135 COMM 3 radio installation with a modern crypto capable radio.

AF Form 1067 AMC 15-046 MUOS- KC-135 requires global BLOS secure voice and secure data communications via UHF MILSATCOM connectivity. This 1067 dictates the requirement to install a MUOS capable radio solution in order to fully utilize DOD's new UHF MILSATCOM constellation and waveform.

AF Form 1067 AMC 16-053 SATURN- KC-135 requires the significantly improved anti-jam capabilities provided by Second-generation Anti-jam Tactical UHF radio for NATO (SATURN) to replace the currently installed HAVE QUICK II anti-jam capability. HAVE QUICK II is a sunseting crypto program that requires replacement by SATURN. This 1067 requires KC-135 to implement SATURN capability when installing a MUOS capable radio.

AF Form 1067 AMC 17-039 IW - KC-135 will ensure, when installing a MUOS capable radio, that installation will also support secure BLOS voice communications connectivity with the legacy Integrated Waveform (IW) communications system.

KC-135 funding also supports Program Management Administration (PMA), various studies, analyses, and KC-135 requirements definition and demonstrations in support of Air Force Advanced Battle Management Systems (ABMS) initiative.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401218F / KC-135s
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver the KC-135 weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY 2020 \$0.000 million was expended for civilian pay expenses in this program element, and in FY 2021 \$0.000 million is forecasted for civilian pay expenses in this program element.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	0.000	4.591	0.249	0.000	0.249
Current President's Budget	0.000	4.583	3.564	0.000	3.564
Total Adjustments	0.000	-0.008	3.315	0.000	3.315
• 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	-0.008	3.315	0.000	3.315

**Change Summary Explanation**

FY 2022 funding request increase for communication modernization and upgrades.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> KC-135 MUOS radio	0.000	4.583	3.564
<b>Description:</b> The KC-135 utilizes the legacy V/UHF satellite system, UHF Follow-On (UFO), to communicate with their controlling Command & Control (C2) agencies and other warfighters. This program upgrades COMM 3 by adding Beyond Line Of Sight (BLOS) and Line Of Sight (LOS) capability for secure voice and C2 data communications exchange between MAF aircraft and C2 agencies and is capable of operating with new crypto algorithms being developed under the VINSON/ANDVT Crypto Modernization (VACM) Program by National Security Agency.			
<b>FY 2021 Plans:</b> Procure 4 long lead B-Kits for RDT&E effort.			
<b>FY 2022 Plans:</b>			



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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401218F / KC-135s
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022
Prototype and integration efforts for first articles.			
<b><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i></b> Funding decrease due to utilizing existing contract vehicle for prototype cost savings.			
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	4.583	3.564

<b>D. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APAF 05 Line Item C13500: C-135	28.581	16.274	23.682	-	23.682	-	-	-	-	-	-

**Remarks**

**E. Acquisition Strategy**

Procure B-Kit components through PMA-209 a Navy IDIQ contract.  
Utilize existing contract vehicle for RDT&E effort. To include integration, testing, and prototypes.  
Potential small business for A-Kit and depot-level for installs.





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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401218F / KC-135s	<b>Project (Number/Name)</b> 675261 / KC-135 Upgrades

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>KC-135 MUOS Radio</b>				
Original strategy Contract Award, EMD, and Test	1	2022	2	2024
Long Lead B-Kit components for RDT&E	2	2021	2	2022

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401219F / KC-10s
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	0.019	0.000	0.000	0.000	0.000	-	-	-	-	-	-
675195: <i>Aircraft Modernization Program (AMP)</i>	-	0.019	0.000	0.000	0.000	0.000	-	-	-	-	-	-
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-10 aircraft in the USAF tanker fleet. KC-10 has a divestiture strategy that will follow Fiscal Year 2019 National Defense Authorization Act and Air Force requirements.

Mode 5 program is a Department of Defense mandated upgrade to the 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.

A Federal Aviation Administration (FAA) mandated Automatic Dependent Surveillance-Broadcast (ADS-B) Out upgrade to the KC-10 is also included as part of Mode 5 to meet DO-260B requirements set by the FAA. Both IFF Mode 5 and ADS-B Out are mandated programs (Joint Requirements Oversight Council Memorandum 047-07 and FAA Advisory Circular 20-165B) that have a required incorporation no later than 1 January 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 Air Force.

The program completed formal Engineering and Manufacturing Development (EMD) and will procure kits for installation on all KC-10 aircraft.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver KC-10 weapon system capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.0M was expended and in FY21 \$0.0M is forecasted for civilian pay expenses in this program element.

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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401219F / KC-10s
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<b>B. Program Change Summary (\$ in Millions)</b>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>
Previous President's Budget	0.020	0.000	0.000	0.000	0.000
Current President's Budget	0.019	0.000	0.000	0.000	0.000
Total Adjustments	-0.001	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	-0.001	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>
<b>Title:</b> KC-10 Mode 5 IFF	0.019	0.000	0.000
<b>Description:</b> 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.			
<b>FY 2021 Plans:</b> N/A			
<b>FY 2022 Plans:</b> N/A, no FY22 RDT&E Requirement			
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A			
<b>Accomplishments/Planned Programs Subtotals</b>	0.019	0.000	0.000

<b>D. Other Program Funding Summary (\$ in Millions)</b>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APAF 05 C01000: <i>KC-10A (ATCA)</i>	2.108	0.117	1.902	-	1.902	-	-	-	-	-	-
• APAF 06 C01000: <i>KC-10s</i>	0.000	0.032	0.033	-	0.033	-	-	-	-	-	-

**Remarks**

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force</i> / BA 7: <i>Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401219F / KC-10s	

**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.





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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401219F / KC-10s	<b>Project (Number/Name)</b> 675195 / Aircraft Modernization Program (AMP)

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>KC-10 Mode 5</b>	
KC-10 Mode 5: EMD	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401219F / KC-10s	<b>Project (Number/Name)</b> 675195 / Aircraft Modernization Program (AMP)

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>KC-10 Mode 5</b>				
KC-10 Mode 5: EMD	1	2020	1	2020

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401318F / CV-22
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	125.948	17.355	18.385	17.189	0.000	17.189	-	-	-	-	-	-
676033: <i>CV-22 RDT&amp;E POST PRODUCTION</i>	125.948	17.355	18.385	17.189	0.000	17.189	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**Program MDAP/MAIS Code:** 212  
**Project MDAP/MAIS Code(s):** N42

**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 CV-22 provides long-range, high-speed infiltration, exfiltration, and resupply to Special Forces teams in hostile, denied, and politically sensitive areas. The Navy is the lead service for the Joint V-22 program. The Joint Program Manager is responsible for managing all variants of the V-22. Department of the Navy (DoN) funds the development of the MV-22 and CMV-22. The Air Force funds the service common portion of the CV-22 while United States Special Operations Command (USSOCOM) funds the development and procurement of SOF peculiar systems. CV-22 RDT&E funding provides for the development, integration, and testing of service-common, mission critical aircraft modifications to improve operational effectiveness, platform survivability, and aircraft availability.

Nacelle Modifications : Funds the design and development of the CV-22 nacelle and its components to increase engine time on wing by reducing ingestion of sand/dust and other particulate matter into the engine, improving reliability and maintainability and reducing operations and support costs. This is Air Force Special Operations Command's #1 priority for the CV-22 weapon system.

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 mitigate emerging threats to the aircraft and mission accomplishment, and to identify and assess emerging air vehicle, propulsion system, avionics architecture, electronic warfare, situational awareness, and other weapon system solutions in meeting CV-22 Block C/20 capability requirements.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver the CV-22 weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY 2020 \$0.000 million was expended for civilian pay expenses in this program element, and in FY 2021 \$0.000 million is forecasted for civilian pay expenses in this program element.

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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification: PB 2022 Air Force</b>				<b>Date: May 2021</b>		
<b>Appropriation/Budget Activity</b> 3600: Research, Development, Test & Evaluation, Air Force / BA 7: Operational Systems Development		<b>R-1 Program Element (Number/Name)</b> PE 0401318F / CV-22				
<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	
Previous President's Budget	17.906	18.419	17.447	0.000	17.447	
Current President's Budget	17.355	18.385	17.189	0.000	17.189	
Total Adjustments	-0.551	-0.034	-0.258	0.000	-0.258	
• Congressional General Reductions	0.000	0.000				
• Congressional Directed Reductions	0.000	-0.034				
• 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	-0.551	0.000				
• Other Adjustments	0.000	0.000	-0.258	0.000	-0.258	
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>				<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Nacelle Modifications				10.238	10.441	10.133
<b>Description:</b> Funds design, development, and testing of V-22 Nacelle components- Infrared Suppressor (IRS), Generator Control Unit (GCU) upgrade, heat exchanger improvements, engine health monitoring, and upgrade other nacelle systems and components. Common nacelle modifications for both the CV-22 and MV-22 fleets will increase overall aircraft readiness/ availability, reduce platform operating life cycle costs, and mitigate impacts to aircraft performance and survivability. These improvements will be integrated, tested, and fielded as block modifications to minimize cost and impact on fleet operations and readiness.						
<b>FY 2021 Plans:</b> Continue design, development, and testing of Nacelle Modifications: IRS redesign, IIS (EAPS 2.0), GCU, and engine health monitoring.						
<b>FY 2022 Plans:</b> Continue design, development, and testing of Nacelle Modifications; IIS (EAPS 2.0) & Flight Control Systems.						
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding decreased due to re-prioritizing resources						
<b>Title:</b> Enhanced Self-Deployment Capabilities				7.117	7.944	7.056
<b>Description:</b> Develops capabilities to enhance self-deployment, such as improved ice protection, engine performance, performance buyback, navigation, communications, and battle space awareness/networking capabilities/multi domain command and control (MDC2); situational awareness; electronic warfare; weapons systems; defensive avionics systems and architecture;						

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0401318F / CV-22
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
weight reduction initiatives; modular avionics/cyber security implementation and other changes to the underlying aircraft systems necessary to enable these capabilities.			
<b>FY 2021 Plans:</b> Continue design and development activities to enhance situational awareness, MAA/cyber security, and integration and develop Flight Control Computer (FCC) obsolescence effort.			
<b>FY 2022 Plans:</b> Continue design and development activities to enhance situational awareness, MAA/cyber security, and integration and develop FCC obsolescence effort.			
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding decreased due to re-prioritizing resources			
<b>Accomplishments/Planned Programs Subtotals</b>	17.355	18.385	17.189

<b>D. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE 07 PE 1160403BB: <i>Special Operations, Aviation Systems</i>	28.081	16.773	4.851	-	4.851	-	-	-	-	-	-
• APAF 02 Line Item <i>Special Operation: CV-22 Modification</i>	17.256	54.109	38.770	-	38.770	-	-	-	-	-	-
• APAF 04 0401318F: <i>CV-22</i>	0.000	206.220	0.000	-	0.000	-	-	-	-	-	-
• APAF 05 Line Item <i>V02200: CV-22 Mods</i>	65.348	119.396	158.162	-	158.162	-	-	-	-	-	-
• APAF 06 Line Item <i>000999: CV-22 Initial Spares/Repair Parts</i>	0.000	6.574	10.525	-	10.525	-	-	-	-	-	-
• APAF 07 Line Item <i>C0V220: CV-22 Post-Production Support</i>	0.000	0.000	0.000	-	0.000	-	-	-	-	-	-
• RDTE 05 PE <i>0604262N: V-22A Navy</i>	184.443	132.427	107.984	-	107.984	-	-	-	-	-	-

**Remarks**  
In addition to the funding identified in the table above, prior year funding includes \$547.755M in RDT&E, DW, BA07, PE 1160421BB: Special Operations, CV-22 Development, and \$429.216M in RDT&E, AF, BA05, PE 0401318F: CV-22

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> 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.

--Nacelle Modifications: Improved Inlet Solution (EAPS 2.0), Infrared Suppressor, and Generator Control Unit will utilize a combination of sole source and competitive contracts.

--Enhanced Self-Deployment Capabilities: Modular Avionics, Flight Control Computer, and performance buyback will utilize a combination of sole source and competitive contracts.

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 continue increasing competition where feasible, depending primarily on the level of platform integration required and Government rights to needed technical data.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401318F / CV-22	<b>Project (Number/Name)</b> 676033 / CV-22 RDT&E POST PRODUCTION
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
V-22 Nacelle Improvements	Various	Various : Various	68.890	8.703	Mar 2020	8.906	Mar 2021	5.750	Mar 2022	-		5.750	-	-	-
CV-22 Osprey Enhanced Self-deployment Capability	Various	Various : Various	39.717	5.582	Jun 2020	6.409	Jun 2021	6.691	Jun 2022	-		6.691	-	-	0.000
<b>Subtotal</b>			108.607	14.285		15.315		12.441		-		12.441	-	-	N/A

**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 Development Target Value of Contract differs from total cost because this is a joint development funded by Navy and Air Force.

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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 and Studies	Various	Various : Various	6.599	1.370	Mar 2020	1.370	Mar 2021	2.373	Mar 2022	-		2.373	-	-	0.000
<b>Subtotal</b>			6.599	1.370		1.370		2.373		-		2.373	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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	9.709	1.500	Dec 2019	1.500	Dec 2020	2.175	Dec 2021	-		2.175	-	-	0.000
<b>Subtotal</b>			9.709	1.500		1.500		2.175		-		2.175	-	-	N/A





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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401318F / CV-22	<b>Project (Number/Name)</b> 676033 / CV-22 RDT&E POST PRODUCTION

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>CV-22</b>	
Nacelle Modifications	
-- IIS Development and Test (EAPS 2.0)	
--- Generator Control Unit (GCU)	
-- Infrared Suppressor (IRS) Redesign	
-- Engine Health Monitoring	
Enhanced Self-Deployment	
-- Modular Avionics Architecture (MAA)	
-- Flight Control Computer (FCC)	
-- Multi Domain Command and Control (MDC2)	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0401318F / CV-22	<b>Project (Number/Name)</b> 676033 / CV-22 RDT&E POST PRODUCTION

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>CV-22</b>				
Nacelle Modifications	1	2020	4	2023
-- IIS Development and Test (EAPS 2.0)	1	2020	4	2023
--- Generator Control Unit (GCU)	2	2020	4	2021
-- Infrared Suppressor (IRS) Redesign	2	2020	4	2021
-- Engine Health Monitoring	2	2020	4	2021
Enhanced Self-Deployment	1	2020	4	2026
-- Modular Avionics Architecture (MAA)	1	2020	4	2024
-- Flight Control Computer (FCC)	2	2020	4	2026
-- Multi Domain Command and Control (MDC2)	2	2022	4	2026

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0408011F / <i>Special Tactics / Combat Control</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	3.543	7.659	6.640	0.000	6.640	-	-	-	-	-	-
675138: <i>ST System Development</i>	-	3.543	7.659	6.640	0.000	6.640	-	-	-	-	-	-
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 Special Warfare Acquisition Growth and Refresh (SWAGR). SWAGR will develop, test, train, and modernize the existing and future Family of Systems (FoS) 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) Special Warfare operators. ST System Development focus on reducing the risk of fratricide and substantially reducing size and weight of the equipment carried through various core capabilities, which include but are not limited to: Human Machine Interface (HMI), Line of Sight (LOS) targeting, medical monitoring, and Machine-to-Machine (M2M) C4ISR System and all other ST capability needs.

This program will develop and enhance technologies for Special Warfare ST operators to recognize, identify, range, nominate, and designate targets during both day and night operations. SWAGR 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. SWAGR systems are light, compact, and portable for use by dismounted Special Warfare ST operators. FY22 SWAGR funding will provide significant improvements in operational capability, situational awareness, and precision lethality in the battle space while continuing to build and enhance the SWAGR family of systems. This may be conducted through industry technology demonstrations, prototypes, and associated engineering support to posture the SWAGR for technology insertion. These efforts will deliver enhanced capability for the dismounted soldier in terms of dramatic weight reduction and increase mission effectiveness across the conflict spectrum. SWAGR also supports AFSOC Tactical Command and Control (TAC C2) programs to develop and enhance communications 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. Due to the rapidly changing threat environment, the acquisition program manager has the authority to redirect funding as necessary to meet current slated and emerging requirements. The above efforts may change based on the need to support current Air Force mission requirements.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.549M was expended for civilian pay expenses in this program element, and in FY21 \$1.017M is forecasted for civilian pay expenses in this program element.”

The Special Tactics (ST) System Development activities also include studies, analysis, and risk-reduction activities to support both current and future program planning and execution.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0408011F / <i>Special Tactics / Combat Control</i>
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Program name was changed from BATTLEFIELD AIRMEN OPERATIONS KIT (BAO Kit) to SPECIAL WARFARE ACQUISITION GROWTH AND REFRESH (SWAGR) to reflect the scope of the new AFSOC Capabilities Development Document (CDD) managing the program.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	3.629	7.673	6.740	0.000	6.740
Current President's Budget	3.543	7.659	6.640	0.000	6.640
Total Adjustments	-0.086	-0.014	-0.100	0.000	-0.100
• 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	-0.086	-0.014	-0.100	0.000	-0.100

**Change Summary Explanation**

Funding was rephrased into FY21, SWAGR FOS CDD requirements will be incrementally funded with FY22 budget.

RDT&E: 2.5M for development (plugin, app, programs), 4.24M for contract, integration, testing

PROC: 2.1M for assault zone, 1.3M for personnel recovery, 1.7M for reconnaissance specific mission sets; 4.5M for mobility (ground/maritime); 13.3M for communications/power; 6.9M for parachute systems/accessories; 12.2 for visual augmentation systems; 2.9M for unmanned systems (comm/ISR); 18.6M for contract, integration, testing; 5.1M for inventory control point.

BAO Inc II disconnect of 126M fully funded in the FY19-22 POM. Programming distribution was roughly 20% of the overall delta each year FY19-21, 40% in FY22, then back to pre-FY19 levels starting in FY22, a primary reason for the large difference between FY21 and 22. Additionally, earlier this FY, 15.2M of FY21 programming was redirected to other programs by HAF further increasing the difference.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Human Machine Interface (HMI)	0.762	1.799	1.768

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 0408011F / <i>Special Tactics / Combat Control</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Description:</b> 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.</p> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>- Continued to support digitally aided combat close air support operations. Plan to develop and operate tests or full spectrum certification (Joint Interoperable Test Command (JITC), Air Force System Interoperability Test (AFSIT), and Authority to Operate (ATO)).</li> <li>- Continued to explore and define requirements for implementation of the Iridium waveform granting DoD dedicated airtime.</li> <li>- Continued 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.</li> <li>- Required maturation of available technology for future dismounted communication contract in order to meet the requirements of the user.</li> </ul> <p><b>FY 2022 Plans:</b></p> <ul style="list-style-type: none"> <li>- Will continue to support digitally aided combat close air support operations. Plan to develop and operate tests or full spectrum certification (Joint Interoperable Test Command (JITC), Air Force System Interoperability Test (AFSIT), and Authority to Operate (ATO)).</li> <li>- Will continue to explore and define requirements for implementation of the Iridium waveform granting DoD dedicated airtime.</li> <li>- Will continue communications development: will upgrade HMI efforts which reduce the Size, Weight, and Power (SWAP) required to be carried by the Special Tactics Community. Specifically includes wireless technology.</li> <li>- Will require maturation of available technology for future dismounted communication contract in order to meet the requirements of the user.</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Current FY22 funding allows for the development to continue with the HMI effort for the Special Tactics CDD.</p>				
<p><b>Title:</b> Line of Sight</p> <p><b>Description:</b> Line of Sight (LOS) targeting enables the Special Warfare ST operators 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</p>		0.122	0.259	0.278

**UNCLASSIFIED**

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 0408011F / <i>Special Tactics / Combat Control</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
AFSOC Special Operation Weather Team's (SOWT) ability to provide timely, accurate, and critical deep battle space weather reconnaissance and intelligence.				
<b>FY 2021 Plans:</b> - Continued to explore and develop future Non Line of sight (XLOS) targeting device capabilities for Special Tactics community.				
<b>FY 2022 Plans:</b> - Will continue to explore and develop future Non Line of sight (XLOS) targeting device capabilities for Special Tactics community.				
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Current FY22 funding allows for the development to continue with the Line of Sight effort for the Special Tactics CDD.				
<b>Title:</b> Machine-to-Machine (M2M) Software Development		2.659	5.601	4.594
<b>Description:</b> This program is a Modern Software Development Program (MSDP). The software acquisition uses a modern software development methodology and is not primarily in sustainment. It has no objective system and will use iterative development across the project's lifecycles. 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 Special Warfare ST operators 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 SA on the battlefield.				
<b>FY 2021 Plans:</b> - Continued to explore requirements to address future FoS capability gaps. - Continued research and developmental efforts to support requirements in BAO FoS CDD, which includes but is not limited to Assault Zones, Fires, Weather, Personnel Recovery, and Enabling Capabilities.				
<b>FY 2022 Plans:</b> - Will continue to explore requirements to address future FoS capability gaps. - Will continue research and developmental efforts to support requirements in BAO FoS CDD, which includes but is not limited to Assault Zones, Fires, Weather, Personnel Recovery, and Enabling Capabilities.				
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Current FY22 funding allows for the development to continue with the M2M effort for the Special Tactics CDD.				
<b>Accomplishments/Planned Programs Subtotals</b>		3.543	7.659	6.640

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0408011F / <i>Special Tactics / Combat Control</i>
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**D. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF 03 Line Item 837100: <i>Tactical C-E Equipment</i>	38.324	29.021	38.136	-	38.136	-	-	-	-	-	-
• OPAF 04 Line Item 842990: <i>Personal Safety and Rescue Equipment</i>	6.299	2.502	21.647	-	21.647	-	-	-	-	-	-

**Remarks**

**E. Acquisition Strategy**

Special Warfare Acquisition Growth and Refresh (SWAGR) awarded a contract in FY16 to complete M2M software development. In FY20 this contract was extended to FY22, the plan is to compete a new M2M contract and award during FY22. This effort will include system engineering, design, integration, and fielding support for M2M software. Due to the rapidly changing threat environment, the acquisition program manager has the authority to redirect funding as necessary to meet current slated and emerging requirements. The above efforts may change based on the need to support current Air Force mission requirements. Wright Patterson AFB, OH manages the contract effort.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0408011F / <i>Special Tactics / Combat Control</i>	<b>Project (Number/Name)</b> 675138 / <i>ST System Development</i>
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Human Machine Interface (HMI)	C/Various	Various : Various	-	0.303	Dec 2019	1.745	Dec 2020	1.442	Dec 2021	-		1.442	-	-	-
Line of Sight	SS/ Various	Physical Optics Corporation : Torrance, CA	-	0.001	Nov 2019	0.002	Nov 2020	0.002	Nov 2021	-		0.002	-	-	-
Machine-To-Machine (M2M) Software Development	C/CPFF	General Dynamics IT : Dayton, OH	-	2.833	Feb 2020	4.521	Feb 2021	4.438	Feb 2022	-		4.438	-	-	-
<b>Subtotal</b>			-	3.137		6.268		5.882		-		5.882	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Agency Support	Various	46 TS : Eglin AFB, FL	-	0.205	Oct 2019	0.582	Dec 2020	0.380	Dec 2021	-		0.380	-	-	-
<b>Subtotal</b>			-	0.205		0.582		0.380		-		0.380	-	-	N/A

<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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 : Various, NV	-	0.201	Oct 2019	0.809	Dec 2020	0.378	Dec 2021	-		0.378	-	-	-
<b>Subtotal</b>			-	0.201		0.809		0.378		-		0.378	-	-	N/A

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract		
<b>Project Cost Totals</b>		-	3.543	7.659	6.640	-		6.640	-	-	N/A

**Remarks**



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0408011F / <i>Special Tactics / Combat Control</i>	<b>Project (Number/Name)</b> 675138 / <i>ST System Development</i>

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b><i>ST System Development</i></b>	
Human Machine Interface (HMI)	
Line of Sight	
Machine-To-Machine Software Development	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0408011F / <i>Special Tactics / Combat Control</i>	<b>Project (Number/Name)</b> 675138 / <i>ST System Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>ST System Development</i></b>				
Human Machine Interface (HMI)	1	2020	4	2022
Line of Sight	1	2020	4	2022
Machine-To-Machine Software Development	1	2020	4	2022

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0702207F / <i>Depot Maintenance (Non-IF)</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	1.821	0.000	0.000	0.000	0.000	-	-	-	-	-	-
673326: <i>Precision Measurement &amp; Calibration</i>	-	1.821	0.000	0.000	0.000	0.000	-	-	-	-	-	-
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).

In FY 2021, PE 0702207F, Depot Maintenance (Non-IF), Project 673326, Precision Measurement & Calibration, efforts were transferred to PE 0207521F, Air Force Calibration, 673326, Precision Measurement & Calibration, for proper location of 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.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force				<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 0702207F / <i>Depot Maintenance (Non-IF)</i>				
<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	
Previous President's Budget	0.000	0.000	0.000	0.000	0.000	
Current President's Budget	1.821	0.000	0.000	0.000	0.000	
Total Adjustments	1.821	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	1.821	0.000	0.000	0.000	0.000	
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>				<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Calibration Standards				1.821	0.000	0.000
<b>Description:</b> Develop improved calibration standards to support physical, mechanical, and electro-mechanical support equipment						
<b>FY 2021 Plans:</b> N/A						
<b>FY 2022 Plans:</b> N/A						
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A						
<b>Accomplishments/Planned Programs Subtotals</b>				1.821	0.000	0.000
<b>D. Other Program Funding Summary (\$ in Millions)</b> N/A						
<b>Remarks</b>						
<b>E. Acquisition Strategy</b> Primarily accomplished through intergovernmental transfer between the Department of Defense and other Federal Departments.						



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0702207F / <i>Depot Maintenance (Non-IF)</i>	<b>Project (Number/Name)</b> 673326 / <i>Precision Measurement &amp; Calibration</i>

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b><i>Precision Measurment &amp; Calibration</i></b>	
Develop Improved Calibration Standards	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0702207F / <i>Depot Maintenance (Non-IF)</i>	<b>Project (Number/Name)</b> 673326 / <i>Precision Measurement &amp; Calibration</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Precision Measurment &amp; Calibration</i></b>				
Develop Improved Calibration Standards	1	2020	4	2020

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0708055F / <i>Maintenance, Repair &amp; Overhaul System</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	9.239	24.468	26.921	0.000	26.921	-	-	-	-	-	-
675329: <i>MAINTENANCE REPAIR AND OVERHAUL INITIATIVE</i>	0.000	9.239	24.468	26.921	0.000	26.921	-	-	-	-	-	-

**Program MDAP/MAIS Code:** 523

**Note**

In FY 2020 PE 0708055F, Maintenance, Repair & Overhaul Initiative (MROi) efforts were transferred from Project 675207 to Project 675329, MROi, in order to improve transparency of this Business System Category II (BCAT II), formerly an ACAT I acquisition program.

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

The MROi program is a Doctrine, Organization, Training, Materiel, Leadership, Personnel, Facilities and Policies (DOTMLPF-P) transformation and standardization of both the business processes and enabling materiel solution. MROi will provide Air Force Sustainment Center (AFSC) with an integrated capability for planning, scheduling, and executing organic depot maintenance to support agile planning, optimized workload assignment, resource allocation, integrated quality, and maintenance-driven Air Force Working Capital Fund (AFWCF) financials auditability. This integrated capability, by definition, represents a critical step forward toward resolution of the Air Force's Integrated Financial Systems Material Weakness.

MROi will implement a configured Oracle Enterprise Business Suite (EBS) commercial off-the-shelf (COTS) software product with required reports, interfaces, conversions, extensions, and workflows (RICE-W) objects.

MROi will implement throughout all AFSC commodities, electronics, missile, propulsion, aircraft, and maintenance support groups. MROi's implementation will include transitional interfaces with various legacy systems to support continuous operations within the depot maintenance and supporting financials environment.

FY 2022 funding will support continued development and integration leading to planned Full Deployment Decision capabilities. The MROi implementer will continue to configure the Oracle suite for comprehensive program requirements; configure associated Commercial-Off-The-Shelf (COTS) support software; and develop Reports, Interfaces, Conversions and Extensions (RICE) software.

Collaborative and combined development along with operational testing is being performed iteratively throughout the development, configuration, integration, and deployment. Funds will also be used to perform logistics system risk reduction, data analysis, studies, and innovative integration efforts for common technology capabilities such as cloud migration, infrastructure and cloud development test and hosting environment, technology development and mobile applications, as well as to support interfaces with other systems.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0708055F / <i>Maintenance, Repair &amp; Overhaul System</i>
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver MROi business system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 0.000M was expended for civilian pay expenses in this program element, and in FY21 0.000M is forecasted for civilian pay expenses in this program element.

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

This program is in Budget Activity 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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	10.311	24.513	21.994	0.000	21.994
Current President's Budget	9.239	24.468	26.921	0.000	26.921
Total Adjustments	-1.072	-0.045	4.927	0.000	4.927
• Congressional General Reductions	0.000	-0.045			
• 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	-0.072	0.000			
• Other Adjustments	0.000	0.000	4.927	0.000	4.927

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0708055F / <i>Maintenance, Repair &amp; Overhaul System</i>				<b>Project (Number/Name)</b> 675329 / <i>MAINTENANCE REPAIR AND OVERHAUL INTIATIVE</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
675329: <i>MAINTENANCE REPAIR AND OVERHAUL INTIATIVE</i>	0.000	9.239	24.468	26.921	0.000	26.921	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**Note**

In FY 2020 PE 0708055F, Project 675207, Maintenance, Repair & Overhaul Initiative (MROi), efforts transferred to PE 0708055F, Project 675329, MROi, in order to improve transparency of this Business System Category II (BCAT II), formerly an ACAT I acquisition program.

As a result of the transition from DoDI 5000.02 to DoDI 5000.75, MROi was reclassified to a BCAT II program as reflected in the 11 Apr 2018 MROi Milestone B ADM.

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

The MROi program is a Doctrine, Organization, Training, Materiel, Leadership, Personnel, Facilities and Policies (DOTMLPF-P) transformation and standardization of both the business processes and enabling materiel solution. MROi will provide Air Force Sustainment Center (AFSC) with an integrated capability for planning, scheduling, and executing organic depot maintenance to support agile planning, optimized workload assignment, resource allocation, integrated quality, and maintenance-driven Air Force Working Capital Fund (AFWCF) financials auditability. This integrated capability, by definition, represents a critical step forward toward resolution of the Air Force's Integrated Financial Systems Material Weakness.

MROi will implement a configured Oracle Enterprise Business Suite (EBS) commercial off-the-shelf (COTS) software product with required reports, interfaces, conversions, extensions, and workflows (RICE-W) objects.

MROi will implement throughout all AFSC commodities, electronics, missile, propulsion, aircraft, and maintenance support groups. MROi's implementation will include transitional interfaces with various legacy systems to support continuous operations within the depot maintenance and supporting financials environment.

FY 2022 funding will support the development and integration of MROi, leading to a planned Full Deployment Decision/Full Deployment Authority to Proceed (ATP). The MROi implementer will continue to configure the Oracle suite for comprehensive program requirements; configure associated Commercial-Off-The-Shelf (COTS) support software; develop Reports, Interfaces, Conversions and Extensions (RICE) software; and develop training materials. Collaborative and combined development along with operational testing is being performed iteratively throughout the development, configuration, integration, and deployment using agile software methodology. Funds will also be used to perform logistics system risk reduction, data analysis, studies, and innovative integration efforts for common technology capabilities such as cloud migration, infrastructure and cloud developmental test and hosting environment, technology development and mobile applications, as well as to support interfaces with other systems.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0708055F / <i>Maintenance, Repair &amp; Overhaul System</i>	<b>Project (Number/Name)</b> 675329 / <i>MAINTENANCE REPAIR AND OVERHAUL INTIATIVE</i>
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver MROi business system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 0.000M was expended for civilian pay expenses in this program element, and in FY21 0.000M is forecasted for civilian pay expenses in this program element.

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Product Development	9.239	24.468	26.921
<b>Description:</b> 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.			
<b>FY 2021 Plans:</b> - Support the continued development and integration of MROi, leading to a planned Full Deployment Decision/Full Deployment Authority to Proceed (ATP). Completed Minimum Viable Product (MVP) 1 and begin work on MVP 2. - Continue to configure the Oracle suite; configure associated Commercial-Off-The-Shelf (COTS) support software; develop Reports, Interfaces, Conversions and Extensions (RICE) software; and develop training materials. Conduct risk assessments, to include possible move from DISA infrastructure to Cloud environment. - Continue to perform collaborative and combined development and operational testing iteratively throughout the development, configuration, integration, and deployment.			
<b>FY 2022 Plans:</b> - Will continue development and integration of MROi, leading to a planned Full Deployment Decision/Full Deployment Authority to Proceed (ATP). Complete MVP 2 and begin MVP 3. - Will continue to configure the Oracle suite; configure associated Commercial-Off-The-Shelf (COTS) support software; develop Reports, Interfaces, Conversions and Extensions (RICE) software; and develop training materials. - Will continue to perform collaborative and combined development and operational testing iteratively throughout the development, configuration, integration, and deployment.			
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding increased because of scrum team growth associated to the development efforts of MROi.			
<b>Accomplishments/Planned Programs Subtotals</b>	9.239	24.468	26.921

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2022</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u>	<u>Total Cost</u>
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	
• OPAF 03 834480: <i>Maintenance Repair &amp; Overhaul Initiative</i>	0.000	-	4.387	-	4.387	-	-	-	-	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0708055F / <i>Maintenance, Repair &amp; Overhaul System</i>	<b>Project (Number/Name)</b> 675329 / <i>MAINTENANCE REPAIR AND OVERHAUL INTIATIVE</i>

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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**Remarks**

**D. Acquisition Strategy**

MROi uses an agile, incremental build-release acquisition strategy to deliver capability. The program used a competitive, best value strategy to select a system implementer utilizing the existing NETCENTS-2 Small Business Application Services contract for the original contract, which was awarded 11 Jul 2018 and concluded 16 Sep 2020. For the follow-on effort, the program used a competitive, best value strategy to select a system implementer utilizing the existing NETCENTS-2 Full and Open Large Business Application Services contract, awarded in Sep 20. Hosting Infrastructure is provided through the Enterprise Resource Planning - Common Services (ERP-CS).

- Development Contract Strategy
- Directed use of NETCENTS II Application Services IDIQ
- Competitive, Best Value Full Trade-off procedures
- Own technical baseline
- Tech Stack Licenses
- Work for first minimally viable product performed via small business
- Follow-on increments with financial interfaces to be performed by large business

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0708055F / Maintenance, Repair & Overhaul System	<b>Project (Number/Name)</b> 675329 / MAINTENANCE REPAIR AND OVERHAUL INTIATIVE
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<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Maintenance, Repair and Overhaul Initiative: Configuration System Implementer	C/Various	NETCENTS-2 : WPAFB, OH	0.000	4.527	Jul 2020	11.129	Jul 2021	16.310	Nov 2021	-		16.310	-	-	-
Maintenance, Repair and Overhaul Initiative: Software Development	C/Various	Various : WPAFB, OH	0.000	0.060	May 2020	0.331	May 2021	0.197	Nov 2021	-		0.197	-	-	-
Maintenance, Repair and Overhaul Initiative: Hosting and Environment Support	MIPR	DISA : Oklahoma City, OK	0.000	0.004	Mar 2020	0.008	Feb 2021	0.006	Dec 2021	-		0.006	-	-	-
Maintenance, Repair and Overhaul Initiative: Capabilities Integration Environment (CIE)	MIPR	AFLCMC/HNII : Gunter Annex, AL	0.000	0.030	Feb 2020	0.092	Feb 2021	0.068	Dec 2021	-		0.068	-	-	-
Maintenance, Repair and Overhaul Initiative: Legacy System Interface Development	C/CPAF	Various : WPAFB, OH	0.000	0.132	Aug 2020	0.000		0.000		-		0.000	-	-	-
<b>Subtotal</b>			0.000	4.753		11.560		16.581		-		16.581	-	-	N/A

<b>Support (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Maintenance, Repair and Overhaul Initiative: ISP Support	C/CPFF	Bowhead : Alexandria, VA	0.000	0.282	Mar 2020	0.702	Mar 2021	0.522	Dec 2021	-		0.522	-	-	-
Maintenance, Repair and Overhaul Initiative: Studies	C/Various	Various : WPAFB, OH	0.000	0.000	Mar 2020	0.000		0.000		-		0.000	-	-	-
Maintenance, Repair and Overhaul Initiative: FFRDC Support	C/CPFF	MITRE : WPAFB, OH	0.000	1.386	Mar 2020	1.589	Mar 2021	1.178	Dec 2021	-		1.178	-	-	-

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0708055F / Maintenance, Repair & Overhaul System	<b>Project (Number/Name)</b> 675329 / MAINTENANCE REPAIR AND OVERHAUL INTIATIVE
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<b>Support (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Maintenance, Repair and Overhaul Initiative: Oracle Support	C/Various	Oracle : WPAFB, OH	0.000	0.587	Jan 2020	1.730	Jan 2021	1.430	Dec 2021	-		1.430	-	-	-
Maintenance, Repair and Overhaul Initiative: PMO Oracle Support	C/CPAF	Oracle : WPAFB, OH	0.000	0.600	Jan 2020	0.992	Jan 2021	1.087	Dec 2021	-		1.087	-	-	-
Maintenance, Repair and Overhaul Initiative: Data platforms, services, integration, transformation and curation	C/Various	Various : Various, OH	0.000	-		1.642	Nov 2020	1.243	Nov 2021	-		1.243	-	-	-
Maintenance, Repair and Overhaul Initiative: Field Assistance Service (FAS)	TBD	TBD : WPAFB, OH	0.000	-		0.015	Feb 2021	0.007	Dec 2021	-		0.007	-	-	-
Maintenance, Repair and Overhaul Initiative: FIAR/ FISCAM	TBD	TBD : TBD	0.000	-		0.279	Dec 2020	0.189	Dec 2021	-		0.189	-	-	-
<b>Subtotal</b>			0.000	2.855		6.949		5.656		-		5.656	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Maintenance, Repair and Overhaul Initiative: Test Support	MIPR	DISA : Oklahoma City, OK	0.000	0.532	Jan 2020	0.591	Jan 2021	0.403	Dec 2021	-		0.403	-	-	-
Maintenance, Repair and Overhaul Initiative: Joint Interoperability Test Command (JITC) Support	MIPR	GSA : WPAFB, OH	0.000	0.094	Mar 2020	0.054	Mar 2021	0.033	Dec 2021	-		0.033	-	-	-
<b>Subtotal</b>			0.000	0.626		0.645		0.436		-		0.436	-	-	N/A





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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0708055F / <i>Maintenance, Repair &amp; Overhaul System</i>	<b>Project (Number/Name)</b> 675329 / <i>MAINTENANCE REPAIR AND OVERHAUL INTIATIVE</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b><i>Maintenance, Repair and Overhaul Initiative</i></b>																												
MVP 1																												
MVP 1 Government Integrated Test 1.1																												
MVP 2																												
MVP 2 Government Integrated Test 2.1																												
MVP 2 Government Integrated Test 2.2																												
MVP 2 Government Integrated Test 2.3																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0708055F / <i>Maintenance, Repair &amp; Overhaul System</i>	<b>Project (Number/Name)</b> 675329 / <i>MAINTENANCE REPAIR AND OVERHAUL INTIATIVE</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Maintenance, Repair and Overhaul Initiative</i></b>				
MVP 1	1	2020	1	2021
MVP 1 Government Integrated Test 1.1	3	2020	1	2021
MVP 2	4	2020	3	2022
MVP 2 Government Integrated Test 2.1	2	2021	3	2021
MVP 2 Government Integrated Test 2.2	4	2021	1	2022
MVP 2 Government Integrated Test 2.3	2	2022	3	2022

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0708610F / <i>Logistics Information Technology (LOGIT)</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	10.133	33.186	7.071	0.000	7.071	-	-	-	-	-	-
675207: <i>Logistics IT System Modernization</i>	0.000	10.133	33.186	7.071	0.000	7.071	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**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.

Log IT is a portfolio of programs that currently addresses Transformation, Remediation, and Modernization of Operational Systems. Transformation focuses on transforming the Logistics IT enterprise to a more efficient, cost-effective integrated IT infrastructure. Remediation entails modifying operational Logistics software systems to address congressionally-mandated Financial Improvement & Audit Readiness requirements and remediating critical IT risks through the Logistics Strike Teams (consolidation, re-hosting, analytics). Modernization concentrates on software upgrades for operational systems to increase functional capabilities, reduce sustainment costs, meet statutory IT compliance requirements and improve user performance.

**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) requirements and align with the Joint Chiefs of Staff J-4 Concept for Logistics, and the AF Portfolio Board's approved Logistics Flight Plan. The AF must concurrently sustain and modify identified logistics systems to achieve FIAR remediation by the statutory deadline; execute software upgrades to reduce high operating costs and meet evolving operational demands; implement statutory compliance requirements; improve system performance; and enable system consolidation efforts that lower the cyber threat space and reduce long-term portfolio costs.

- Identified systems include, but are not limited to, the Integrated Logistics System-Supply (ILS-S), Enhanced Technical Information Management System (ETIMS), Integrated Maintenance Data System (IMDS), and Reliability and Maintainability Information System (REMIS). Additional logistics systems may be included as financial audits are completed and system consolidation efforts mature.

**Transformation:**

- The AF must transform its logistics business processes and transition away from using numerous custom stovepipe systems and processes that perform similar tasks. Eliminating process redundancies across the logistics enterprise will enable the AF to execute more secure, resilient, efficient, cost-effective and integrated logistics. The

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0708610F / <i>Logistics Information Technology (LOGIT)</i>	
<p>objective of transformation is to conduct Business Process Re-engineering (BPR) to identify and eliminate overlaps in business processes across core logistics systems and, where appropriate, implement new IT systems that employ best commercial practices and modern cloud-based architectures.</p> <p>- The AF will take full advantage of the flexibilities provided by DoDI 5000.75, Business Systems Requirements and Acquisition guidance, as well as Agile development methodologies to identify requirements across the spectrum of Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities and Policy (DOTMLPF-P); and to acquire and deploy approved material solutions in the most efficient and effective manner possible utilizing the 5-phased Business Capability Acquisition Cycle (BCAC). These phases are structured to optimize a joint responsibility of functional and acquisition activities, leading to the successful delivery of the business capability. There will be an emphasis placed on acquisition of business systems aligned to commercial best practices utilizing commercial off-the-shelf (COTS), government off-the-shelf (GOTS) solutions, and modern platforms that support continuous integration and continuous deployment (CI/CD) following a development, security, and operations (DevSecOps) methodology.</p> <p>- The AF logistics enterprise is comprised of multiple overarching functional areas, to include base and depot-level maintenance, end-to-end supply chain management, and predictive analysis and forecasting. The AF will standardize its business processes within each major logistics functional area through Transformational Capability Initiatives (TCIs). These TCIs include, but are not limited to: Maintenance, Repair and Overhaul Initiative (MROi PE 0708055F), Foundational Logistics Information Technology Enterprise System (FLITES) (formerly known as Item Master Logistics Capability Initiative (IMLCI)), Supply Capability Initiative, Air Force Product Lifecycle Management Capability Initiative (AF-PLM), and Field Maintenance Capability Initiative. There may be one or more specific initiatives aligned to each of the major CI areas referenced above.</p> <p>Transformation Capability Initiatives (TCI):</p> <p>- TCI Foundational Logistics Information Technology Enterprise System (FLITES) (formerly Item Master Logistics Capability Initiative (IMLCI)) provides the capability to manage comprehensive, accurate, reliable item master data (e.g., accurate identification and authorization of owners and users of items). FLITES is a key component of the Air Force (AF) Logistics Capability Transformation Plan. It will provide Item standardization and configuration management from a single authoritative source, ensuring foundational logistics processes are executed in concert to support the A4 logistics baseline. It will enable key integration and transformation capabilities, including Item Unique Identification (IUID) association to business transactions; streamlined management of part item attributes across supply, finance, engineering, technology, transportation, maintenance, and vendor communities; and provide translation capabilities between functional and technical business communities and systems.</p> <p>The program name was changed from Item Master Logistics Capability Initiative (IMLCI) to Foundational Logistics Information Technology Enterprise System (FLITES) in order to avoid Trademark confusion with Oracle's product "Oracle Item Master".</p> <p>- TCI Supply Capability Initiative is focused on enabling simplified, standardized processes to fundamentally enhance the business operations and provide total asset visibility across the supply chain. These improvements have been identified in the USAF Logistics Capabilities Transformation Plan.</p>		

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0708610F / <i>Logistics Information Technology (LOGIT)</i>
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- TCI Field Maintenance will improve the AF field maintenance capabilities across Mission Generation Network (MGN) and Repair Network (RN) (e.g. propulsion, avionics, command and control (C2) enabler systems, cyber systems, communications–electronics & 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.

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- Funds will be used to perform studies, analysis, and innovative integration efforts for common technology capabilities such as cloud migration, technology development and mobile applications that cross and support all of the aforementioned initiatives.

- This program element may include necessary civilian pay expenses required to manage, execute, and deliver AF integrated logistics integration capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 0.000M was expended for civilian pay expenses in this program element, and in FY21 0.000M is forecasted for civilian pay expenses in this program element

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

This program is in Budget Activity 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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	16.065	35.225	45.735	0.000	45.735
Current President's Budget	10.133	33.186	7.071	0.000	7.071
Total Adjustments	-5.932	-2.039	-38.664	0.000	-38.664
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-2.039			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-5.385	0.000			
• SBIR/STTR Transfer	-0.547	0.000			
• Other Adjustments	0.000	0.000	-38.664	0.000	-38.664

**Change Summary Explanation**

FY22 funding was decreased to fund higher Air Force priorities.

FY21 funding was increased to support the Logistics Strike Team effort to collapse an additional 80+ logistics systems in FY21.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 0708610F / <i>Logistics Information Technology (LOGIT)</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Title:</b> Integrated Logistics Support - Supply Enhancements (ILS-S Enhancements)</p> <p><b>Description:</b> Modify ILS-S 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 Item Unique Identification (IUID), Defense Logistics Marking Standards (DLMS), and enhancements for information technology modernization.</p> <p><b>FY 2021 Plans:</b> - Effort complete in FY20</p> <p><b>FY 2022 Plans:</b> N/A</p>		2.600	0.000	0.000
<p><b>Title:</b> Enhanced Technical Information Management System Enhancements (ETIMS Enhancements)</p> <p><b>Description:</b> Modify ETIMS 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, and enhancements for information technology modernization.</p> <p><b>FY 2021 Plans:</b> - Begin Logistics directed subsumption activities and enhancements</p> <p><b>FY 2022 Plans:</b> - Will begin Increment 2 of Logistics directed subsumption activities and enhancements</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> - Funding decreased to support higher Air Force priorities.</p>		0.000	4.600	0.300
<p><b>Title:</b> Enhanced Technical Information Management System Software Upgrade (ETIMS SUP)</p> <p><b>Description:</b> Modify ETIMS software to integrate additional enhancements satisfying requirements contained in the Functional Requirements Document(FRD). ETIMS requires modernization to incorporate enhancements into the AF Enterprise Technical Order (TO) Management System, and the current ETIMS release that is being worked falls into this category. ETIMS is a dev/mod effort that will satisfy the Management of Computer Program Identification Number (CPINs), archive digital TOs, interface the system of record Time Compliance Technical Order (TCTO) data with REMIS, manage and track to change requests, and store and distribute Interactive Electronic Technical Manuals (IETMs).</p> <p><b>FY 2021 Plans:</b></p>		0.622	0.000	0.000

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 0708610F / <i>Logistics Information Technology (LOGIT)</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
- Effort complete in FY20. <b>FY 2022 Plans:</b> N/A				
<b>Title:</b> Logistics Enhancements <b>Description:</b> Modify programs 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 Item Unique Identification (IUID), Defense Logistics Marking Standards (DLMS), and enhancements for information technology modernization. Programs include but are not limited to Integrated Maintenance Data System (IMDS), Reliability and Maintainability Information System (REMIS), and Integrated Logistics Support - Supply (ILS-S). <b>FY 2021 Plans:</b> N/A <b>FY 2022 Plans:</b> - Will begin Logistics directed subsumption activities and enhancements <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> - Effort is not planned to begin until FY22.		0.000	0.000	0.050
<b>Title:</b> Transformation Capability Initiative -Foundational Logistics Information Technology Enterprise System (FLITES) (formerly Item Master Logistics Capability Initiative (IMLCI)) <b>Description:</b> FLITES will provide comprehensive Item Catalog and Provisioning functions for the Logistics business systems, and will replace the Item Management Control System (IMCS) suite of legacy systems, at a minimum. It will be the central repository for the Item core business objects, providing standardization of Item cataloging processes, structure, attributes, propagation, and standardized views for all applicable Item types. Additionally, FLITES will receive product structure input from an engineering Product Lifecycle Management (PLM) type system. FLITES will contain the Item data that is the core underlying information for each Transformation Capability Initiative (TCI), and as such will integrate with many logistics enterprise systems. FLITES is a pilot program within NDAA Section 873, "Agile or Iterative Development Methods to Tailor Major Software-Intensive Warfighting Systems and Defense Business Systems pilot program." <b>FY 2021 Plans:</b> - Complete installation and tuning commercial platform on Cloud-One and Dev/Test environments - Begin configuration of commercial platform to provide foundational cataloging capability		6.911	20.507	5.850

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 0708610F / <i>Logistics Information Technology (LOGIT)</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<ul style="list-style-type: none"> <li>- Conduct recurring cyber-security and system performance testing concurrent with configuration</li> <li>- Develop and test interfaces and data exchanges to other Logistics Systems</li> <li>- Prepare and begin fielding capability to pre-production environment for user familiarization and feedback following agile methodology over multiple sprints</li> </ul> <p><b>FY 2022 Plans:</b></p> <ul style="list-style-type: none"> <li>- Will continue to conduct recurring cyber-security and system performance testing concurrent with configuration</li> <li>- Will continue to develop and test interfaces and data exchanges to other Logistics Systems</li> <li>- Will prepare and begin fielding capability to production following agile methodology over multiple sprints</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b></p> <ul style="list-style-type: none"> <li>- Funding decreased to support higher Air Force priorities.</li> </ul>				
<p><b>Title:</b> Emerging Financial Improvement and Audit Readiness (Emerging FIAR)</p> <p><b>Description:</b> Modify operational Logistics software systems to incorporate emerging FIAR requirements. These requirements are the result of on-going analysis of the Treasury Financial Management (TFM) Chapter 9500, as directed by OMB A-123 appendix D, and the DoD FMR volume 1, chapter 3. The results are identified and documented systems deficiencies that can only be satisfied via a material solution.</p> <p><b>FY 2021 Plans:</b> Begin FIAR remediation efforts for the Reliability and Maintainability Information System (REMIS), specifically the management of the REMIS User Access Table, as well as code changes to address conflicting user access through a Lookback process. Effort will convert REMIS user access from group privileges to role-based user access privileges to reduce the potential for assigning users conflicting system functions and capabilities and simplify tracking the activities of individual users. The Lookback process will also become more simplified with these code changes as it consolidates the data into one data repository. This will provide for the ability to create reports without needing to perform manual cross references that are done today.</p> <p><b>FY 2022 Plans:</b> -Will continue FIAR remediation efforts for REMIS.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> - Funding decreased because FIAR remediation efforts for REMIS User Access Table and Lookback process will complete in early FY22. Follow on FIAR remediation efforts will begin later in the FY.</p>		0.000	1.500	0.371
<b>Title:</b> Logistics Strike Teams (Strike Teams)		-	6.579	0.500



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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0708610F / <i>Logistics Information Technology (LOGIT)</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Description:</b> Effort to collapse remaining 270 of original 359 logistic 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 4) inject modern technologies (e.g. cloud). Enhance logistics data analytics environment with machine learning, predictive, and prognostic capabilities; incorporate automated tools for rapid consolidation of duplicative analytics capabilities.</p> <p><b>FY 2021 Plans:</b> Continue efforts to collapse remaining 270 of original 359 systems and enhance logistics analytics by applying more accurate methodologies that will:</p> <ul style="list-style-type: none"> <li>- improve command and control</li> <li>- enhance logistics data analytics and forecasting</li> <li>- eliminate redundancy and duplication</li> <li>- inject modern technologies (e.g. cloud)</li> <li>- Enhance logistics data analytics environment by:</li> <li>- machine learning</li> <li>- predictive, and prognostic capabilities</li> <li>- incorporate automated tools for rapid consolidation of duplicative analytics capabilities</li> </ul> <p><b>FY 2022 Plans:</b> Will continue efforts to collapse remaining 270 of original 359 systems and enhance logistics analytics by applying more accurate methodologies that will:</p> <ul style="list-style-type: none"> <li>- improve command and control</li> <li>- enhance logistics data analytics and forecasting</li> <li>- eliminate redundancy and duplication</li> <li>- inject modern technologies (e.g. cloud)</li> <li>- Enhance logistics data analytics environment by:</li> <li>- machine learning</li> <li>- predictive, and prognostic capabilities</li> <li>- incorporate automated tools for rapid consolidation of duplicative analytics capabilities</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> - Funding decreased to support higher Air Force priorities.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	10.133	33.186	7.071

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0708610F / <i>Logistics Information Technology (LOGIT)</i>
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**D. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF 03 Line Item 834430: <i>Global Combat Support System-Air Force (GCSS-AF)</i>	11.226	0.000	3.959	-	3.959	-	-	-	-	-	-

**Remarks**

**E. Acquisition Strategy**

Air Force Program Executive Office - Business and Enterprise Systems (AFPEO-BES) is evaluating systems under the DoDI 5000.75 to approve Authority To Proceed (ATP) for each core logistics system remediation/modification project.

Agile development practices transform IT acquisitions by incrementally delivering capabilities faster and responding more effectively to changes in operations, technology, and budgets. The four objectives of Agile software development are: 1. Focusing on small, frequent capability releases; 2. Valuing working software over comprehensive documentation; 3. Responding rapidly to changes in operations, technology, and budgets; 4. Actively involving users throughout development to ensure high operational value. In addition, exploitation of emerging cloud-native and containerized deployment on modern platforms will greatly enhance speed of delivery to users in a secure, scalable, and flexible manner.

The Logistics IT program utilizes the Agile software development methodology in the acquisition of these projects. LogIT supports multiple lines of effort and will employ multiple acquisition strategies to achieve the 3 LogIT objectives of FIAR and Software Upgrades, Transformation, and Transformation Capability Initiatives. Agile development, continuous integration and deployment are preferred methodologies that will be employed to the greatest extent possible to achieve maximum flexibility and cyber-resiliency, using an appropriate mix of contractor and government personnel.

Contract strategies will require multiple approaches with a focus on best value and rapid execution using contracts like the pre-competed Small Business Enterprise Application Solutions (SBEAS) multi-vendor indefinite delivery/indefinite quantity (ID/IQ) vehicle.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0708610F / Logistics Information Techno logy (LOGIT)	<b>Project (Number/Name)</b> 675207 / Logistics IT System Modernization
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<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
ETIMS Enhancements - Prime Integration	C/CPAF	Digital Management, Inc. : WPAFB, OH	0.000	-		4.220	May 2021	0.150	Aug 2022	-		0.150	-	-	-
ETIMS SUP - Prime Integration	C/CPAF	Digital Management, Inc. : WPAFB, OH	0.000	0.133	Jul 2020	-		-		-		-	-	-	-
ILS-S Enhancements - DLMS	C/FFP	DATUM : MAFB-Gunter, AL	0.000	2.069	Jan 2020	-		-		-		-	-	-	-
Logistics Enhancements - Prime Integration	TBD	TBD : TBD	0.000	-		-		0.050	Jun 2022	-		0.050	-	-	-
FLITES (formerly IMLCI) - Development/Production Software Tools	TBD	TBD : WPAFB, OH	0.000	-		0.940	May 2021	0.268	Sep 2022	-		0.268	-	-	-
FLITES (formerly IMLCI) - Hosting	TBD	TBD : WPAFB, OH	0.000	-		1.669	Jan 2021	1.216	Feb 2022	-		1.216	-	-	-
FLITES (formerly IMLCI) - Technical Services Contract	C/FFP	TBD : WPAFB, OH	0.000	3.190	Sep 2020	12.987	Jan 2021	1.981	Feb 2022	-		1.981	-	-	-
FLITES (formerly IMLCI) - Java Developers	C/FFP	Bering Global Solutions : WPAFB, OH	0.000	-		1.325	Feb 2021	0.731	Jun 2022	-		0.731	-	-	-
Emerging FIAR - REMIS CFO Reconciliation	C/FFP	Innovative Mgmt Concepts : WPAFB, OH	0.000	-		1.500	Jun 2021	0.371	Jun 2022	-		0.371	-	-	-
Logistics Strike Teams	Various	TBD : TBD	0.000	-		5.546	Jan 2021	0.500	Mar 2022	-		0.500	-	-	-
<b>Subtotal</b>			0.000	5.392		28.187		5.267		-		5.267	-	-	N/A

<b>Support (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
ETIMS Enhancements - SME	C/FFP	TBD : WPAFB, OH	0.000	-		0.230	Jun 2021	0.100	Jun 2022	-		0.100	-	-	-

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0708610F / Logistics Information Techno logy (LOGIT)	<b>Project (Number/Name)</b> 675207 / Logistics IT System Modernization
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<b>Support (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
ETIMS Enhancements - ISP	C/FFP	Bowhead : WPAFB, OH	0.000	-		0.150	Feb 2021	0.050	Feb 2022	-		0.050	-	-	-
ETIMS SUP - SME	C/CPFF	DATUM : WPAFB, OH	0.000	0.247	Jul 2020	-		-		-		-	-	-	-
FLITES (formerly IMLCI) - SME	C/FFP	TACG, LLC : WPAFB, OH	0.000	0.265	Jun 2020	0.276	May 2021	0.118	May 2022	-		0.118	-	-	-
FLITES (formerly IMLCI) - ISP	C/FFP	Bowhead : WPAFB, OH	0.000	0.229	Jun 2020	0.166	May 2021	0.097	Jun 2022	-		0.097	-	-	-
FLITES (formerly IMLCI) - Cloud 1 Development Lab Compute & Store	C/CPFF	Smartertronix : MAFB-Gunter, AL	0.000	0.076	Aug 2020	-		-		-		-	-	-	-
LOGIT (All programs) - Software and Training	Various	Various : MAFB-Gunter, AL	0.000	2.413	Aug 2020	1.488	Mar 2021	0.412	Mar 2022	-		0.412	-	-	-
<b>Subtotal</b>			0.000	3.230		2.310		0.777		-		0.777	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
FLITES (formerly IMLCI) - LDTO	PO	96th Test Wing : Eglin AFB, FL	0.000	0.111	Dec 2019	0.106	Jan 2021	0.120	Dec 2021	0.000		0.120	-	-	-
<b>Subtotal</b>			0.000	0.111		0.106		0.120		0.000		0.120	-	-	N/A

<b>Management Services (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
FLITES (formerly IMLCI) - PMO Travel	Various	PEO : WPAFB, OH	0.000	0.002	Sep 2020	0.054	Feb 2021	0.027	Nov 2021	-		0.027	-	-	-
FLITES (formerly IMLCI) - EPASS	C/CPFF	Oasis : WPAFB, OH	0.000	0.873	Apr 2020	1.150	Jan 2021	0.639	Mar 2022	-		0.639	-	-	-



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0708610F / <i>Logistics Information Technology (LOGIT)</i>	<b>Project (Number/Name)</b> 675207 / <i>Logistics IT System Modernization</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026					
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
<b><i>ILS-S Enhancements</i></b>																														
ILS-S Enhancements - Iterative & Agile Design/Development	██████████																													
ILS-S Enhancements - Agile Iterative Releases	██████████																													
ILS-S enhancements - Agile Iterative Testing	██████████																													
ILS-S Enhancements - PDR/CDR Design Review 2	██																													
ILS-S Enhancements - PDR/CDR Design Review 3					██																									
<b><i>ETIMS Enhancements</i></b>																														
ETIMS Enhancements - Inc 1 Pre-Acquisition Activities					██████████																									
ETIMS Enhancements - Inc 1 Development					██████████																									
ETIMS Enhancements - Inc 1 Testing													██																	
<b><i>ETIMS SUP</i></b>																														
ETIMS SUP - Development/Testing	██████████																													
ETIMS SUP - Full Deployment ATP (Aug 20)					██																									
<b><i>Logistics Enhancements</i></b>																														
Logistics Enhancements - Pre-Acquisition Activities													██████████																	
<b><i>Emerging FIAR - REMIS CFO Reconciliation</i></b>																														
Emerging FIAR REMIS CFO Reconciliation - Development					██████████																									
Emerging FIAR REMIS CFO Reconciliation - Testing					██████████																									

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**Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0708610F / <i>Logistics Information Technology (LOGIT)</i>	<b>Project (Number/Name)</b> 675207 / <i>Logistics IT System Modernization</i>
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	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b><i>FLITES (formerly IMLCI)</i></b>																												
FLITES (formerly IMLCI) - Acquisition ATP	██████████																											
FLITES (formerly IMLCI) - Contract Award				████																								
FLITES (formerly IMLCI) - Development/ Testing				██																								
FLITES (formerly IMLCI) - Limited Deployment ATP									████																			
FLITES (formerly IMLCI) - Limited Deployments											██████████																	
<b><i>Logistics Strike Teams</i></b>																												
Logistics Strike Teams - Pre-acquisition ATP Activities				██																								

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0708610F / <i>Logistics Information Technology (LOGIT)</i>	<b>Project (Number/Name)</b> 675207 / <i>Logistics IT System Modernization</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>ILS-S Enhancements</b>				
ILS-S Enhancements - Iterative & Agile Design/Development	1	2020	2	2021
ILS-S Enhancements - Agile Iterative Releases	1	2020	2	2021
ILS-S enhancements - Agile Iterative Testing	1	2020	2	2021
ILS-S Enhancements - PDR/CDR Design Review 2	1	2020	1	2020
ILS-S Enhancements - PDR/CDR Design Review 3	1	2021	1	2021
<b>ETIMS Enhancements</b>				
ETIMS Enhancements - Inc 1 Pre-Acquisition Activities	1	2021	2	2021
ETIMS Enhancements - Inc 1 Development	3	2021	4	2022
ETIMS Enhancements - Inc 1 Testing	4	2022	4	2022
<b>ETIMS SUP</b>				
ETIMS SUP - Development/Testing	1	2020	4	2020
ETIMS SUP - Full Deployment ATP (Aug 20)	4	2020	4	2020
<b>Logistics Enhancements</b>				
Logistics Enhancements - Pre-Acquisition Activities	3	2022	4	2022
<b>Emerging FIAR - REMIS CFO Reconciliation</b>				
Emerging FIAR REMIS CFO Reconciliation - Development	3	2021	4	2022
Emerging FIAR REMIS CFO Reconciliation - Testing	3	2021	4	2022
<b>FLITES (formerly IMLCI)</b>				
FLITES (formerly IMLCI) - Acquisition ATP	1	2020	4	2020
FLITES (formerly IMLCI) - Contract Award	4	2020	4	2020
FLITES (formerly IMLCI) - Development/Testing	4	2020	4	2022



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0708610F / <i>Logistics Information Technology (LOGIT)</i>	<b>Project (Number/Name)</b> 675207 / <i>Logistics IT System Modernization</i>

<b>Events by Sub Project</b>	<b>Start</b>		<b>End</b>	
	<b>Quarter</b>	<b>Year</b>	<b>Quarter</b>	<b>Year</b>
FLITES (formerly IMLCI) - Limited Deployment ATP	1	2022	1	2022
FLITES (formerly IMLCI) - Limited Deployments	2	2022	4	2022
<b><i>Logistics Strike Teams</i></b>				
Logistics Strike Teams - Pre-acquisition ATP Activities	1	2021	4	2022

**Note**  
 - Logistics Strike Teams Requirements will continue to conduct pre-acquisition ATP activities. These activities include items such as risk reduction efforts, problem statements, and Clinger-Cohen Act documentation.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0708611F / <i>Support Systems Development</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	0.522	11.816	0.000	0.000	0.000	-	-	-	-	-	-
675042: <i>Log Application Logistics Integration (LALI)</i>	-	0.522	11.816	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

Logistics, Installations and Mission Support - Enterprise View (LIMS-EV) is the A4 reporting and analytics gateway providing a single "source of truth" via aggregated logistics data from numerous authoritative logistics systems using a wide range of analytic tools from streamlined, comprehensive dashboards to intricate, tailored ADHOC reporting for multiple logistics mission areas including weapon systems, engines, support equipment, financials, maintenance, repair network, vehicles, and mobile. LIMS-EV delivers 20+ Business Intelligence capabilities to various logistics business areas by integrating data from 70+ systems with world-wide access by 33K + users including decision makers at all AF levels (Flight, Squadron, Group, Wing, MAJCOM, COCOM).

LIMS-EV User Group has submitted their highest priority requirements for post FY20 development and includes the following projects:

- DLA Interactive Problem Item Datasheet (iPID)
- Minimum Essential Level Recall Assistance Tool (MELRAT) 2.0
- Vehicle View CR/DR
- PRIBUY Capability Migration
- Support Equipment View 2.0
- Engine Oil Analysis Program
- Engine Health Management
- Data Capture and Storage
- Defense Property Accountability System (DPAS) Accountability Data Integration
- Support Equipment View Expansion
- Program Objective Memorandum (POM) View
- Weapon System Sustainment 2.0

The User Group will provide a recommended "1-N" ranking for a functional prioritization list. The LIMS-EV FMO will work with BLADE and functional community to determine a dev/mod execution plan through consideration of a number of factors including alternative solution availability (BLADE, BI Solution, etc.), project feasibility (ie. data availability), resource availability, functional sponsorship, and A4 leadership priorities.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0708611F / <i>Support Systems Development</i>
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Future LIMS-EV modernization include federating/integrating LIMS-EV with the A4 enterprise Basing and Logistics Analytics Data Environment(BLADE), which will allow expansion of LOGCOP capability using LIMS-EV data. Additionally, refactoring LIMS-EV using enterprise technical solutions will increase scalability and portability of LIMS-EV views by reducing reliance on legacy software applications which currently require separate licensing which increases cost and limits portability. Asset Lifecycle Management Automation, Improved Supply Chain Visibility and End-to-End Maintenance Lifecycle Management are planned to deliver eight new capabilities to modernize six current views which targets 80% of current LIMS-EV users.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Logistics, Installations and Mission Support capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 0.000M was expended for civilian pay expenses in this program element, and in FY21 0.000M is forecasted for civilian pay expenses in this program element

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

This program is in Budget Activity 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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	0.539	11.838	13.725	0.000	13.725
Current President's Budget	0.522	11.816	0.000	0.000	0.000
Total Adjustments	-0.017	-0.022	-13.725	0.000	-13.725
• 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	-0.017	-0.022			
• Other Adjustments	0.000	0.000	-13.725	0.000	-13.725

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> LIMS-EV Version 3.0 Product Development	0.522	11.816	-
<b>Description:</b> Expanded, Scalable, Portable, Enterprise Logistics Data Accessibility			
<b>FY 2021 Plans:</b>			

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 0708611F / <i>Support Systems Development</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p>Eight Major Enhancements and 23 Minor change requests for the Vehicle Management, Supply, Maintenance, Avionics, Propulsion, Repair Network, Support Equipment and Communication Security (COMSEC) communities that build on prior development to enable advanced Predictive Enterprise Logistics Reporting and Analytics in the following areas:</p> <ul style="list-style-type: none"> <li>- Will begin to implement a modeling &amp; simulation capability</li> <li>- Will begin to perform Big data analytics</li> <li>- Will begin actuarial capability and reliability analysis</li> <li>- Will begin to incorporate operational data, such as flight profile data to support deep performance analysis of weapon system components and supporting predictive modeling</li> <li>- Will begin to configure and simulate different logistical outcomes based on known factors</li> <li>- Provide greater control to functional representatives to transform data by revising reference tables and business rules without developer intervention</li> <li>- Provide greater functional self service provisioning capability</li> <li>- Implement Mobile Capability to support initiatives such as Flight line of the Future</li> <li>- Enable federation of data across multi-security and functional domains.</li> <li>- Expand ADHOC reporting capability without needing special data universes</li> <li>- Modernize expanded visualization capability, with greater consistency across application views.</li> <li>- Expand access to new data feeds as well as unstructured and semi-structured data</li> <li>- Provide foundation infrastructure for Logistics Data Environment</li> <li>- Improve Forecasting Capability</li> <li>- Forecast future health of weapon system and equipment with constraint analysis</li> <li>- Improve trend analysis</li> <li>- Implement Statistical Process Control with anomaly detection</li> <li>- Determine root cause and fault analysis</li> <li>- Project future data with high degree of confidence</li> <li>- Display OSD Re-phasing and Program reduction limits ability for new enhancements</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> LIMS-EV Version 3.0 will complete product development activities in FY 2021 and begin using O&amp;M funding in FY 2022.</p>				
<b>Accomplishments/Planned Programs Subtotals</b>		0.522	11.816	-
<b>D. Other Program Funding Summary (\$ in Millions)</b>				
N/A				

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force Date: May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0708611F / <i>Support Systems Development</i>
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**D. Other Program Funding Summary (\$ in Millions)**

**Remarks**  
LIMS-EV Version 3.0 program will complete product development activities in FY 2021 and begin using O&M funding in FY 2022.

**E. Acquisition Strategy**  
LIMS-EV will utilize services provided by the Air Force Cloud One Government Cloud Framework. AFLCMC/HNII 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 within the Cloud One Framework.



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0708611F / <i>Support Systems Development</i>	<b>Project (Number/Name)</b> 675042 / <i>Log Application Logistics Integration (LALI)</i>

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b><i>Support Systems Developments PE 0708611F</i></b>	
LIMS-EV Version 3.0	
LIMS-EV alignment with A4 enterprise data environment (BLADE)	
LIMS-EV native cloud solution integration	
Asset Lifecycle Management Automation	
Improved Supply Chain Visibility	
Machine Learning Integration	
End-to-End Maintenance Lifecycle Management	



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0708611F / <i>Support Systems Development</i>	<b>Project (Number/Name)</b> 675042 / <i>Log Application Logistics Integration (LALI)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Support Systems Developments PE 0708611F</b>				
LIMS-EV Version 3.0	3	2020	4	2021
LIMS-EV alignment with A4 enterprise data environment (BLADE)	4	2020	4	2021
LIMS-EV native cloud solution integration	2	2021	4	2021
Asset Lifecycle Management Automation	2	2021	4	2021
Improved Supply Chain Visibility	4	2020	4	2021
Machine Learning Integration	2	2021	4	2021
End-to-End Maintenance Lifecycle Management	3	2020	4	2021

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0804743F / <i>Other Flight Training</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	2.054	1.330	1.999	0.000	1.999	-	-	-	-	-	-
675304: <i>Aviation Resource Management System (ARMS)</i>	-	2.054	1.330	1.999	0.000	1.999	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

The Aviation Resource Management System (ARMS) is the authoritative data source for all aircrew and parachutist management (including flight and jump pay) covering 65,000 Aircrew/Parachutists and used by 2,800 1C0X2 Career Field members with 2.2M transactions per week. The ARMS is a web-based on-line management information system designed to support the base level Director of Operations (DO), aircrew supervisors, and managers. ARMS provides management policies and ensures the status of the Air Force flying programs are available to flying/jump supervisors to make resource allocation decisions. ARMS ensures accurate tracking of flying and ground training programs for each weapon system at each base. ARMS provides accurate and timely aircrew/parachutist information which assists in monitoring, tracking, and scheduling military training required to meet Air Force mission requirements. Additionally, the ARMS manages flying hours for aircrew parachutists world-wide to include USAF, Air Force Reserve Command (AFRC) and the Air National Guard (ANG).

The current ARMS functionality resides at a Defense Information System Agency (DISA) DECC and consists of "5" logical modules to include: Flight, Individual Training, Jumper Aircrew, Resource Tracking, Reports, and System. The sustainment of these capabilities and the introduction of new capabilities follows an agile development process, but the effectiveness of that process is severely limited by the existing production environment. A portion of the ARMS Jumper Aircrew module capabilities are being migrated to a mandated government-approved cloud environment. The cloud environment provides the Continuous Integration and Continuous Deployment (CI/CD) pipeline required to constantly deliver software in an agile framework, following the required DevSecOps methodology. The migration to the cloud environment and the DevSecOps methodology will transform ARMS into a scalable and flexible system capable of meeting all information requirements of the Aviation Resource Management community.

Once the initial cloud ARMS Jumper Aircrew capability is established, all remaining legacy program capabilities and new program requirements will be incorporated into the ARMS product backlog and prioritized for migration/stand-up in the cloud program instance. The ARMS DISA legacy program will sunset, once all capabilities are successfully migrated to the cloud environment.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Other Flight Training system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY 2020 \$0.000 million was expended for civilian pay expenses in this program element, and in FY 2021 \$0.000 million is forecasted for civilian pay expenses in this program element.

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

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0804743F / <i>Other Flight Training</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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	2.057	1.332	2.134	0.000	2.134
Current President's Budget	2.054	1.330	1.999	0.000	1.999
Total Adjustments	-0.003	-0.002	-0.135	0.000	-0.135
• 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	-0.003	-0.002	-0.135	0.000	-0.135

**Change Summary Explanation**

FY 2022 funding was reduced by \$0.135 million to account for the availability of prior year execution balances.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Aviation Resource Management System (ARMS)	2.054	1.330	1.999
<b>Description:</b> Hardware/software development to update ARMS, adding functionality and system interfaces.			
<b>FY 2021 Plans:</b> Continue migrating legacy ARMS capabilities from DISA platform to Cloud One platform to include patches to correct system deficiencies and required upgrades; update system design, configuration, test, and training; and, continue RMF controls needed for continuous ATO.			
<b>FY 2022 Plans:</b> Continue migrating legacy ARMS capabilities from DISA platform to Cloud One platform; deliver patches as needed to correct system deficiencies or apply required upgrades; and, continue updates to system design, configuration, test, and training.			
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding increased due to amplified transferring of capabilities from legacy DISA system to the cloud-hosted system and provided additional contractor support for Engineering, Professional, and Administrative Support Services.			
<b>Accomplishments/Planned Programs Subtotals</b>	2.054	1.330	1.999

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force Date: May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0804743F / <i>Other Flight Training</i>
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**D. Other Program Funding Summary (\$ in Millions)**  
N/A

**Remarks**

**E. Acquisition Strategy**

The ARMS utilizes Agile development methodologies to incrementally develop and field enhancements to the existing system. The ARMS PMO utilizes military programmers for code development/sustainment and government civilians providing program management, engineering, and information technology support. The ARMS PMO has partnered with the USAF Business Enterprise Systems (BES) Directorate's Business Enterprise Systems Programming INovation (BESPIN) office to acquire contractor resources that are experts at agile software development in a cloud environment. BESPIN has acquired current contractor support via Section 8a direct award using the United States Digital Services guide and templates on agile development which allowed for an agile acquisition.

The initial ARMS cloud capability will be fielded in late FY21 and the updated ARMS Training Management module will be fielded to legacy ARMS in FY22. Once the Jump module capability is established in Cloud One, migration efforts will begin to transition all legacy ARMS capabilities to the Cloud One environment. Changes to the legacy baseline will be limited to patches, vulnerability mitigation, and required capability implementations during the migration. Legacy ARMS will be linked to the Cloud One instance throughout the migration effort. This will ensure users a seamless single sign-on application with underlying capabilities existing in both legacy DISA and Cloud One.

The rate of migration capability is limited by the funding profile. With additional funding, the ARMS PMO could employ multiple agile teams with subject matter experts to work either on the same module faster or in parallel on separate modules. The ARMS PMO will have to maintain the legacy system during the entire transition to the cloud systems. A cost savings will be realized in the out years once the legacy system is decommissioned.

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2022 Air Force</b>											<b>Date: May 2021</b>				
<b>Appropriation/Budget Activity</b> 3600 / 7						<b>R-1 Program Element (Number/Name)</b> PE 0804743F / Other Flight Training					<b>Project (Number/Name)</b> 675304 / Aviation Resource Management System (ARMS)				

<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
ARMS BESPIN FEARLESS	SS/FFP	Fearless Solution LLC : Baltimore, MD	-	0.810	Mar 2020	0.050	Mar 2021	-		-		-	-	-	10.000
<b>Subtotal</b>			-	0.810		0.050		-		-		-	-	-	N/A

**Remarks**  
ARMS INCREMENT I INCLUDES BUILDS I AND II. ARMS BUILD I AND II ARE NOW LISTED SEPARATELY.

<b>Support (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
ARMS Architecture Contract Support	C/FFP	Copper River Information Technology, LLC : Anchorage, AK	-	0.067	Sep 2020	0.067	Sep 2021	-		-		-	-	-	-
ARMS C&A SUPPORT III	C/FFP	OASIS : Lexington, MA	-	0.159	Apr 2020	0.159	Apr 2021	0.200	Apr 2022	-		0.200	-	-	-
ARMS CONFIGURATION MANAGER	C/FFP	OASIS : Lexington, MA	-	0.130	Apr 2020	0.130	Apr 2021	0.180	Apr 2022	-		0.180	-	-	-
ARMS SYSTEM ADMIN III	C/FFP	OASIS : Lexington, MA	-	0.161	Apr 2020	0.161	Apr 2021	0.215	Apr 2022	-		0.215	-	-	-
ARMS CIE SUPPORT	C/FFP	TBD : TBD	-	0.227	Apr 2020	0.227	Apr 2021	0.230	Apr 2022	-		0.230	-	-	-
ARMS INTEGRATION SUPPORT	C/FFP	Not specified. : TBD	-	0.163	Apr 2020	0.163	Apr 2021	0.185	Apr 2022	-		0.185	-	-	-
ARMS Program Assessment	SS/FFP	TM Capture : Maxwell AFB-Gunter Annex, AL	-	0.065	Feb 2020	0.065	Feb 2021	-		-		-	-	-	0.325
<b>Subtotal</b>			-	0.972		0.972		1.010		-		1.010	-	-	N/A



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0804743F / <i>Other Flight Training</i>	<b>Project (Number/Name)</b> 675304 / <i>Aviation Resource Management System (ARMS)</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>ARMS EXHIBIT R-4</b>																												
Advisory and Assistance Services Contract																												
ARMS Program Assessment																												
Increment I Build 1 Contract																												
Development - Increment I Build 2 Complete																												
Architecture Support																												
ARMS Cloud Development/Migration																												
Cloud Development - Jump module																												
Field - Jump Module																												
Cloud Development Resources module																												
Field Resources module multiple releases																												
Cloud Development Flight module																												
Field Flight module multiple releases																												
Cloud development Training module																												
Field Training module multiple releases																												



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0804743F / <i>Other Flight Training</i>	<b>Project (Number/Name)</b> 675304 / <i>Aviation Resource Management System (ARMS)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>ARMS EXHIBIT R-4</b>				
Advisory and Assistance Services Contract	1	2021	4	2026
ARMS Program Assessment	1	2021	4	2026
Increment I Build 1 Contract	1	2021	4	2021
Development - Increment I Build 2 Complete	1	2021	4	2021
Architecture Support	1	2021	3	2021
ARMS Cloud Development/Migration	1	2021	4	2025
Cloud Development - Jump module	1	2021	4	2021
Field - Jump Module	1	2021	4	2021
Cloud Development Resources module	1	2021	4	2022
Field Resources module multiple releases	2	2021	4	2022
Cloud Development Flight module	1	2023	4	2024
Field Flight module multiple releases	2	2023	4	2024
Cloud development Training module	1	2024	4	2026
Field Training module multiple releases	2	2024	4	2025

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0808716F / <i>Other Personnel Activities</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	0.010	0.000	0.000	0.000	0.000	-	-	-	-	-	-
675141: <i>DEOMI Faculty Research</i>	-	0.010	0.000	0.000	0.000	0.000	-	-	-	-	-	-
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>B. Program Change Summary (\$ in Millions)</b>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>
Previous President's Budget	0.010	0.000	0.000	0.000	0.000
Current President's Budget	0.010	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

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

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>
<b>Title:</b> Equal Opportunity Issues	0.010	0.000	0.000
<b>Description:</b> Conduct research on military and civilian equal opportunity issues.			
<b>FY 2021 Plans:</b>			

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 0808716F / <i>Other Personnel Activities</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
N/A				
<b>FY 2022 Plans:</b> N/A				
<b>Accomplishments/Planned Programs Subtotals</b>		0.010	0.000	0.000
<b>D. Other Program Funding Summary (\$ in Millions)</b> N/A				
<b>Remarks</b>				
<b>E. Acquisition Strategy</b> Grants will be awarded competitively.				

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0808716F / <i>Other Personnel Activities</i>	<b>Project (Number/Name)</b> 675141 / <i>DEOMI Faculty Research</i>
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Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Product Development	C/CPAF	Not specified. : TBD	-	0.000		0.000		0.000		-		0.000	-	-	-
DEOMI	Various	Various : Various	-	0.010	Mar 2020	0.000		0.000		-		0.000	-	-	-
<b>Subtotal</b>			-	0.010		0.000		0.000		-		0.000	-	-	N/A

**Remarks**  
Contract method will be a grant

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	-	0.010	0.000	0.000	-	0.000	-	-	N/A

**Remarks**



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**Exhibit R-4A, RDT&E Schedule Details:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0808716F / <i>Other Personnel Activities</i>	<b>Project (Number/Name)</b> 675141 / <i>DEOMI Faculty Research</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>DEOMI Faculty Research</i></b>				
Receive Grants	1	2020	2	2020
Award Grants	3	2020	4	2020

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development	<b>R-1 Program Element (Number/Name)</b> PE 0901202F I Joint Personnel Recovery Agency
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	1.985	2.088	1.841	0.000	1.841	-	-	-	-	-	-
675196: Joint Technology Exploitation	-	1.985	2.088	1.841	0.000	1.841	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

Funding supports development of innovative capabilities to address Personnel Recovery in Large Scale Combat Operations, Multi-Domain Operations and anti-access/area denial environments for Combatant Commanders and the Services. Joint personnel Recovery Agency (JPRA) developmental efforts address Personnel Recovery capability gaps and shortfalls identified in the Personnel Recovery Initial Capabilities Document approved by the Joint Requirements Oversight Council memorandum 120-12 on 8 Aug 2012, and subsequent supporting documents approved in the Joint Capabilities Integration Development System. Activities include funding for research and development, support equipment, contract services and all associated costs specifically identified to support the JPRA headquarters Ft. Belvoir, VA and other agency operating locations.

Development and transition to sustainment of an enterprise level information data system [Personnel Recovery Information Data System (PRIDS)] to enable DoD data management, analysis and collaboration. Funds also provide USAF Platform One/Cloud One housing for PRIDS. DODI 3002.1 directed JPRA 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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	2.060	2.092	2.136	0.000	2.136
Current President's Budget	1.985	2.088	1.841	0.000	1.841
Total Adjustments	-0.075	-0.004	-0.295	0.000	-0.295
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-0.004			
• 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	-0.075	0.000	-0.295	0.000	-0.295

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 0901202F <i>I Joint Personnel Recovery Agency</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Personnel Recovery Information Data System (PRIDS) <b>Description:</b> Development of the Personnel Recovery Information Data System  <b>FY 2021 Plans:</b> Developing and transitioning to sustainment of an enterprise level information data system [Personnel Recovery Information Data System (PRIDS)] to enable DoD data management, analysis and collaboration.  <b>FY 2022 Plans:</b> Developing and transitioning to sustainment of an enterprise level information data system [Personnel Recovery Information Data System (PRIDS)] to enable DoD data management, analysis and collaboration.  <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Increased \$39K to account for inflation.		1.985	2.088	1.841
<b>Title:</b> Optimal Search Study <b>Description:</b> Assess and evaluate technologies for personnel recovery geospatial data visualization, predictive and real-time planning capabilities.  <b>FY 2021 Plans:</b> Budget reallocated to PRIDS.  <b>FY 2022 Plans:</b> N/A		0.000	0.000	0.000
<b>Title:</b> Analysis of Alternatives <b>Description:</b> Systems analysis to support a future program of record to satisfy the report and locate requirement gaps as identified by the combatant commands (CCMDs).  <b>FY 2021 Plans:</b> Budget reallocated to PRIDS.  <b>FY 2022 Plans:</b> N/A		0.000	0.000	0.000
<b>Title:</b> DOD Support to Personnel Recovery in a Chief of Mission Environment (DSRCE) - Automated Development Tool.		0.000	0.000	0.000

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0901202F <i>I Joint Personnel Recovery Agency</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Description:</b> Internet accessible database that addresses personnel recovery roles, responsibilities, and activities to develop a DOD Personnel Recovery Supplement to a U.S. diplomatic post's emergency action plan.</p> <p><b>FY 2021 Plans:</b> Budget reallocated to PRIDS.</p> <p><b>FY 2022 Plans:</b> N/A</p>			
<p><b>Title:</b> Smartphone Initiative</p> <p><b>Description:</b> Develop capabilities to enable Service members to use their smartphones as Personnel Recovery aids.</p> <p><b>FY 2021 Plans:</b> Budget reallocated to PRIDS.</p> <p><b>FY 2022 Plans:</b> N/A</p>	0.000	0.000	0.000
<b>Accomplishments/Planned Programs Subtotals</b>	1.985	2.088	1.841

**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.



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901202F / <i>Joint Personnel Recovery Agency</i>	<b>Project (Number/Name)</b> 675196 / <i>Joint Technology Exploitation</i>

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>No project title.</b>	
Common Distress Reporting System	
Optimal Search Study	
Collaborative Personnel Recovery planning systems	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901202F / <i>Joint Personnel Recovery Agency</i>	<b>Project (Number/Name)</b> 675196 / <i>Joint Technology Exploitation</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>No project title.</i>				
Common Distress Reporting System	1	2020	4	2026
Optimal Search Study	1	2020	4	2026
Collaborative Personnel Recovery planning systems	1	2020	4	2026

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0901218F / <i>Civilian Compensation Program</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	3.809	3.862	3.560	0.000	3.560	-	-	-	-	-	-
674139: <i>Civilian Compensation Program</i>	-	3.809	3.862	3.560	0.000	3.560	-	-	-	-	-	-
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 Program Element(PE) excludes manpower authorizations and costs. This 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 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>B. Program Change Summary (\$ in Millions)</b>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>
Previous President's Budget	3.809	3.869	3.950	0.000	3.950
Current President's Budget	3.809	3.862	3.560	0.000	3.560
Total Adjustments	0.000	-0.007	-0.390	0.000	-0.390
• 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	-0.007	-0.390	0.000	-0.390

**Change Summary Explanation**

FY2022 funding reduced by \$0.390M for the Federally Funded Research Development Center (FFRDC).

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>
<b>Title:</b> Civilian Compensation	3.809	3.862	3.560

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0901218F / <i>Civilian Compensation Program</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Description:</b> Program compensates employees assigned to RDT&amp;E facilities for work-related injuries or occupational diseases.</p> <p><b>FY 2021 Plans:</b> Continue to provide compensation to employees assigned to RDT&amp;E facilities for work-related injuries or occupational diseases, and implement services to expedite the return of employees back to work.</p> <p><b>FY 2022 Plans:</b> Continue to provide compensation to employees assigned to RDT&amp;E facilities for work-related injuries or occupational diseases, and implement services to expedite the return of employees back to work.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Decrease due to anticipated lower compensation costs</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	3.809	3.862	3.560

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

N/A

**Remarks**

**E. Acquisition Strategy**

Not Applicable.





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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901218F / <i>Civilian Compensation Program</i>	<b>Project (Number/Name)</b> 674139 / <i>Civilian Compensation Program</i>

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b><i>Civilian Compensation Program</i></b>	
Compensation program	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901218F / <i>Civilian Compensation Program</i>	<b>Project (Number/Name)</b> 674139 / <i>Civilian Compensation Program</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Civilian Compensation Program</i></b>				
Compensation program	1	2020	4	2026

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0901220F / <i>Personnel Administration</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	4.265	1.581	3.368	0.000	3.368	-	-	-	-	-	-
675194: <i>Force Development Transformation</i>	-	4.265	1.581	3.368	0.000	3.368	-	-	-	-	-	-

**Note**

This program, BA 7, PE 0901220F, project 675194, TIMES Development, is a new start.

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

The Force Development Transformation program contains two DAF initiatives addressing vital personnel issues: Personnel Services Delivery and the Total Integration Mobilization Execution System.

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 from on-premise data centers to a more sustainable cloud-based hosting solution and flexible services-based architecture as defined by the Defense Enterprise Service Management Framework (DESMF).

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Personnel Services Delivery and the Total Integration Mobilization Execution System capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 0.000M was expended for civilian pay expenses in this program element, and in FY21 0.000M is forecasted for civilian pay expenses in this program element

The Total Integration Mobilization Execution System (TIMES) will be a cloud-based software suite utilized to modernize the Air Force's processes to mobilize (i.e., activate) Airmen under Title 10 orders in support of the Active Duty mission. Current mobilization processes include coordination through 32 disparate information systems and numerous databases (e.g., MS SharePoint, Excel) and often results in delays to issuing orders. TIMES will automate the Air Reserve Component's (ARC) activation processes to enable rapid and accurate information flow from first identifying an Airman to fulfill a requirement, through orders processing and delivery, to initiating pay and benefits. It will increase Air Force Guard and Reserve members' confidence that when called to serve, their families are taken care of.

TIMES was approved as a FY20 new start via a FY21 reprogramming action. Due to no FY21 funding, TIMES Development is a FY22 new start request.

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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0901220F / <i>Personnel Administration</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	6.476	1.584	1.723	0.000	1.723
Current President's Budget	4.265	1.581	3.368	0.000	3.368
Total Adjustments	-2.211	-0.003	1.645	0.000	1.645
• Congressional General Reductions	0.000	-0.003			
• Congressional Directed Reductions	-2.100	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	-0.111	0.000			
• Other Adjustments	0.000	0.000	1.645	0.000	1.645

**Change Summary Explanation**

FY20: \$2.1M Congressional directed reduction; \$0.111M SBIR transfer

FY21: \$2.973M TIMES new start approval via ATR; \$0.003M Congressional general reduction

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0901220F / <i>Personnel Administration</i>				<b>Project (Number/Name)</b> 675194 / <i>Force Development Transformation</i>			
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
675194: <i>Force Development Transformation</i>	-	4.265	1.581	3.368	0.000	3.368	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

This program, BA 7, PE 0901220F, project 675194, TIMES Development, is a new start.

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

The Force Development Transformation program contains two independent DAF initiatives addressing vital personnel issues: Personnel Services Delivery and the Total Integration Mobilization Execution System.

**Personnel Services Delivery:**

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 reduced in-person interactions. PSD supports the migration of legacy applications and other information technologies from on premises data centers to a more sustainable cloud-based hosting solution and flexible services-based architecture as defined by the Defense Enterprise Service Management Framework (DESMF). In addition, funds will be used to perform studies and innovative integration efforts for common technology capabilities such as cloud migration, technology development and mobile application.

**Total Integration Mobilization Execution System:**

The Total Integration Mobilization Execution System (TIMES) will be a cloud-based software suite utilized to modernize the Air Force's processes to mobilize (i.e., activate) Airmen under Title 10 orders in support of the Active Duty mission. Current mobilization processes include coordination through 32 disparate information systems and numerous databases (e.g., MS SharePoint, Excel) and often results in delays to issuing orders. TIMES will automate the Air Reserve Component's (ARC) activation processes to enable rapid and accurate information flow from first identifying an Airman to fulfill a requirement, through orders processing and delivery, to initiating pay and benefits. It will increase Air Force Guard and Reserve members' confidence that when called to serve, their families are taken care of.

TIMES was approved as a new start via a FY20 reprogramming action. Due to no FY21 funding, TIMES Development is a FY22 new start request.

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

	FY 2020	FY 2021	FY 2022
<b>Title:</b> PSD - Human Resource Systems (HRS) Transition	4.160	1.418	1.531

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901220F / <i>Personnel Administration</i>	<b>Project (Number/Name)</b> 675194 / <i>Force Development Transformation</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Description:</b> The HRS Transition supports the DAF Human Resources Digital Transformation initiative by identifying and documenting human resource legacy systems for modernization, transition and/or decommission; supporting the consolidation of human resource legacy applications and other information technologies utilizing Commercial-off-the-Shelf (COTS) solutions, Agile incremental delivery, and rapid prototyping; ensuring solutions utilize a flexible services-based architecture as defined by the DoD Enterprise Service Management Framework (DESMF); executing risk reduction activities, prototyping and development of solutions to update or replace legacy human resource systems.</p> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>- Continue to provide technology demonstrations, risk reduction activities, and studies for tiered HR service delivery to assess the ability to utilize Software as a Service (SaaS) delivery capabilities</li> <li>- Prototype Learning Management SaaS modules to evaluate utility</li> <li>- Continue to support on-going studies to determine most effective strategy to implement the DAF Human Resources Digital Transformation</li> </ul> <p><b>FY 2022 Plans:</b></p> <ul style="list-style-type: none"> <li>- Will continue to provide technology demonstrations, risk reduction activities, and studies for tiered HR service delivery, and to assess the ability to utilize Software as a Service (SaaS) delivery capabilities</li> <li>- Will develop an advanced Prototype Recruiting SaaS modules to evaluate utility</li> <li>- Will develop an Oracle-hosted cloud migration strategy</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding increased due to increase in Oracle Fusion Cloud licenses and more complex prototype implementations.</p>				
<p><b>Title:</b> PSD - Test and Evaluation/Systems Engineering</p> <p><b>Description:</b> The Test and Evaluation/Systems Engineering initiative transitions the Test and Development Environment (T&amp;DE) to an approved Cloud Service Provider; continues 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 continues infrastructure development.</p> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>- Ensure the Cloud instantiation of the TD&amp;E is kept up-to-date</li> <li>- Continue to support all aspects of engineering, including software and systems engineering, requirements analysis, configuration management, and database administration</li> </ul>		0.105	0.163	0.166



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901220F / <i>Personnel Administration</i>	<b>Project (Number/Name)</b> 675194 / <i>Force Development Transformation</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p>- Continue to perform test and evaluation of HRS transition activities including any emergent customer needs and provide system engineering support for the HRS transition</p> <p><b>FY 2022 Plans:</b></p> <ul style="list-style-type: none"> <li>- Will maintain the Cloud instantiation of the TD&amp;E</li> <li>- Will continue to support all aspects of engineering, including software and systems engineering, requirements analysis, configuration management, and database administration</li> <li>- Will continue to perform test and evaluation of HRS transition activities including any emergent customer needs and provide system engineering support for the HRS transition</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A</p>			
<p><b>Title:</b> TIMES Development</p> <p><b>Description:</b> TIMES will establish a cloud-based operating environment to modify existing Army Mobilization Common Operating Picture (MOBCOP) software into the Air Force's TIMES software. Overall development will involve establishing automated data pushes and pulls between Air Force systems of record and the TIMES database, establishing necessary virtual servers and cybersecurity compliance in the cloud-hosted environment, and automating the flow of data from the Headquarters Air Force and Major Command level down to the Guard and Reserve unit level. TIMES will move the process from legacy, manual inputs to automated and streamlined inputs in order to eliminate unnecessary bureaucracy and redundancy in the Air Reserve Component utilization process.</p> <p><b>FY 2021 Plans:</b> Establishment of the cloud-hosted environment and software modifications to facilitate the conversion of Headquarters Air Force and Major Command-level components of the process.</p> <ul style="list-style-type: none"> <li>- Award contracts for MOBCOP software modification and cloud-hosted development environment</li> <li>- Determine best cloud-hosted environment option</li> <li>- Establish development and test cloud-hosted environments</li> <li>- Establish initial automated data input from Air Force personnel system of record</li> <li>- Modify MOBCOP Financial Management application into TIMES Air Reserve Component Requirements Tracker (ARCORT-S/N)</li> <li>- Transfer data from legacy ARCORT system into TIMES ARCORT module</li> </ul> <p><b>FY 2022 Plans:</b> Maturation of the cloud-hosted environment, promotion of modified software to production environment for Headquarters Air Force and Major Command-level elements of the process, and sunsetting of legacy systems.</p> <ul style="list-style-type: none"> <li>- Will establish production cloud-hosted environments</li> </ul>	-	0.000	1.671

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901220F / <i>Personnel Administration</i>	<b>Project (Number/Name)</b> 675194 / <i>Force Development Transformation</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<ul style="list-style-type: none"> <li>- Will receive Authority To Operate (ATO) certification</li> <li>- Will establish initial automated data inputs from systems utilized for planning and execution of Guard and Reserve orders</li> <li>- Will promote TIMES ARCORT to production and go live for Air Force use</li> <li>- Will sunset legacy ARCORT system</li> <li>- Will modify MOBCOP financial management applications into TIMES Air Force Mobilization Management System (AFMMS-S/N)</li> <li>- Will transfer data from legacy AFMMS system into TIMES AFMMS module</li> <li>- Will promote TIMES AFMMS to production and go live for Air Force use</li> </ul> <p><b><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i></b></p> <ul style="list-style-type: none"> <li>- Funding increased to support timely standup of new TIMES ARCORT system and sunset legacy system.</li> </ul>				
<b>Accomplishments/Planned Programs Subtotals</b>		4.265	1.581	3.368
<b>C. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>Remarks</b>				
<b>D. Acquisition Strategy</b>				
<p>PSD: Personnel Services Delivery employs an evolutionary acquisition strategy to deliver incremental Information Technology and Human Resources capabilities with development contracts that are awarded in a competitive environment. Technology demonstrations will be used to reduce technology risks, assess Commercial-Off-The-Shelf (COTS) products, and produce technology insertion and migration strategies. 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 and Milestone Decision Authority (MDA) for PSD. Air Force Life Cycle Management Center (AFLCMC) is the contracting authority for the PSD Program and provides contracts, legal and comptroller support.</p> <p>TIMES: The Army MOBCOP system has proven capability in reducing system-wide redundancy and speeding up the delivery of orders for soldiers. The DAF's strategy awards a contract to modify the Army's software to work with Air Force data and processes. The DAF strategy also includes establishing a Task Order with the Cloud One contract for cloud hosting.</p>				

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901220F / <i>Personnel Administration</i>	<b>Project (Number/Name)</b> 675194 / <i>Force Development Transformation</i>
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PSD: HRS Transition Phase 1 (HCM)	MIPR	NCMS : San Antonio, TX	-	3.427	Feb 2020	-		-		-		-	-	-	4.993
PSD: HRS Transition Phase 2	TBD	TBD : TBD	-	-		0.903	May 2021	0.673	May 2022	-		0.673	-	-	-
PSD: Acquisition Planning SME	C/FFP	TACG, LLC : Beavercreek, OH	-	0.146	Aug 2020	0.070	Aug 2021	0.280	Nov 2021	-		0.280	-	-	-
PSD: HCM SaaS Licenses	C/FFP	Emergent, LLC : Virginia Beach, VA	-	0.179	Oct 2020	0.020	Aug 2021	0.100	Nov 2021	-		0.100	-	-	-
TIMES: System Integrator	C/FFP	TBD : TBD	-	-		-		1.671	Feb 2022	-		1.671	-	-	-
<b>Subtotal</b>			-	3.752		0.993		2.724		-		2.724	-	-	N/A

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PSD: Engineering, Professional, and Administrative Support Services (EPASS)	C/CPFF	Oasis : Lincoln, MA	-	0.470	Apr 2020	0.395	Mar 2021	0.428	Dec 2021	-		0.428	-	-	-
PSD: Specialized Cost Services (SCS)	C/CPAF	BTAS : Beavercreek, OH	-	0.033	Apr 2020	-		-		-		-	-	-	-
<b>Subtotal</b>			-	0.503		0.395		0.428		-		0.428	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PSD: Test/Evaluation Support	C/CPIF	Diversified Technical Services, Inc. : San Antonio, TX	-	0.000	Jul 2020	0.163	Jul 2021	0.166	Jul 2022	-		0.166	-	-	-
<b>Subtotal</b>			-	0.000		0.163		0.166		-		0.166	-	-	N/A



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901220F / <i>Personnel Administration</i>	<b>Project (Number/Name)</b> 675194 / <i>Force Development Transformation</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
<b>Personnel Services Delivery (PSD)</b>																																
HR Applications Functionality Improvements	██████████																															
HRS Transition Phase 1 Technology Demonstration (HCM SAAS)	██████████																															
HRS Transition Phase 2 Contract Award/ Additional Risk Reduction					████																											
<b>TIMES Development</b>																																
Award TIMES contract					██████████																											
Establish legacy database inputs					██████████																											
Modify and go live for TIMES ARCORT module					██████████																											
Sunset legacy ARCORT									██████████																							
Modify and go live for TIMES AFFMS module									██████████																							
Sunset legacy AFFMS													████																			
Cloud Hosting - Award Contract					██████████																											
Cloud Hosting - Establish virtual servers and cybersecurity controls					██████████																											

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901220F / <i>Personnel Administration</i>	<b>Project (Number/Name)</b> 675194 / <i>Force Development Transformation</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Personnel Services Delivery (PSD)</i></b>				
HR Applications Functionality Improvements	1	2020	4	2020
HRS Transition Phase 1 Technology Demonstration (HCM SAAS)	1	2020	4	2020
HRS Transition Phase 2 Contract Award/Additional Risk Reduction	2	2021	2	2021
<b><i>TIMES Development</i></b>				
Award TIMES contract	3	2021	4	2021
Establish legacy database inputs	4	2021	1	2022
Modify and go live for TIMES ARCORT module	4	2021	3	2022
Sunset legacy ARCORT	3	2022	4	2022
Modify and go live for TIMES AFFMS module	1	2022	4	2022
Sunset legacy AFFMS	4	2022	4	2022
Cloud Hosting - Award Contract	3	2021	4	2021
Cloud Hosting - Establish virtual servers and cybersecurity controls	4	2021	4	2022

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0901226F / <i>Air Force Studies and Analysis Agency</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	1.390	1.195	1.248	0.000	1.248	-	-	-	-	-	-
676009: <i>M &amp; S DEVELOPMENT</i>	-	1.390	1.195	1.248	0.000	1.248	-	-	-	-	-	-
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 element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.0M was expended for civilian pay expenses in this program element, and in FY21 \$0.0M is forecasted for civilian pay expenses in this program element.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	1.443	1.197	1.497	0.000	1.497
Current President's Budget	1.390	1.195	1.248	0.000	1.248
Total Adjustments	-0.053	-0.002	-0.249	0.000	-0.249
• 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	-0.053	-0.002	-0.249	0.000	-0.249

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0901226F / <i>Air Force Studies and Analysis Agency</i>
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**Change Summary Explanation**

Increases due to development and application of advanced analytics, capability to improve efficiency and effectiveness within Air Force Enterprise. Expanding the capability to exploit large data sets using modern algorithms and machine learning.

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

	FY 2020	FY 2021	FY 2022
<b>Title:</b> Modeling and Simulation Development	1.390	1.195	1.248
<b>Description:</b> Develop and Update Modeling & Simulation (M&S) tools.			
<b>FY 2021 Plans:</b> Continue research and development of M&S Tools			
<b>FY 2022 Plans:</b> Continue research and development of M&S Tools			
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Increase due to development of advanced analytics capability to improve efficiency and effectiveness to exploit large data sets.			
<b>Accomplishments/Planned Programs Subtotals</b>	1.390	1.195	1.248

**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.





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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901226F / Air Force Studies and Analysis Agency	<b>Project (Number/Name)</b> 676009 / M & S DEVELOPMENT

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>M&amp;S Development</b>	
Modeling & Simulation Development	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901226F / <i>Air Force Studies and Analysis Agency</i>	<b>Project (Number/Name)</b> 676009 / <i>M &amp; S DEVELOPMENT</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>M&amp;S Development</i></b>				
Modeling & Simulation Development	1	2020	4	2026

**Note**

Applying the resources under this PE started in 1Q FY2012 and has continued to develop successful products over time. A9 anticipates work to begin continue for 12-24 months for (1)research into how to better model new friendly and enemy weapons systems, (2) continue to develop tools to better examine evolving weapons technologies and (3) developing new models to better populate the data requirements of existing tools.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0901538F / <i>Financial Management Information Systems Development</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	8.983	6.993	4.852	0.000	4.852	-	-	-	-	-	-
672222: <i>Program Budget Enterprise Service (PBES)</i>	0.000	4.199	1.967	0.041	0.000	0.041	-	-	-	-	-	-
675177: <i>Cost Estimating Modeling (CEM)</i>	0.000	4.784	5.026	4.811	0.000	4.811	-	-	-	-	-	-

**Program MDAP/MAIS Code:** N87

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

This program element develops upgrades to existing financial management systems. These upgrades are required to comply with auditability and transparency requirements as well as efficiencies in processing financial transactions. This program element also supports studies and analysis to improve future program planning and execution.

There are two programs within this program element: Program and Budget Enterprise Services (PBES) and Cost Estimating Modeling (CEM).

PBES is a software development effort that will utilize a Service Oriented Architecture (SOA) to deliver budgeting and programming capability for the Air Force and will replace the following legacy systems that support the budget formulation and force programming process: Automated Budget Interactive Data Environment System (ABIDES), Resource Allocation Programming Information Decision System (RAPIDS), Force Structure Data Management (FSDM), and Enhanced Tradespace Tool (ETT).

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

This program element may include necessary civilian pay expenses required to manage, execute, and deliver financial management information system capabilities. In FY20 0.000M was expended for civilian pay expenses in this program element, and in FY21 0.000M is forecasted for civilian pay expenses in this program element.

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

This program is in Budget Activity 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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0901538F / <i>Financial Management Information Systems Development</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	9.323	7.006	5.185	0.000	5.185
Current President's Budget	8.983	6.993	4.852	0.000	4.852
Total Adjustments	-0.340	-0.013	-0.333	0.000	-0.333
• Congressional General Reductions	0.000	-0.013			
• 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	-0.340	0.000			
• Other Adjustments	0.000	0.000	-0.333	0.000	-0.333

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0901538F / <i>Financial Management Information Systems Development</i>				<b>Project (Number/Name)</b> 672222 / <i>Program Budget Enterprise Service (PBES)</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
672222: <i>Program Budget Enterprise Service (PBES)</i>	0.000	4.199	1.967	0.041	0.000	0.041	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

PBES will be the single solution software development effort to deliver planning, programming, budgeting and execution (PPBE) capability for the United States Air Force. PBES will replace legacy systems such as the Automated Budget Interactive Data Environment System (ABIDES), Resource Allocation Programming Information Decision System (RAPIDS), Force Structure Data Management (FSDM), and the Enhanced Tradespace Tool (ETT), supporting 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 data standardization 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 PPBE process. 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.

A Commercial-off-the-Shelf (COTS) product has been selected as the tool of choice which will require minor configuration changes to meet the stated user requirements. This strategy requires no code changes to the actual COTS product and will drive lower support costs along with making future requirements changes easier in the out-years. Requirements will be satisfied through an iterative process of sprint development cycles, where usable capability is produced and made available to operational users after every sprint. The Integrated Product Office construct along with application of agile principles allows the program to properly plan system requirements, deliver early capability to the end users, achieve early return on investment of taxpayer dollars, division of risk, reduce waste, effectively respond to change, and continuously improve our processes.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver financial management information system capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY19 \$0M and in FY20 \$0M was expended for civilian pay expenses in this program element.

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

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> PBES	4.199	1.967	0.041

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901538F / <i>Financial Management Information Systems Development</i>	<b>Project (Number/Name)</b> 672222 / <i>Program Budget Enterprise Service (PBES)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Description:</b> Software development effort providing modern and enhanced planning, programming, budgeting and execution capabilities to the USAF. Funding supports engineering, cybersecurity, technical development, implementation and automated testing.</p> <p>ACCOMPLISHMENTS:</p> <ul style="list-style-type: none"> <li>- Delivered additional development Sprints 12-18 (Expanded Planning, Program, and Budget capabilities) for test and fielding</li> <li>- Delivered programming/budgeting capability to Air Staff to shadow build the FY2022 PB</li> <li>- Received approval to deploy to MAJCOM and Air Staff users to support the FY2021 PB build</li> <li>- Received Limited Deployment 4 (Jan) and 5 (Jul) Authority to Proceed Memorandum</li> <li>- Migrated Legacy system historical data into PBES module (ETT, RAPIDS, ASARS, ABIDES)</li> </ul> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>- Deliver data transfer for Plan-to-Program requirements defined and scheduled</li> <li>- Deliver development Sprints 19-20 (Expanded Planning, Program, and Budget capabilities)</li> <li>- Complete Full Deployment Authority to Proceed with Milestone Decision Authority</li> <li>- Deliver patches as needed to correct system deficiencies or upgrades required</li> <li>- Continue PBES acquisition planning, reporting, and execution activities</li> <li>- Continue to make updates to system design, configuration, test, and training</li> <li>- Continue to satisfy risk management framework (RMF) controls needed for ATO</li> </ul> <p><b>FY 2022 Plans:</b></p> <ul style="list-style-type: none"> <li>- Will continue acquisition deployment actions in preparation for the Capability Support Phase authority to proceed milestone decision.</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b></p> <ul style="list-style-type: none"> <li>- Funding decreased due to completion of primary development actions and preparation for sustainment in FY22.</li> </ul>			
<b>Accomplishments/Planned Programs Subtotals</b>	4.199	1.967	0.041

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• OPAF 03 834010: <i>General Information Technology</i>	1.966	0.695	0.000	-	0.000	-	-	-	-	-	-



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901538F / <i>Financial Management Information Systems Development</i>	<b>Project (Number/Name)</b> 672222 / <i>Program Budget Enterprise Service (PBES)</i>

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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**Remarks**

**D. Acquisition Strategy**

PBES is a Business Category (BCAT) III program following DOD 5000.75 BCAC policy. The PBES strategy, supported by all Stakeholders, employed an empowered joint Program Office, Functional Community, and Senior Stakeholder group to rapidly develop, test, and deploy the DAF's Planning, Programming, and Budgeting capability within three years. This strategy required mutual trust and risk acceptance by all parties to be successful. Thus far, this strategy has been highly successful delivering PBES capabilities on schedule and substantially under budget.

The first step in this strategy utilized early risk reduction efforts (sometimes referred to as "prototyping") to prove the capability and contractors existed to meet users' needs. This was conducted using two 6-month contract vehicles which were both completed months early, delivering several hundred user requirements. The success of these efforts led to the strategy of selecting a COTS product called Oracle Hyperion and to hire a small-business system integrator (SI). The significance in both of these is that the COTS product and the SI have both already been deployed across commercial companies and multiple DoD agencies, thus reducing the risk for implementation by the Government.

Both contract awards for the SI and Oracle licenses were made in 1QFY2018, with substantial cost savings received by negotiating bulk license purchases for all DAF users. The development strategy employs agile development methods creating 8 week "Sprint" releases to deploy capability rapidly with substantial user feedback along the way. Twenty total Sprints were planned across three years in an attempt to match on-going Air Force PPBE cycles. As Sprints are developed and tested, they are then deployed for operational use.

Various DAF organizations used PBES to support the FY2022 PB build. Per the FY2018 decision, DAF Planners formally transitioned to PBES for the FY2023 DAF Plan creation in Feb 2021.

Full deployment of PBES is on schedule to be completed in 2QFY2022. The success of this strategy can be attributed to mutual buy-in by all parties, risk acceptance that the solution will not be perfect from the start, and an understanding that not all requirements are exactly known up-front and that changes will be required continuously to be successful.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901538F / <i>Financial Management Information Systems Development</i>	<b>Project (Number/Name)</b> 672222 / <i>Program Budget Enterprise Service (PBES)</i>
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Systems Integrator	C/FFP	AFLCMC : Maxwell-Gunter AFB, AL	0.000	1.963	Dec 2019	0.539	Dec 2020	0.041	Dec 2021	-		0.041	-	-	2.728
Architecture	C/Various	Bowhead Technology : Alexandria, VA	0.000	0.118	Mar 2020	-		-		-		-	-	-	0.118
<b>Subtotal</b>			0.000	2.081		0.539		0.041		-		0.041	-	-	N/A

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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	HEDC : Hill AFB, UT	0.000	1.480	Sep 2020	1.428	Apr 2021	-		-		-	-	-	2.883
PMO Technical/SME Support	C/FFP	TACG : Beavercreek, OH	0.000	0.177	May 2020	-		-		-		-	-	-	0.177
Cyber Security Analyst DDC-IT	C/FFP	DDC IT Services : Albuquerque, NM	0.000	0.179	Mar 2020	-		-		-		-	-	-	0.179
Cloud One/CIE/C1D	C/CPFF	Smartronix, Inc : Hollywood, MD	0.000	0.088	Jul 2020	-		-		-		-	-	-	0.088
<b>Subtotal</b>			0.000	1.924		1.428		-		-		-	-	-	N/A

**Remarks**  
Hill AFB Enterprise Data Center

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test Support	MIPR	96 Test Wing : Eglin AFB, FL	0.000	0.051	Dec 2019	-		-		-		-	-	-	0.051
<b>Subtotal</b>			0.000	0.051		-		-		-		-	-	-	N/A



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901538F / <i>Financial Management Information Systems Development</i>	<b>Project (Number/Name)</b> 672222 / <i>Program Budget Enterprise Service (PBES)</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b><i>Program Budget Enterprise Service</i></b>																												
System Integrator Contract Award																												
Develop/Modify Air Staff Application																												
Develop/Modify Planning Application																												
Limited Deployment Decision #4 (release final MAJCOM, Program & Budget Requests)																												
Limited Deployment Decision #5 (release Reporting, Data Warehouse & FSDM)																												
Full Deployment Decision (fully deploy PBES & authorize Legacy sys shutdown)																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901538F / <i>Financial Management Information Systems Development</i>	<b>Project (Number/Name)</b> 672222 / <i>Program Budget Enterprise Service (PBES)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Program Budget Enterprise Service</b>				
System Integrator Contract Award	1	2021	1	2021
Develop/Modify Air Staff Application	1	2020	1	2021
Develop/Modify Planning Application	1	2020	2	2021
Limited Deployment Decision #4 (release final MAJCOM, Program & Budget Requests)	2	2020	2	2020
Limited Deployment Decision #5 (release Reporting, Data Warehouse & FSDM)	3	2020	3	2020
Full Deployment Decision (fully deploy PBES & authorize Legacy sys shutdown)	2	2022	2	2022

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0901538F / <i>Financial Management Information Systems Development</i>				<b>Project (Number/Name)</b> 675177 / <i>Cost Estimating Modeling (CEM)</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
675177: <i>Cost Estimating Modeling (CEM)</i>	0.000	4.784	5.026	4.811	0.000	4.811	-	-	-	-	-	-
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 3221, 3227, 4251, 4252, 4253, and 4328) and policy directives (e.g., DoDI 5000.02, DoDI 5000.73) 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, policy directives, 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 that drive increased cost estimating demands such as FY16/17/18 NDAA reports (PL 114-92/114-328/115-91--provisions relating to Major Defense Acquisition Programs (Section 804 of the FY16 NDAA authorized rapid prototyping and rapid fielding of defense systems), 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 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 policy (initiatives on enhanced trade-off analysis, affordability analysis, and will- versus should-cost analysis). The CADE and CEM partnership is the lead example for better data initiatives designed as a response to a 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 to include analyzing historical data and changing technologies/programmatics to develop new estimating methods (e.g. statistical tools, cost estimating relationships) across hundreds of product work breakdown structure 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 directed energy costs, software cost datasets and metrics; contract or engineering change order studies, analysis, and models; other government cost data, methods, and analysis tools (e.g., depot standup and government test); reliability and maintainability trends and impacts on cost; and fixed price contract performance.

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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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901538F / <i>Financial Management Information Systems Development</i>	<b>Project (Number/Name)</b> 675177 / <i>Cost Estimating Modeling (CEM)</i>
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver financial management information system capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F.

The FY 2022 funding request was reduced by \$0.259 million to account for the availability of prior year execution balances.

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

	FY 2020	FY 2021	FY 2022
<p><b>Title:</b> CEM</p> <p><b>Description:</b> Perform knowledge-based studies (KBS) — Develop/modernize cost data, data collection process improvements, collect and analyze data to develop new estimating methods (e.g. statistical tools, cost estimating relationships (CERs), schedule estimating relationships (SERs)), 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>ACCOMPLISHMENTS:</p> <ul style="list-style-type: none"> <li>- Completed studies in the areas of space systems, depot over and above cost data and analysis, advanced materials and manufacturing processes, joint cost analysis research, engineering change orders, common computing environments (cloud), agile, cyber security, ground radios/terminals</li> <li>- Completed several data collection process reforms</li> <li>- Worked with OSD CADE team to implement data design and structure requirements into CADE system</li> <li>- Initiated studies of contract cost growth by contract type, UAV operating and support cost, ICBM escalation, general supply division cost increase to the flying hour program, terminal and radio dataset development cost, and digital engineering impact to program cost</li> </ul> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>- Complete studies and renew Air Force cost estimating infrastructure in the areas of contract cost growth, UAV operating and support cost, ICBM escalation, general supply division cost increase to the flying hour program, terminal and radio dataset development cost, satellite sizing model updates, scheduling estimating relationships among space programs, resilient ground systems - DevOps, aircraft system engineering/program management database, and airborne open mission systems</li> <li>- Complete tool to automate collection of contract modifications and use this database to develop a benchmark tool to estimate engineering change orders in acquisition program phases</li> <li>- Review Air Force's use of digital engineering approaches and assess the perceived and demonstrated benefits and risks over a weapons system's life cycle</li> <li>- 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</li> <li>- Finalize product deliverable for studies started earlier</li> </ul>	4.784	5.026	4.811

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901538F / <i>Financial Management Information Systems Development</i>	<b>Project (Number/Name)</b> 675177 / <i>Cost Estimating Modeling (CEM)</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022
<ul style="list-style-type: none"> <li>- Continue to work with OSD CADE team to implement data design and structure requirements and visual analysis tool requirements into CADE system</li> <li>- Conduct weekly reviews with technical/cost teams and quarterly contractor progress reviews with entire government cost community</li> </ul> <p><b><i>FY 2022 Plans:</i></b></p> <ul style="list-style-type: none"> <li>- 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</li> <li>- Will develop normalized data sets, benchmark metrics, and cost estimating methods/analytical tools with recent data collections</li> <li>- Will initiate studies that are topical/timely or surface from prior research</li> <li>- Will continue to work with OSD CADE team to implement data design and structure requirements and visual analysis tool requirements into CADE system</li> <li>- Will conduct weekly reviews with technical/cost teams and quarterly contractor progress reviews with entire government cost community</li> </ul> <p><b><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i></b></p> <ul style="list-style-type: none"> <li>- Funding decreased to account for the availability of prior year funds</li> </ul>			
<b>Accomplishments/Planned Programs Subtotals</b>	4.784	5.026	4.811

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

**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.





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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901538F / <i>Financial Management Information Systems Development</i>	<b>Project (Number/Name)</b> 675177 / <i>Cost Estimating Modeling (CEM)</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>CEM</b>																												
Commodity Specific KBS Activities																												
Populate Data Templates w/ Commodity Specific KBS findings (ongoing)																												
Develop CERs/Estimating Tools/Models																												
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)																												
Data / CERs / Tools / Models Deliverables (Sep 2022)																												
Quarterly KBS Progress Reviews																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901538F / <i>Financial Management Information Systems Development</i>	<b>Project (Number/Name)</b> 675177 / <i>Cost Estimating Modeling (CEM)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>CEM</b>				
Commodity Specific KBS Activities	1	2020	4	2022
Populate Data Templates w/ Commodity Specific KBS findings (ongoing)	1	2020	4	2022
Develop CERs/Estimating Tools/Models	1	2020	4	2022
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
Data / CERs / Tools / Models Deliverables (Sep 2022)	4	2022	4	2022
Quarterly KBS Progress Reviews	1	2020	4	2022

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0901554F / <i>Defense Enterprise Acntng and Mgt Sys (DEAMS)</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	40.239	40.564	0.000	0.000	0.000	-	-	-	-	-	-
675178: <i>DEAMS Continuous Capability Development</i>	-	13.895	40.564	0.000	0.000	0.000	-	-	-	-	-	-
675179: <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i>	-	26.344	0.000	0.000	0.000	0.000	-	-	-	-	-	-

**Note**

In FY22, DEAMS Continuous Capability Development (CCD) budget controls have been realigned from Research, Development, Test & Evaluation (RDT&E) Program Element (PE) 0901554F Project 675178, Operations & Maintenance (O&M) AG/SAG 042A, and Other Procurement Line Item 834470 and consolidated into Budget Activity 8 in PE 0608920F in order to participate in the DoD's Software & Digital Technology Pilot Program.

In FY20, PE 0901554F, DEAMS, changed from PE 0901538F, Financial Management Information Systems Development.

In FY20, Project 675178, DEAMS Continuous Capability Development, changed from Defense Enterprise Accounting Management System Increment 2 (DEAMS Inc. 2).

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

FY22 funding for this PE has been transferred to PE 0608920F, Defense Accounting and Management System (DEAMS), Project Number 685178, DEAMS Continuous Capability Development. The FY 2018 NDAA Sections 873/874 directed OSD to streamline software development. The Defense Enterprise Accounting and Management System (DEAMS) has been included in an OSD pilot initiative in which all lifecycle funding will be tracked under BA08, Software and Digital Technology Pilot Programs. Pilot programs will test the ability to execute modern software development practices encompassing development, procurement, modification and maintenance activities. The DEAMS pilot program in PE 0608920F, RDT&E, Air Force, BA08 includes Air Force RDT&E, Other Procurement, and Operations & Maintenance funds transferred from PE 0901554F.

This program element develops upgrades to existing financial management systems. These upgrades are required to comply with auditability and transparency requirements as well as efficiencies in processing financial transactions. This program element also supports studies and analysis to improve future program planning and execution.

There are two projects within this program element: Defense Enterprise Accounting and Management System (DEAMS) Increment 1 (Inc 1), and DEAMS Continuous Capability Development (CCD), formerly known as DEAMS Increment 2. Project 675178: DEAMS CCD started in FY2019 under PE 0901538F. Project 675179: DEAMS Increment 1 was under PE 0901538F through FY2019.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0901554F / <i>Defense Enterprise Acntng and Mgt Sys (DEAMS)</i>	
<p>DEAMS is a commercial-off-the-shelf (COTS), Oracle-based software implementation which provides an auditable, modern accounting and finance management capability. It is the Department of the Air Force's (DAF) core accounting and financial management solution and is a key component of the DAF's long-term business process improvements needed to sustain auditability and correct financial system weaknesses. DEAMS supports 17,000 users at 170 installations world-wide supporting all Air Force Major Commands, the U.S. Space Force, and Unified Commands where the DAF is the executive agent.</p> <p>DEAMS is a joint DAF and United States Transportation Command (USTRANSCOM) Enterprise Resource Planning (ERP) Program that replaces numerous inefficient and/or obsolete legacy accounting and finance systems and provides 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.</p> <p>The DAF has transitioned DEAMS to the Capability Support Phase, in which enhancements are managed through the Agile software development backlog by the Program Management Office (PMO) and Function Management Office (FMO). Enhancement activities will be implemented via a process of development cycles, in which usable capability is produced after every iteration. The PMO construct, along with the application of Agile principles allows the program to properly plan system requirements, deliver early capability to the end users, achieve early return on investment of taxpayer dollars, mitigate risk, reduce waste, effectively respond to change, and continuously improve processes.</p> <p>The DAF is planning to increase DEAMS usage within the acquisition community to include acquisition program executive offices, laboratories, test centers, and air logistics complexes. These deployments will add an additional 4,500 users for a total of 21,500 users.</p> <p>DEAMS is compliant with the Clinger-Cohen Act and the DoD's Business Enterprise Architecture (BEA). DEAMS is key to DAF compliance with the Financial Improvement and Audit Readiness (FIAR) requirement. This requirement supports performance of a full financial audit as required by title 10 U.S.C. Chapter 9A, Sec 240-D.</p> <p>This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver DEAMS for emergent or unanticipated weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.000M was expended for civilian pay expenses in this program element, and in FY21 \$0.000M is forecasted for civilian pay expenses in this program element.</p> <p>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.</p>		

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0901554F / <i>Defense Enterprise Acntng and Mgt Sys (DEAMS)</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	46.789	45.638	55.067	0.000	55.067
Current President's Budget	40.239	40.564	0.000	0.000	0.000
Total Adjustments	-6.550	-5.074	-55.067	0.000	-55.067
• Congressional General Reductions	-4.000	-0.074			
• Congressional Directed Reductions	0.000	-5.000			
• 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	-1.550	0.000			
• Transfer to PE 0608920F	0.000	0.000	-55.067	0.000	-55.067

**Change Summary Explanation**

FY20, PE 0901554F, BPAC 675178, Decreased to accommodate other AF requirements (\$1.0M)  
 FY20, PE 0901554F, BPAC 675178, SBIR Assessment (\$1.55M)  
 FY20, PE 0901554F, BPAC 675179, Congressional Mark (\$4.0M)  
 FY21, PE 0901554F, BPAC 675178, Congressional Mark (\$5.0M)  
 FY21, PE 0901554F, BPAC 675178, Congressional Mark (\$0.074M)  
 FY22, PE 0901554F, BPAC 675178, Transfer to PE 0608920F, Defense Accounting and Management System (DEAMS), Project Number 685178, DEAMS Continuous Capability Development, to participate in the DoD's Software & Digital Technology Pilot Program

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 0901554F / <i>Defense Enterprise Acntng and Mgt Sys (DEAMS)</i>				<b>Project (Number/Name)</b> 675178 / <i>DEAMS Continuous Capability Development</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
675178: <i>DEAMS Continuous Capability Development</i>	-	13.895	40.564	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY2020, PE 0901554F, DEAMS, changed from PE 0901538F, Financial Management Information Systems Development.  
 In FY2020, Project 675178, DEAMS Continuous Capability Development, changed from Defense Enterprise Accounting Management System Increment 2 (DEAMS Inc. 2).

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

FY22 funding for this PE has been transferred to PE 0608920F, Defense Accounting and Management System (DEAMS), Project Number 685178, DEAMS Continuous Capability Development. The FY 2018 NDAA Sections 873/874 directed OSD to streamline software development. The Defense Enterprise Accounting and Management System (DEAMS) has been included in an OSD pilot initiative in which all lifecycle funding will be tracked under BA08, Software and Digital Technology Pilot Programs. Pilot programs will test the ability to execute modern software development practices encompassing development, procurement, modification and maintenance activities. The DEAMS pilot program in PE 0608920F, RDT&E, Air Force, BA08 includes Air Force RDT&E, Other Procurement, and Operations & Maintenance funds transferred from PE 0901554F.

DEAMS is a commercial-off-the-shelf (COTS), Oracle-based software implementation which provides an auditable, modern accounting and finance management capability. It is the Department of the Air Force's (DAF) core accounting and financial management solution and is a key component of the DAF's long-term business process improvements needed to sustain auditability and correct financial system weaknesses. DEAMS supports 17,000 users at 170 installations world-wide supporting all Air Force Major Commands, the U.S. Space Force, and Unified Commands where the DAF is the executive agent.

DEAMS is a joint DAF and United States Transportation Command (USTRANSCOM) Enterprise Resource Planning (ERP) Program that replaces numerous inefficient and/or obsolete legacy accounting and finance systems and provides 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.

The DAF has transitioned DEAMS to the Capability Support Phase, in which enhancements are managed through the Agile software development backlog by the Program Management Office (PMO) and Function Management Office (FMO). Enhancement activities will be implemented via a process of development cycles, in which usable capability is produced after every iteration. The PMO construct, along with the application of Agile principles allows the program to properly plan system requirements, deliver early capability to the end users, achieve early return on investment of taxpayer dollars, mitigate risk, reduce waste, effectively respond to change, and continuously improve processes.



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901554F / <i>Defense Enterprise Acntng and Mgt Sys (DEAMS)</i>	<b>Project (Number/Name)</b> 675178 / <i>DEAMS Continuous Capability Development</i>
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The DAF is planning to increase DEAMS usage within the acquisition community to include acquisition program executive offices, laboratories, test centers, and air logistics complexes. These deployments will add an additional 4,500 users for a total of 21,500 users.

DEAMS is compliant with the Clinger-Cohen Act and the DoD's Business Enterprise Architecture (BEA). DEAMS is key to DAF compliance with the Financial Improvement and Audit Readiness (FIAR) requirement. This requirement supports performance of a full financial audit as required by title 10 U.S.C. Chapter 9A, Sec 240-D.

This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver DEAMS for emergent or unanticipated weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.000M was expended for civilian pay expenses in this program element, and in FY21 \$0.000M is forecasted for civilian pay expenses in this program element.

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

	FY 2020	FY 2021	FY 2022
<p><b>Title:</b> DEAMS Continuous Capability Development (CCD) Product Development</p> <p><b>Description:</b> DEAMS CCD system capabilities will be developed and enhanced through completion of iterative development cycles in accordance with an Agile software development strategy. The DAF is implementing a steady-state incremental development tempo that is more complimentary to the Agile software development process. Development activities include requirements analysis, design, build, test, data conversion, migration from legacy system as required, implementation into the DEAMS baseline, and the resolution of deficiency reports and defects. Activities also include various Advisory and Assistance Services (A&amp;AS) and Program Management Administration (PMA) activities to support the aforementioned development efforts.</p> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>- Continue actions to ensure timely System Integrator (SI) contract award and seamlessly transition from previous SI</li> <li>- Continue incremental planning and support initiatives to organize Continuous Capability Development (CCD) backlog requirements into capability-delivering epics. Planned capabilities include, but are not limited to:                             <ul style="list-style-type: none"> <li>- Ad Hoc Cost Analysis Reporting</li> <li>- Additional Business Intelligence (BI) functionality</li> <li>- Base Supply Expenditures General Funds only</li> <li>- Accounting for base supply purchases</li> <li>- Treasury Direct Phase 2 &amp; 3</li> <li>- Treasury Direct collections</li> <li>- Civilian Pay Cost Accounting</li> <li>- Record Civilian Pay detail for accruals and expenditure accounting</li> <li>- Contract Data Standards</li> <li>- Acquisition data standards for contract writing systems</li> </ul> </li> </ul>	13.895	39.698	0.000

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901554F / <i>Defense Enterprise Acntng and Mgt Sys (DEAMS)</i>	<b>Project (Number/Name)</b> 675178 / <i>DEAMS Continuous Capability Development</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<ul style="list-style-type: none"> <li>- Major Acquisition/Reimbursable Program Systems</li> <li>- Interfaces/Capabilities necessary for major acquisition programs reporting and Complex contract obligation and pre-validation</li> <li>- Job Order Cost Accounting</li> <li>- Interface enhancement of Job Order Cost Accounting System (JOCAS) II with Standard Financial Information Structure (SFIS) upgrade</li> </ul> <p><b>FY 2022 Plans:</b> See PE 0608920F, Defense Accounting and Management System (DEAMS), Project Number 675178, DEAMS Continuous Capability Development.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A</p>				
<p><b>Title:</b> Test and Evaluation</p> <p><b>Description:</b> The T&amp;E process will be a complete system operational test to determine DEAMS effectiveness, suitability and mission capability. The T&amp;E efforts conducted are in developer sites, Air Force test sites, DISA production sites and user locations.</p> <p>The T&amp;E effort will include the implementation of the AGILE principles which includes Sprint Testing where functionality developed code in the sprint is tested for conformance to functional and non-functional requirements. Sprint Testing shall address unit and integrated testing. Additionally, there will continue to be regression testing to validate that the work within the sprint has not introduced new defects into areas of the product no directly impacted by the work of the sprint and has not introduced defects into the cross-product dependencies such as interfaces.</p> <p><b>FY 2021 Plans:</b></p> <ul style="list-style-type: none"> <li>- Continue Follow-on Operational Test and Evaluation as required</li> <li>- Continue to validate planned software releases and coordinate testing</li> <li>- Continue to validate user deployments and coordinate testing</li> </ul> <p><b>FY 2022 Plans:</b> See PE 0608920F, Defense Accounting and Management System (DEAMS), Project Number 685178, DEAMS Continuous Capability Development.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A</p>		0.000	0.866	0.000
<b>Accomplishments/Planned Programs Subtotals</b>		13.895	40.564	0.000

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901554F / <i>Defense Enterprise Acntng and Mgt Sys (DEAMS)</i>	<b>Project (Number/Name)</b> 675178 / <i>DEAMS Continuous Capability Development</i>

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF 03 834470: <i>Defense Enterprise Accounting &amp; Mgt Sys</i>	2.285	0.899	-	-	-	-	-	-	-	-	-

**Remarks**

FY22 funding transferred to PE 0608920F, Defense Accounting and Management System (DEAMS), Project Number 685178, DEAMS Continuous Capability Development.

**D. Acquisition Strategy**

The DAF concluded Increment I deployment and has transitioned DEAMS to the Business Capability Acquisition Cycle's (BCAC) Capability Support Phase. Implementation is accomplished via the Continuous Capability Development program in which requirements are prioritized by the associated Program and Functional Management Offices and organized in the requirements backlog. DEAMS capabilities are developed and sustained in accordance with the selected Agile software implementation strategy. Development activities include requirements analysis, design, build, test, data conversion, migration from legacy system as required, implementation into the DEAMS baseline, and the resolution of deficiency reports and defects. Sustainment activities include day-to-day operations and support, production environment management, and numerous system performance improvement initiatives. This strategy has been refined to enable continual enhancements and process improvements for the life of the system.

The DEAMS program will develop functionality on cadence and release on demand. User experience and mission impact will be considered when determining release dates during the execution cycle.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date: May 2021**

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901554F / Defense Enterprise Acntng and Mgt Sys (DEAMS)	<b>Project (Number/Name)</b> 675178 / DEAMS Continuous Capability Development
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Continuous Capability Development (CCD) Product Development	C/Various	Various : Various	-	13.895	May 2020	-		-		-		-	-	-	-
DEAMS: Rapid Acquisition	C/Various	TBD : TBD	-	-		13.639	Jun 2021	-		-		-	-	-	-
DEAMS: SME Support, General Ledger Reports and Analysis, Business Process Analysis, Master Data Conversion and Training Development	C/T&M	Kearney & Company : Various	-	-		12.998	Feb 2021	-		-		-	-	-	-
DEAMS: ERP Solution Architecture services	C/FP	Lintech Global Inc. : Farmington Hills, MI	-	-		2.588	Feb 2021	-		-		-	-	-	-
DEAMS: Oracle Software Solutions	Various	Various : Various	-	-		2.260	May 2021	-		-		-	-	-	-
DEAMS: Direct mission Support (Development, Integration Environments)	Various	Various : Various	-	-		1.394	Jan 2021	-		-		-	-	-	-
DEAMS: ERP DBA Development and Support Services	C/FFP	DDC IT Services, LLC : Albuquerque, NM	-	-		1.147	Jun 2021	-		-		-	-	-	-
<b>Subtotal</b>			-	13.895		34.026		-		-		-	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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 services	C/CPAF	Various : Various	-	-		0.866	May 2021	-		-		-	-	-	-
<b>Subtotal</b>			-	-		0.866		-		-		-	-	-	N/A





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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901554F / <i>Defense Enterprise Acntng and Mgt Sys (DEAMS)</i>	<b>Project (Number/Name)</b> 675178 / <i>DEAMS Continuous Capability Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>DEAMS</b>				
Acquisition Planning	1	2020	3	2021
Agile Software Development Contract Award	4	2021	4	2021

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901554F / Defense Enterprise Acntng and Mgt Sys (DEAMS)	<b>Project (Number/Name)</b> 675179 / Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
675179: Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)	-	26.344	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**Note**

In FY2020, PE 0901554F, DEAMS, changed from PE 0901538F, Financial Management Information Systems Development. In FY2021 PE 0901554F, DEAMS BPAC 675179 usage ends.

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

DEAMS is a commercial-off-the-shelf (COTS), Oracle-based software implementation which provides an auditable, modern accounting and finance management capability. It is the Department of the Air Force's (DAF) core accounting and financial management solution and is a key component of the DAF's long-term business process improvements needed to sustain auditability and correct financial system weaknesses. DEAMS supports 17,000 users at 170 installations world-wide supporting all Air Force Major Commands, the U.S. Space Force, and Unified Commands where the DAF is the executive agent.

Increment 1 deployments are complete. The DAF has transitioned DEAMS to the Capability Support Phase, in which enhancements are managed through the Agile software development backlog by the Program Management Office (PMO) and Function Management Office (FMO). Enhancement activities will be implemented via a process of development cycles, in which usable capability is produced after every iteration. The PMO construct, along with the application of Agile principles allows the program to properly plan system requirements, deliver early capability to the end users, achieve early return on investment of taxpayer dollars, mitigate risk, reduce waste, effectively respond to change, and continuously improve processes.

This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver DEAMS for emergent or unanticipated weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.000M was expended for civilian pay expenses in this program element, and in FY21 \$0.000M is forecasted for civilian pay expenses in this program element.

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

<b>Title:</b> Product Development	FY 2020	FY 2021	FY 2022
<b>Description:</b> Description: DEAMS capability development activities support multiple software releases and user deployments 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.	25.853	0.000	0.000



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901554F / <i>Defense Enterprise Acntng and Mgt Sys (DEAMS)</i>	<b>Project (Number/Name)</b> 675179 / <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p>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&amp;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 Program Management Administration (PMA) utilizing an agile approach for reporting, disbursing, and auditing initiatives.</p> <p>Develop, using an Agile software development approach, the Disbursing Initiative (includes modernizing disbursing and implementing daily reconciliation with the U.S. Treasury, which will manage the receipt and acceptance of agreements, orders, and invoices), the Reporting Initiative (establish a modernized Business Intelligence reporting solution), and the Segregation of Duties (SOD) Initiative (allow DEAMS to meet regulatory compliance requirements associated with Financial Information System Controls Audit Manual (FISCAM)).</p> <p><b>FY2020 ACCOMPLISHMENTS:</b></p> <ul style="list-style-type: none"> <li>-Completed planned FY2020 deployment of DEAMS to all personnel with the exception of aprx 150 members due to COVID 19 travel restrictions, bringing total users to 16,800 to include Space Command</li> <li>- Added 7113 Business Event capability not functioning at R12 go-live with scheduled process for reporting</li> <li>- Enabled the OSD-mandated Contingency Reporting Capability ahead of need date</li> <li>- Implemented several critical services for DEAMS end users that GCSS-AF were ceasing, ensuring capability remains operational for FM community</li> <li>- Awarded additional contracts for development and pre-production environments with the DISA for improved Agile software development on DEAMS</li> <li>- Decreased Technical Debt by reducing RICE objects and improved Materialized Views increasing system performance</li> <li>- Stabilized the Oracle R12 upgrade by resolving over 350 defects with all Severity 1 defects being closed</li> <li>- Successful FY2020 end of year closeout</li> </ul> <p><b>FY 2021 Plans:</b> N/A</p> <p><b>FY 2022 Plans:</b> N/A</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b></p>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901554F / Defense Enterprise Acntng and Mgt Sys (DEAMS)	<b>Project (Number/Name)</b> 675179 / Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
Increment 1 complete			
<b>Title:</b> Test and Evaluation (T&E)	0.491	0.000	0.000
<b>Description:</b> The T&E process will be a complete system operational test to determine DEAMS effectiveness, suitability, and mission capability using the R12 Upgrade. 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. Database Administrator (DBA) Test Support required to service test instances. Capabilities Integration Environment (CIE) Integration/Development support for ancillary Test activities required. Hardware and software required for test activities. The T&E effort for the Agile Pilot Program includes Sprint Testing where functionality developed code in the sprint is tested for conformance to functional and non-functional requirements. Sprint Testing shall address unit and integrated testing. Additionally, there will be Regression Testing to validate that the work within the sprint has not introduced defects into areas of the product not directly impacted by the work of the sprint and has not introduced defects into cross-product dependencies such as interfaces.			
<b>FY 2021 Plans:</b> N/A			
<b>FY 2022 Plans:</b> N/A			
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Increment 1 complete			
<b>Accomplishments/Planned Programs Subtotals</b>	26.344	0.000	0.000

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF 03 834470: Defense Enterprise Accounting & Mgt Sys	2.285	0.899	-	-	-	-	-	-	-	-	-
<b>Remarks</b>											

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901554F / <i>Defense Enterprise Acntng and Mgt Sys (DEAMS)</i>	<b>Project (Number/Name)</b> 675179 / <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i>

**D. Acquisition Strategy**

The DAF concluded Increment I deployment and has transitioned DEAMS to the Business Capability Acquisition Cycle's (BCAC) Capability Support Phase. Implementation is accomplished via the Continuous Capability Development program in which requirements are prioritized by the associated Program and Functional Management Offices and organized in the requirements backlog. DEAMS capabilities are developed and sustained in accordance with the selected Agile software implementation strategy. Development activities include requirements analysis, design, build, test, data conversion, migration from legacy system as required, implementation into the DEAMS baseline, and the resolution of deficiency reports and defects. Sustainment activities include day-to-day operations and support, production environment management, and numerous system performance improvement initiatives. This strategy has been refined to enable continual enhancements and process improvements for the life of the system.

The DEAMS program will develop functionality on cadence and release on demand. User experience and mission impact will be considered when determining release dates during the execution cycle.

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2022 Air Force</b>											<b>Date: May 2021</b>				
<b>Appropriation/Budget Activity</b> 3600 / 7				<b>R-1 Program Element (Number/Name)</b> PE 0901554F / Defense Enterprise Acntng and Mgt Sys (DEAMS)				<b>Project (Number/Name)</b> 675179 / Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)							

<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
DEAMS: Rapid Acquisition	C/T&M	CACI-ISS, INC : Chantilly, VA	-	9.154	Apr 2020	-		-		-		-	-	-	-
DEAMS: SME Support, General Ledger Reports and Analysis, Business Process Analysis, Master Data Conversion and Training Development	C/T&M	Kearney and Company : Various	-	6.190	Feb 2020	-		-		-		-	-	-	-
DEAMS: ERP Solutions Architecture services	C/FP	Lintech Global, Inc. : Farmington Hills, MI	-	1.407	Feb 2020	-		-		-		-	-	-	-
DEAMS: Oracle Software Solutions	Various	Various : Various	-	1.743	May 2020	-		-		-		-	-	-	-
DEAMS: Direct mission Support (Development/ Integration Environments)	Various	Various : Various	-	1.527	Jan 2020	-		-		-		-	-	-	-
DEAMS: ERP DBA Development and Support Services	C/FFP	DDC IT Services, LLC : Albuquerque, NM	-	1.121	Jun 2020	-		-		-		-	-	-	-
<b>Subtotal</b>			-	21.142		-		-		-		-	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
DEAMS: Test services from AFOTEC, JITC, LDTO and other miscellaneous test resources	Various	Various : Various	-	0.491	Jan 2020	-		-		-		-	-	-	-
<b>Subtotal</b>			-	0.491		-		-		-		-	-	-	N/A



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901554F / <i>Defense Enterprise Acntng and Mgt Sys (DEAMS)</i>	<b>Project (Number/Name)</b> 675179 / <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>DEAMS Inc 1, Agile Process</b>																												
DEAMS Inc 1, R12 Software Baseline Development	■																											
DEAMS Inc 1, Reporting	■	■	■	■																								
DEAMS Inc 1, Disbursing	■	■	■	■																								
DEAMS Inc 1, Auditing	■	■	■	■																								
DEAMS Inc 1, Follow-on Operational Test and Evaluation (FOT&E)							■	■																				
DEAMS Inc 1, Capability Support Authority to Proceed (CS ATP)												■																

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0901554F / <i>Defense Enterprise Acntng and Mgt Sys (DEAMS)</i>	<b>Project (Number/Name)</b> 675179 / <i>Defense Enterprise Accounting Management System Increment 1 (DEAMS Inc 1)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>DEAMS Inc 1, Agile Process</b>				
DEAMS Inc 1, R12 Software Baseline Development	1	2020	1	2020
DEAMS Inc 1, Reporting	1	2020	4	2020
DEAMS Inc 1, Disbursing	1	2020	4	2020
DEAMS Inc 1, Auditing	1	2020	3	2020
DEAMS Inc 1, Follow-on Operational Test and Evaluation (FOT&E)	2	2021	3	2021
DEAMS Inc 1, Capability Support Authority to Proceed (CS ATP)	4	2021	4	2021

**Note**

Remaining Inc 1 Requirements will move to CCD as of 1st Qtr FY21

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development	<b>R-1 Program Element (Number/Name)</b> PE 1201017F I Global Sensor Integrated on Network (GSIN)
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	3.532	0.000	0.000	0.000	0.000	-	-	-	-	-	-
675368: GSIN (Global Integrated Sensor Network)	-	3.532	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**Note**  
 In FY 2020, PE 0301017F, Global Sensor Integrated on Network (GSIN), Project 675368, GSIN (Global Integrated Sensor Network), efforts were transferred to PE 1201017F, Global Sensor Integrated on Network (GSIN), Project Project 675368, GSIN (Global Integrated Sensor Network), for more accurate classification of work.

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

In FY 2021, PE 1201017F, Global Sensor Integrated on Network efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1201017SF Global Sensor Integrated on Network from Appropriation 3600, Budget Activity 07 due to the creation of a new Appropriation for Space Force.

\$1.889M is included in FY 2021 in this request for Appropriation 3600, Research, Development, Test & Evaluation, Air Force, PE 1201017F; these funds should have been requested under Appropriation 3620 Research, Development, Test & Evaluation, Space Force, PE 1201017SF. Justification and plans for these funds are included in PE 1201017SF, Global Sensor Integrated on Network (GSIN), R-1 Line #26.

The missions of USSPACECOM and USSTRATCOM include establishing and providing 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.

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 developed and established a unified schema that integrates 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 radars and sensors to provide data in net-centric formats consumable by other authorized systems and mission areas, thus reducing the need to acquire more systems. Activities also include studies and analysis to support current program planning, execution, and future program planning.

GSIN directly supports USSPACECOM, USSTRATCOM and other Combatant Command and MAJCOM mission sets. GSIN meshes 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. Repurposing these traditionally stove-piped systems and sensors, GSIN enables the warfighter in several ways. GSIN enables creation of a User Defined Operating Picture (UDOP) to provide a single, unambiguous missile event picture allowing realtime collaboration for nuclear C2 and improved senior leader situational awareness (SA) for effective decision-making. GSIN also improves Space Situational Awareness (SSA) by tapping additional sensor capability and provides this data for the larger space order of battle capabilities. GSIN

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1201017F / <i>Global Sensor Integrated on Network (GSIN)</i>
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dramatically improves the ingestion of nontraditional, but readily available, non-US government and commercial data to the United States Space Force (USSF) satellite catalog. GSIN addresses NORTHCOM/STRATCOM's signed Joint Emergent Operational Need (JEON) ST-0010 request for uninterrupted traditional and non-traditional sensor data integration and the Global Threat Characterization Assessment (GTCA) Operational Planning Team report. GSIN provides critical and unique data to the USSPACECOM SSA data repositories to facilitate the large Space Battle Management Command and Control (BMC2) suite of capabilities/programs. Finally, GSIN provides Machine Learner and Data Analysis functions to optimize and operate situational awareness in the field.

Space Acquisition must respond with speed and agility to emerging adversary threats. Space & Missile Systems Center (SMC) is transforming the organization and implementation of space acquisition to an enterprise approach, maximizing innovation and resiliency, leveraging international, commercial, and mission partnerships, and managing program/project priorities according to an integrated unclassified/classified enterprise space architecture. Expanding the appropriate acquisition authorities and contract mechanisms to deliver capability sooner, SMC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose capabilities.

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

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	3.647	1.889	6.590	0.000	6.590
Current President's Budget	3.532	0.000	0.000	0.000	0.000
Total Adjustments	-0.115	-1.889	-6.590	0.000	-6.590
• 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	-0.115	0.000			
• Other Adjustments	0.000	-1.889	-6.590	0.000	-6.590

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Radar, sensor, technical intelligence (TI), and Allied Systems	2.085	0.000	0.000

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 1201017F / <i>Global Sensor Integrated on Network (GSIN)</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Description:</b> Radar, sensor, technical intelligence and Allied Systems: Designs, develops, exposes and integrates data from radar, sensors and technical intelligence systems in regions of the world where potential GSIN users currently do not have coverage. Provide real time data from systems that previously reported in hours or days after critical events. Conduct studies/surveys/meetings as necessary to continually identify systems meeting GSIN user data exposure needs. Space Situational Awareness (SSA): Designs, develops, tests, exposes, and integrates SSA data from previously untapped systems into space production systems and the Global Information Grid (GIG). Develop implementation plans to mature data exposure capabilities.</p> <p><b>FY 2021 Plans:</b> N/A</p> <p><b>FY 2022 Plans:</b> N/A</p>				
<p><b>Title:</b> Data Services, Net Centric Integration and Configuration Control, and program outreach</p> <p><b>Description:</b> 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, and assessment services for risk reduction evaluations.</p> <p><b>FY 2021 Plans:</b> \$1.889M is incorrectly requested in PE 1201017F for FY 2021; these funds should have transferred to 1201017SF. Justification and plans for these funds are documented in PE 1201017SF, Global Sensor Integrated on Network (GSIN) R-1 Line #26.</p> <p><b>FY 2022 Plans:</b> N/A</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A</p>		1.447	0.000	0.000
<b>Accomplishments/Planned Programs Subtotals</b>		3.532	0.000	0.000
<b>D. Other Program Funding Summary (\$ in Millions)</b>				
N/A				

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force Date: May 2021

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

**R-1 Program Element (Number/Name)**  
PE 1201017F I Global Sensor Integrated on Network (GSIN)

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

**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 SSA/MW/MD/MASINT/TI data exposure architecture and solution. The contracts are managed by the relevant organization's contracting office. GSIN does not award or manage any contracts. The AFLCMC at Hanscom AFB (AFLCMC/HB) and SMC at Los Angeles AFB provide necessary program management, financial management, and other support as may be applicable for GSIN.





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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1201017F / <i>Global Sensor Integrated on Network (GSIN)</i>	<b>Project (Number/Name)</b> 675368 / <i>GSIN (Global Integrated Sensor Network)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>GSIN Data Exposure</b>				
(MASINT 4) Production/Fielding	1	2020	1	2020
(MASINT 4) Integration and Testing	3	2020	3	2020
(MASINT 4) Operational	4	2020	4	2020
(MASINT 5) Design and Development	3	2020	4	2020
(Radar/MASINT 6) Design and Development	4	2020	4	2020

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	0.952	0.991	0.000	0.000	0.000	-	-	-	-	-	-
670373: <i>DCIP</i>	-	0.488	0.493	0.000	0.000	0.000	-	-	-	-	-	-
67A011: <i>Space Analysis and Application Development</i>	-	0.464	0.498	0.000	0.000	0.000	-	-	-	-	-	-

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

The 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.

Mission Assurance (MA) is a DoD risk management effort, driven by DODD 3020.40 that seeks to ensure the availability of networked assets critical to DoD missions. "DoD will continue, under the MA construct and policy, existing efforts to meet national and Defense Critical Infrastructure (DCI) requirements established by PPD-21. Existing Department-level Defense Critical Infrastructure Program policy will remain effective until integrated into, replaced, or rescinded by MA policy. DoD Components will maintain sufficient resources to meet DCI responsibilities for identifying, assessing, managing, and monitoring risk to critical infrastructure and align associated security, protection, and risk management efforts under an MA construct." Critical infrastructure assets can include installations, facilities, antennas, vehicles, computing systems, and communications links. The USSTRATCOM 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)]. 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.

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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	0.988	0.993	1.004	0.000	1.004
Current President's Budget	0.952	0.991	0.000	0.000	0.000
Total Adjustments	-0.036	-0.002	-1.004	0.000	-1.004
• 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	-0.036	-0.002	-1.004	0.000	-1.004

**Change Summary Explanation**

Program terminated

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>	<b>Project (Number/Name)</b> 670373 / DCIP
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
670373: DCIP	-	0.488	0.493	0.000	0.000	0.000	-	-	-	-	-	-
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 beginning in FY16. THIS IS NOT A NEW START.

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

Mission Assurance (MA) is a DoD risk management effort, driven by DODD 3020.40 that seeks to ensure the availability of networked assets critical to DoD missions. "DoD will continue, under the MA construct and policy, existing efforts to meet national and Defense Critical Infrastructure (DCI) requirements established by PPD-21. Existing Department-level Defense Critical Infrastructure Program (DCIP) policy will remain effective until integrated into, replaced, or rescinded by MA policy. DoD Components will maintain sufficient resources to meet DCI responsibilities for identifying, assessing, managing, and monitoring risk to critical infrastructure and align associated security, protection, and risk management efforts under an MA construct." Critical infrastructure assets can include installations, facilities, antennas, vehicles, computing systems, and communications links.

The USSTRATCOM 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)]. 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 2020	FY 2021	FY 2022
<b>Title:</b> Mission Assurance Defense Critical Infrastructure Program	0.488	0.493	-
<b>Description:</b> Supports 1) systems engineering analysis for the decomposition of mission systems and assets, and supporting networks and infrastructure that execute USSTRATCOM missions, 2) research, studies, analysis, 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.			
<b>FY 2021 Plans:</b> Provide 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. Develop link-node display of systems connecting tasked missions and operational			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>	<b>Project (Number/Name)</b> 670373 / DCIP

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
plans to mission essential tasks and critical infrastructure assets. Identifies vulnerabilities, and participate in risk management process for remediation and mitigation.  No OCO Requested <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Project ends in FY21.			
<b>Accomplishments/Planned Programs Subtotals</b>	0.488	0.493	-

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

N/A

**Remarks**

The Defense Critical Infrastructure Program is an on-going program, cost to complete is N/A

**D. Acquisition Strategy**

Projects funded through DCIP will be awarded using competitive contracts to the maximum extent possible.



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>	<b>Project (Number/Name)</b> 670373 / <i>DCIP</i>

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b><i>Defense Critical Infrastructure Program</i></b>	
Asset Dependency, Risk Mitigation, Ops Research, Design/Development, Modeling and Simulation, Test and Evaluation...this is an on-going effort	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>	<b>Project (Number/Name)</b> 670373 / <i>DCIP</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Defense Critical Infrastructure Program</i></b>				
Asset Dependency, Risk Mitigation, Ops Research, Design/Development, Modeling and Simulation, Test and Evaluation...this is an on-going effort	1	2020	4	2021

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>				<b>Project (Number/Name)</b> 67A011 / <i>Space Analysis and Application Development</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
67A011: <i>Space Analysis and Application Development</i>	-	0.464	0.498	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The 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)**

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Title:</b> Data Integration and Fusion Center</p> <p><b>Description:</b> 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 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><b>FY 2021 Plans:</b> Investigate, experiment, and disseminate various Title 10 and Title 50 data sources from collection through dissemination to tactical platforms using machine to machine solutions to move data more efficiently and affect kill chain timelines.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Project ends in 2021</p>	0.464	0.498	-
<p><b>Title:</b> Space Analysis and Application Development</p> <p><b>Description:</b> The Space Analysis and Application Development program (Space Modeling and Simulation) transferred into the new USSPACECOM PE 1202140F.</p> <p><b>FY 2021 Plans:</b></p>	0.000	0.000	0.000



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>	<b>Project (Number/Name)</b> 67A011 / <i>Space Analysis and Application Development</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
See write-up in PE 1202140F				
<b>FY 2022 Plans:</b> N/A				
<b>Accomplishments/Planned Programs Subtotals</b>		0.464	0.498	0.000
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A				
<b>Remarks</b> Space Campaign Modeling and Simulation funding moved to the newly created USSPACECOM PE 1202140F beginning in FY20. All that will remain in BPAC 67A011 PE 1201921F is the Data Integration and Fusion Center RDT&E funding. It will be an on-going program. Cost to complete is N/A				
<b>D. Acquisition Strategy</b> 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-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>	<b>Project (Number/Name)</b> 67A011 / <i>Space Analysis and Application Development</i>
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Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Data Integration and Fusion Center	C/Various	Multiple Gov/Civ Agencies : Schriever AFB, CO	-	0.464	Jan 2020	0.498	Jan 2021	-		-		-	-	-	-
<b>Subtotal</b>			-	0.464		0.498		-		-		-	-	-	N/A

**Remarks**  
Best value to the government selected contractors, universities, government facilities, federally funded research and development centers, laboratories, or other organizations

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	-	0.464	0.498	-	-	-	-	-	N/A

**Remarks**  
Beginning in FY20 the RDT&E funding in the USSTRATCOM Space Analysis and Application Development program is transferring into the newly created PE 1202140F, USSPACECOM

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>	<b>Project (Number/Name)</b> 67A011 / <i>Space Analysis and Application Development</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b><i>Data Integration and Fusion Center</i></b>	
Continue to develop concepts to overcome data isolation	██████████
On-going effort to develop concepts to overcome data isolation in order to enable kill chains in the Joint Battlespace	██████████
Experimentation with current government owned software to inject and disseminate new data sources from Title 10 and Title 50 sensors	██████████

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1201921F / <i>Service Support to STRATCOM - Space Activities</i>	<b>Project (Number/Name)</b> 67A011 / <i>Space Analysis and Application Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Data Integration and Fusion Center</i></b>				
Continue to develop concepts to overcome data isolation	1	2020	4	2020
On-going effort to develop concepts to overcome data isolation in order to enable kill chains in the Joint Battlespace	1	2020	4	2020
Experimentation with current government owned software to inject and disseminate new data sources from Title 10 and Title 50 sensors	1	2021	4	2021

**Note**

Beginning in FY20 the funding portfolio for the Space Analysis Modeling and Simulation program within USSTRATCOM will transfer to the newly created PE 1202140F, USSPACECOM

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1202140F / <i>Service Support to SPACECOM Activities</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	11.429	8.983	6.737	0.000	6.737	-	-	-	-	-	-
672486: <i>JOINT NAVWAR CENTER (JNWC) SPACE ACTIVITIES</i>	-	7.033	7.484	5.195	0.000	5.195	-	-	-	-	-	-
67A011: <i>Space Analysis and Application Development</i>	-	4.396	1.499	1.542	0.000	1.542	-	-	-	-	-	-

**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 mission and campaign-level M&S tools. 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.

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. Funds are used to create and maintain NAVWAR knowledge. NAVWAR expertise is developed in part by execution of PNT Operational Field Assessments (POFAs). GYPSY POFA's are linked to Combatant Commander's (CCMD) Tier 1 exercises (USSTRATCOM's Global Lightning and Global Thunder are examples) and provide operational realistic threat-representative, GPS-contested environments for analytical assessment of air, ground, maritime, space & cyberspace mission capability. FORTUNE POFAs are PNT capability and vulnerability assessments associated with a Service exercise or mission event. PRISM POFAs encompass all Operations, Actions, and Activities (OAAs) associated with events outside of specific CCMD and/or service exercises or mission events. Assessments inform service acquisition decisions, capability gaps, intelligence gaps and tactics, techniques and procedures (TTP) development and implementation to mitigate effects on warfighter operations in the anticipated theater NAVWAR threat environments. JNWC assesses Department wide PNT posture through the PNT Annual assessment IAW DoDI 4650.08.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver Space Analysis and Application Development capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.0M was expended and in FY21 \$0.0M is forecasted for civilian pay expenses in this program element.

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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1202140F / <i>Service Support to SPACECOM Activities</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	11.863	8.999	9.179	0.000	9.179
Current President's Budget	11.429	8.983	6.737	0.000	6.737
Total Adjustments	-0.434	-0.016	-2.442	0.000	-2.442
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-0.016			
• 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	-0.434	0.000	-2.442	0.000	-2.442

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 1202140F / <i>Service Support to SPACE COM Activities</i>				<b>Project (Number/Name)</b> 672486 / <i>JOINT NAVWAR CENTER (JNWC) SPACE ACTIVITIES</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
672486: <i>JOINT NAVWAR CENTER (JNWC) SPACE ACTIVITIES</i>	-	7.033	7.484	5.195	0.000	5.195	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**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. Funds are used to create and maintain NAVWAR knowledge. NAVWAR expertise is developed in part by execution of PNT Operational Field Assessments (POFAs). GYPSY POFA's are linked to Combatant Commander's (CCMD) Tier 1 exercises (USSTRATCOM's Global Thunder and Global Lightning are examples) and provide operational realistic threat-representative, GPS-contested environments for analytical assessment of air, ground, maritime, space & cyberspace mission capability. FORTUNE POFAs are PNT capability and vulnerability assessments associated with a Service exercise or mission event. PRISM POFAs encompass all Operations, Actions, and Activities (OAAs) associated with events outside of specific CCMD and/or service exercises or mission events. Assessments inform service acquisition decisions, capability gaps, intelligence gaps and tactics, techniques and procedures (TTP) development and implementation to mitigate effects on warfighter operations in the anticipated theater NAVWAR threat environments. JNWC assesses department wide PNT posture through the PNT Annual assessment IAW DoDI 4650.08.

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> PNT Operational Assessments	7.033	7.484	5.195
<b>Description:</b> 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			
<b>FY 2021 Plans:</b> Continuing Operational assessments - Modeling and simulation equipment, to simulate potential threats (Red force vs Blue Force capabilities) and develop mitigation strategies for potential denial of blue force PNT capabilities.			
Continued development, scenario build, specialized equipment, to prevent the hostile use of Positioning, Navigation and Timing (PNT) information.			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1202140F / <i>Service Support to SPACE COM Activities</i>	<b>Project (Number/Name)</b> 672486 / <i>JOINT NAVWAR CENTER (JNWC) SPACE ACTIVITIES</i>
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<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p>Planned exercises - GYPSY x2 for Combatant Command objectives, Fortune exercises x4 are for Service objectives, and PRISM events (undetermined) are for all others.</p> <p><b>FY 2022 Plans:</b> Continuing Operational assessments - Modeling and simulation equipment, to simulate potential threats (Red force vs Blue Force capabilities)and develop mitigation strategies for potential denial of blue force PNT capabilities.</p> <p>Continued development, scenario build, specialized equipment, to prevent the hostile use of Positioning, Navigation and Timing (PNT) information.</p> <p>Planned exercises - GYPSY x2 for Combatant Command objectives, Fortune exercises x4 are for Service objectives, and PRISM events (undetermined) are for all others.</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Decrease in requirements</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	7.033	7.484	5.195

**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.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1202140F / Service Support to SPACE COM Activities	<b>Project (Number/Name)</b> 672486 / JOINT NAVWAR CENTER (JNWC) SPACE ACTIVITIES
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Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Product Development	C/CPAF	Not specified. : TBD	-	0.000		0.000		0.000		-		0.000	-	-	-
Position Navigation and Timing Operational Field Assessments	PO	Multiple, Kirtland AFB NM : Kirtland, NM	-	7.033	Oct 2019	7.484	Oct 2020	5.195	Oct 2021	-		5.195	-	-	-
<b>Subtotal</b>			-	7.033		7.484		5.195		-		5.195	-	-	N/A

**Remarks**  
Prior to the FY20 PB cycle, The Joint Navigation and Warfare Center (JNWC) was reported under PE 1201921F, WSC 672486. Beginning in FY20, the program will be reported under the newly created PE 1202140F, Service Support to U.S. SPACECOM Activities

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	-	7.033	7.484	5.195	-	5.195	-	-	N/A

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1202140F / <i>Service Support to SPACE COM Activities</i>	<b>Project (Number/Name)</b> 672486 / <i>JOINT NAVWAR CENTER (JNWC) SPACE ACTIVITIES</i>

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>Navigation Warfare (NAVWAR)</b>	
NAVWAR Operational Field Assessments - Continuing	
Create / Maintain NAVWAR Knowledge - Continuing	
NAVWAR Operational and CONOPS Events - Continuing	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1202140F / <i>Service Support to SPACE COM Activities</i>	<b>Project (Number/Name)</b> 672486 / <i>JOINT NAVWAR CENTER (JNWC) SPACE ACTIVITIES</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Navigation Warfare (NAVWAR)</i></b>				
NAVWAR Operational Field Assessments - Continuing	1	2020	4	2026
Create / Maintain NAVWAR Knowledge - Continuing	1	2020	4	2026
NAVWAR Operational and CONOPS Events - Continuing	1	2020	4	2026

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 1202140F / Service Support to SPACE COM Activities				<b>Project (Number/Name)</b> 67A011 / Space Analysis and Application Development			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
67A011: <i>Space Analysis and Application Development</i>	-	4.396	1.499	1.542	0.000	1.542	-	-	-	-	-	-
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 mission and campaign-level M&S tools. 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.

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Space Campaign Modeling and Simulation, Development/Modification/Verification/Validation	4.396	1.499	1.542
<b>Description:</b> Developed, modifies, verifies, and validates new models for Space mission areas and modifies existing models to portray new capabilities			
<b>FY 2021 Plans:</b>			
- Continue priority integration of 22 Joint Mission Threads, space-based capabilities, and counter-space effects on the Warfighter in STORM			
- Continue to develop change request proposals and submit to STORM Configuration Control Board (CCB) to improve instantiation of potential future and denied/degraded space-based capabilities and their effects on the Warfighter in STORM			
- In coordination with HAF A/9 (HQ Air Force Studies, Analysis, and Assessments), develop schedule to identify requirements toward implementation of approved change requests and instantiation of space and contested space capabilities in STORM			
- Develop and modify user-friendly, front-end campaign-level M&S software and tools supporting sufficiently accurate and very timely exploratory analytics to optimize more costly campaign-level STORM M&S, operational planning, gaming, and concept development			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1202140F / <i>Service Support to SPACE COM Activities</i>	<b>Project (Number/Name)</b> 67A011 / <i>Space Analysis and Application Development</i>

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<ul style="list-style-type: none"> <li>- Continue development of software and tools to model Red on Blue contested space (one versus one, many versus many, and space campaign-level) and analyze/assess results to determine impact/effects on U.S. military campaigns and global operations</li> <li>- Coordinate and update current and future Blue space order of battle data, Red counter-space order of battle data, Red counter-space CONOPS, future Blue and Red CONOPs to support integration of contested space into mission and campaign-level M&amp;S</li> <li>- Continue updates to software, tools, models, and data at the mission- and campaign-level to inform senior leaders evolving inquiries and decisions on space investments, requirements, acquisition, operational COAs, operational risk, and future planning</li> <li>- Assess and integrate enterprise-level model data for SATCOM capabilities into campaign-level modeling</li> <li>- In coordination with European Command, Indo-Pacific Command, other combatant commands, and respective USSPACECOM Integrated Planning Elements; explore improved integrated risk analysis with new campaign-level M&amp;S capabilities</li> <li>- Utilize updated tools and data to support analytical efforts in support of SPACECOM activities, new Space Analysis Consortium, and evolving space analytical capabilities; and collaborate with partners to inform senior leader forums and decisions on space investments, requirements, acquisition, and operational risk decisions</li> <li>- Support cost benefit analyses of Space Control activities with quantifiable impacts to warfighter operations</li> <li>- Provide analysis support to inform Air Force Space Command's Space Enterprise Vision (SEV)</li> </ul> <p><b>FY 2022 Plans:</b></p> <ul style="list-style-type: none"> <li>- Continue priority integration of 22 Joint Mission Threads, space-based capabilities, and counter-space effects on the Warfighter in STORM</li> <li>- Continue to develop change request proposals and submit to STORM Configuration Control Board (CCB) to improve instantiation of potential future and denied/degraded space-based capabilities and their effects on the Warfighter in STORM</li> <li>- In coordination with HAF A/9 (HQ Air Force Studies, Analysis, and Assessments), develop schedule to identify requirements toward implementation of approved change requests and instantiation of space and contested space capabilities in STORM</li> </ul>			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1202140F / <i>Service Support to SPACE COM Activities</i>	<b>Project (Number/Name)</b> 67A011 / <i>Space Analysis and Application Development</i>		
<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<ul style="list-style-type: none"> <li>- Develop and modify user-friendly, front-end campaign-level M&amp;S software and tools supporting sufficiently accurate and very timely exploratory analytics to optimize more costly campaign-level STORM M&amp;S, operational planning, gaming, and concept development</li> <li>- Continue development of software and tools to model Red on Blue contested space (one versus one, many versus many, and space campaign-level) and analyze/assess results to determine impact/effects on U.S. military campaigns and global operations</li> <li>- Coordinate and update current and future Blue space order of battle data, Red counter-space order of battle data, Red counter-space CONOPS, future Blue and Red CONOPs to support integration of contested space into mission and campaign-level M&amp;S</li> <li>- Continue updates to software, tools, models, and data at the mission- and campaign-level to inform senior leaders evolving inquiries and decisions on space investments, requirements, acquisition, operational COAs, operational risk, and future planning</li> <li>- Assess and integrate enterprise-level model data for SATCOM capabilities into campaign-level modeling</li> <li>- In coordination with European Command, Indo-Pacific Command, other combatant commands, and respective USSPACECOM Integrated Planning Elements; explore improved integrated risk analysis with new campaign-level M&amp;S capabilities</li> <li>- Utilize updated tools and data to support analytical efforts in support of SPACECOM activities, new Space Analysis Consortium, and evolving space analytical capabilities; and collaborate with partners to inform senior leader forums and decisions on space investments, requirements, acquisition, and operational risk decisions</li> <li>- Support cost benefit analyses of Space Control activities with quantifiable impacts to warfighter operations</li> <li>- Provide analysis support to inform Air Force Space Command's Space Enterprise Vision (SEV)</li> </ul> <p><b><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i></b> Project varies by year</p>				
<b>Accomplishments/Planned Programs Subtotals</b>		4.396	1.499	1.542
<b>C. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>Remarks</b>				

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1202140F / <i>Service Support to SPACE COM Activities</i>	<b>Project (Number/Name)</b> 67A011 / <i>Space Analysis and Application Development</i>

**D. Acquisition Strategy**

Any new projects funded in this program will be awarded using competitive procedures to the maximum extent possible.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1202140F / Service Support to SPACE COM Activities	<b>Project (Number/Name)</b> 67A011 / Space Analysis and Application Development
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<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Product Development	C/CPAF	Not specified. : TBD	-	0.000		0.000		0.000		-		0.000	-	-	-
Model Space effects for two mission tasks and integrate into STORM for joint campaign analysis	C/CPAF	TBD : TBD	-	4.396	Oct 2019	1.499	Oct 2020	1.542	Oct 2021	-		1.542	-	-	-
<b>Subtotal</b>			-	4.396		1.499		1.542		-		1.542	-	-	N/A

**Remarks**  
Prior to the FY20 PB cycle, The Space Analysis and Application Development Program was reported under PE 1201921F, WSC 67A011. Beginning in FY20, the program will be reported under the newly created PE 1202140F, USSPACECOM

	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	-	4.396	1.499	1.542	-	1.542	-	-	N/A

**Remarks**  
Prior to the FY20 PB cycle, The Space Analysis and Application Development Program was reported under PE 1201921F, WSC 67A011. Beginning in FY20, the program will be reported under the newly created PE 1202140F, USSPACECOM



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1202140F / <i>Service Support to SPACE COM Activities</i>	<b>Project (Number/Name)</b> 67A011 / <i>Space Analysis and Application Development</i>

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>Space Analysis Modeling and Simulation</b>	
Identify and develop additional Joint Mission Threads for integration into mission and campaign level modeling	██████████
Identify and develop additional Joint Mission Threads and Space Mission Threads for integration into mission and campaign level modeling	██████████
Complete mission-level modeling and analysis for Joint Mission Threads and Space Mission Threads	██████████
Run improved STORM model and update integrated risk analysis with Combatant Commands	██████████
Develop software and tools to model Red on Blue contested space environment. Develop space playbook to define Red counter-space threat	██████████
Update mission and campaign level M&S to inform senior leaders evolving inquiries and decisions on innovation, space investments, rapid acquisition, operational COAs, risk, and planning	██

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1202140F / <i>Service Support to SPACE COM Activities</i>	<b>Project (Number/Name)</b> 67A011 / <i>Space Analysis and Application Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Space Analysis Modeling and Simulation</i></b>				
Identify and develop additional Joint Mission Threads for integration into mission and campaign level modeling	1	2020	4	2020
Identify and develop additional Joint Mission Threads and Space Mission Threads for integration into mission and campaign level modeling	1	2021	4	2021
Complete mission-level modeling and analysis for Joint Mission Threads and Space Mission Threads	1	2022	4	2022
Run improved STORM model and update integrated risk analysis with Combatant Commands	1	2023	4	2023
Develop software and tools to model Red on Blue contested space environment. Develop space playbook to define Red counter-space threat	1	2024	4	2024
Update mission and campaign level M&S to inform senior leaders evolving inquiries and decisions on innovation, space investments, rapid acquisition, operational COAs, risk, and planning	1	2025	4	2026

**Note**

Prior to the FY20 PB cycle, The Space Analysis and Application Development Program was reported under PE 1201921F, WSC 67A011. Beginning in FY20, the program will be reported under the newly created PE 1202140F, USSPACECOM

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	173.903	0.000	0.000	0.000	0.000	-	-	-	-	-	-
672490: <i>Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)</i>	0.000	15.502	0.000	0.000	0.000	0.000	-	-	-	-	-	-
673035: <i>Presidential and National Voice Conferencing</i>	0.000	51.361	0.000	0.000	0.000	0.000	-	-	-	-	-	-
673040: <i>Force Element Terminal</i>	0.000	107.040	0.000	0.000	0.000	0.000	-	-	-	-	-	-

**Program MDAP/MAIS Code:** 199

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

In FY2021, PE 1203001F, Family of Advanced BLoS Terminals efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1203001SF, Family of Advanced BLoS Terminals from Appropriation 3600, Budget Activity 7 due to the creation of a new Appropriation for Space Force.

The FAB-T project 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 the new, highly secure, state-of-the-art capability for DoD platforms to include strategic platforms and airborne/ground command posts via Milstar, and AEHF Satellites. FAB-T terminals will also support the critical command and control (C2) of the Milstar and AEHF satellite constellations. The Air Force will continue development of the FAB-T Command Post Terminal(CPT), performing activities to meet current and future emerging SATCOM requirements.

The Force Element Terminal (FET) project provides secure, protected, and survivable communications for the strategic and tactical warfighter through airborne based MILSATCOM terminals. The FET will provide the B-52, and RC-135 aircraft with worldwide nuclear and non-nuclear survivable, anti-jam Low Probability of Detect (LPD)/ Low Probability of Intercept (LPI), data and voice communications. The FET will be interoperable with Milstar, AEHF, Enhanced Polar Systems - Recapitalization (EPS-R), and Evolved Strategic SATCAM (ESS) Satellite constellations utilizing both Low Data Rate (LDR) and Extended Data Rate (XDR) waveforms.

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 the capability. The PNVC Integrator is responsible for end-to-end integration of these components, to include requirements traceability, end-to-end system testing, configuration and checkout activities, training and technical manuals, network transition support, identification of deficiencies in overall PNVC system capability, enterprise and life cycle support for PNVC components. The AFPEO-SP approved entry into the acquisition lifecycle as post MS-A ACAT III Program of Record in January 2016. Starting in December 2018 PNVC Integrator is responsible for all program elements' requests for funding related to the Defense Information Systems and Agency (DISA) components of the PNVC System in accordance with FY 2018 National Defense Authorization Act, Sec. 1661.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i>
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In February 2019 the AFPEO/NC declared the PNVC Integrator an ACAT II Program based on the updated approved budget request.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver FAB-T weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F.

As directed in the FY 2018 NDAA, Sec 825, amendment to PL 114-92 FY 2016 NDAA, Sec 828 Penalty for Cost Overruns, the calculated percentage reduction to each research, development, test and evaluation and procurement account will be allocated proportionally from all programs, projects, or activities under such account.

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.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	195.288	0.000	0.000	0.000	0.000
Current President's Budget	173.903	0.000	0.000	0.000	0.000
Total Adjustments	-21.385	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	-8.885	0.000			
• OMNIBUS	-12.500	0.000	0.000	0.000	0.000

**Change Summary Explanation**

FY 2020: -5M Congressional mark due to underexecution; -5.9M SBIR Tax; -12.5M OMNIBUS rephrase; -3.437M FET SBIR reduction; -2.050M PNVC SBIR reduction; -0.498M CPT SBIR reduction

FY 2021: -246M Funds transferred from RDT&E, Air Force to RDT&E, Space Force

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 1203001F / Family of Advanced BLoS Terminals (FAB-T)				<b>Project (Number/Name)</b> 672490 / Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
672490: Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)	0.000	15.502	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

In FY2021, PE 1203001F, Family of Advanced BLoS Terminals efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1203001SF, Family of Advanced BLoS Terminals from Appropriation 3600, Budget Activity 7 due to the creation of a new Appropriation for Space Force.

In FY 2020 PE 1203001F, Project 672490, transferred to PE 1203001F, Project 673035 for PNVC and Project 673040 for FET for program transparency.

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.

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> FAB-T CPT Development	15.502	0.000	0.000
<b>Description:</b> 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.			
<b>FY 2021 Plans:</b> The FAB-T program will continue to 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. Additional development will be for National Security Agency (NSA) AEHF terminal certification.			
<b>FY 2022 Plans:</b> N/A			
<b>Title:</b> PNVC Integrator	0.000	0.000	0.000

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203001F / Family of Advanced BLoS Terminals (FAB-T)	<b>Project (Number/Name)</b> 672490 / Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Description:</b> 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 configuration of hardware from these other programs. PNVC components will be installed at ground fixed and mobile command locations, as well as three aircraft platforms.</p> <p><b>FY 2021 Plans:</b> N/A</p> <p><b>FY 2022 Plans:</b> N/A</p>			
<p><b>Title:</b> FAB-T FET</p> <p><b>Description:</b> Funding ensures the continued development of Force Element Terminals. Development activities related to FET design, development and qualification testing will be executed.</p> <p><b>FY 2021 Plans:</b> N/A</p> <p><b>FY 2022 Plans:</b> N/A</p>	0.000	0.000	0.000
<b>Accomplishments/Planned Programs Subtotals</b>	15.502	0.000	0.000

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

<b>Line Item</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• APAF 05 FBLOST: FAB-T	9.610	0.000	0.000	-	0.000	-	-	-	-	-	-
• SPAF 01 FBLOST: FAB-T	32.105	0.000	0.000	-	0.000	-	-	-	-	-	-
• SPAF 01 PNVC: PNVC	1.915	0.000	0.000	-	0.000	-	-	-	-	-	-
• SPAF 01 FAB-T: FAB-T	0.000	0.000	0.000	-	0.000	-	-	-	-	-	-
• SPAF 02 SSPARE Spares and Repair...: FAB-T	0.057	0.000	0.000	-	0.000	-	-	-	-	-	-

**Remarks**

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force		Date: May 2021
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)

**D. 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.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203001F / Family of Advanced BLoS Terminals (FAB-T)	<b>Project (Number/Name)</b> 672490 / Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)
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<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
FAB-T CPT Prime Contract	C/Various	Raytheon : Marlboro, MA	0.000	14.863	Oct 2019	-		-		-		-	-	-	-
FAB-T CPT Technical Mission Analysis	Various	MITRE : Various, MA	0.000	0.449	Jan 2020	-		-		-		-	-	-	-
FAB-T CPT GFE	Various	TBD: TBD : Various, MA	0.000	-		-		-		-		-	-	-	-
FAB-T FET Prime Contracts	Various	Various : Various, MA	0.000	-		-		-		-		-	-	-	-
FAB-T FET Technical Mission Analysis	Various	Various : Various, MA	0.000	-		-		-		-		-	-	-	-
PNVC Prime Contract	Various	Various : Various, MA	0.000	-		-		-		-		-	-	-	-
PNVC Technical Mission Analysis	Various	Various : Various, MA	0.000	-		-		-		-		-	-	-	-
PNVC Enterprise SE&I	Various	Various : Various, MA	0.000	-		-		-		-		-	-	-	-
PNVC GFE/GFP	Various	Various : Various, MA	0.000	-		-		-		-		-	-	-	-
<b>Subtotal</b>			0.000	15.312		-		-		-		-	-	-	N/A

<b>Management Services (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
FAB-T CPT FFRDC	Various	Various : TBD	0.000	0.086	Oct 2019	-		-		-		-	-	-	-
FAB-T FET Other Support	Various	Various : MA	0.000	-		-		-		-		-	-	-	-
FAB-T FET A&AS	Various	Various : MA	0.000	-		-		-		-		-	-	-	-
PNVC FFRDC	MIPR	Various : CA	0.000	-		-		-		-		-	-	-	-
PNVC A&AS	Various	Various : TBD	0.000	-		-		-		-		-	-	-	-
PNVC Other Support	Various	Various : MA	0.000	-		-		-		-		-	-	-	-
FAB-T CPT Other Support	Various	Various : MA	0.000	0.104	Nov 2019	-		-		-		-	-	-	-



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203001F / Family of Advanced BLoS Terminals (FAB-T)	<b>Project (Number/Name)</b> 672490 / Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)
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<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
<b>Subtotal</b>			0.000	0.190		-		-		-		-	-	-	N/A
<b>Project Cost Totals</b>			0.000	15.502		0.000		-		-		-	-	-	N/A

**Remarks**  
 Prior Years funding, FY 2016/FY 2017 \$95.229M was executed in PE 0303001F. Prior to FY 2016, \$180.602M was executed in PE 0303601F.

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i>	<b>Project (Number/Name)</b> 672490 / <i>Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>FAB-T</b>																												
FAB-T CPT Raytheon Development Contract																												
FAB-T CPT Government Test Support																												
FAB-T CPT AEHF Terminal Certification																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i>	<b>Project (Number/Name)</b> 672490 / <i>Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>FAB-T</i></b>				
FAB-T CPT Raytheon Development Contract	1	2020	2	2020
FAB-T CPT Government Test Support	1	2020	2	2020
FAB-T CPT AEHF Terminal Certification	2	2020	2	2020

**Note**  
FAB-T Raytheon Development Contract actual award date 4Q 2012, completion is 2Q 2020.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 1203001F / Family of Advanced BLoS Terminals (FAB-T)				<b>Project (Number/Name)</b> 673035 / Presidential and National Voice Conferencing			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
673035: Presidential and National Voice Conferencing	0.000	51.361	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

In FY2021, PE 1203001F, Family of Advanced BLoS Terminals efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1203001SF, Family of Advanced BLoS Terminals from Appropriation 3600, Budget Activity [07] due to the creation of a new Appropriation for Space Force.

In FY 2020 PE 1203001F, the PNVC effort in Project 672490 transferred to PE 1203001F, Project 673035, PNVC, for additional transparency.

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, configuration and checkout activities, training and technical manuals, network transition support, identification of deficiencies in overall PNVC system capability, enterprise and life cycle 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. In February 2019 the AF PEO/NC declared the PNVC Integrator an ACAT II Program based on updated approved budget request.

Starting in December 2018, PNVC Integrator is responsible for all program elements' requests for funding related to the Defense Information Systems Agency (DISA) components of the PNVC System in accordance with FY 2018 National Defense Authorization Act, Sec. 1661.

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

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

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> PNVC Integrator	51.361	0.000	0.000
<b>Description:</b> 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 configuration of hardware from these other programs. PNVC components will be installed at ground fixed and mobile command locations as well as three aircraft platforms.			

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i>	<b>Project (Number/Name)</b> 673035 / <i>Presidential and National Voice Conferencing</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b><i>FY 2021 Plans:</i></b>                      PNVC Integrator government team will conduct Phase 2 Developmental Test for the remaining operational nodes and end-to-end system test with support from the integrator contractor. In parallel, the integrator contractor and component contractors will continue to resolve any hardware and software deficiencies identified during test, conduct regression and interoperability testing using both contractor and government test laboratories, and conduct planning for future planned system upgrades. The PNVC Integrator will also conduct integration and checkout activities and training at remaining operational sites world-wide, conduct cybersecurity testing, and continue to work closely with sustainment organizations on the preparations for transition to depot support.</p> <p>PNVC Integrator activities will include but are not limited to program office support, studies, technical analysis, prototyping, test planning and execution, deficiency resolution, logistics and sustainment support planning, component product support, risk reduction activities, technical analysis and studies, platform integration support, and integration laboratory support.</p> <p>Rapidly respond to implement system resiliency and situational awareness necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, experimentation, prototyping, etc.</p> <p><i>FY 2020 to FY 2021 Increase/Decrease Statement:</i>                      FY2020 PB to FY2021 PB PNVC Decreased by \$3.184M. In FY2021 PNVC will continue developmental tests, resolve any hardware and software deficiencies, conduct integration and checkout activities and training at remaining operational sites and continue to work closely with sustainment organizations on the preparations for transition to depot support.</p> <p><b><i>FY 2022 Plans:</i></b>                      N/A</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	51.361	0.000	0.000

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APAF 05 FBLOST: <i>FAB-T</i>	9.610	1.575	0.000	-	0.000	-	-	-	-	-	-
• SPAF 01 FBLOST: <i>FAB-T</i>	32.105	60.994	34.100	-	34.100	-	-	-	-	-	-
• SPAF 01 PNVC: <i>PNVC</i>	1.915	5.244	5.877	-	5.877	-	-	-	-	-	-
• SPAF 01 FET: <i>FET</i>	0.000	0.000	0.000	-	0.000	-	-	-	-	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i>	<b>Project (Number/Name)</b> 673035 / <i>Presidential and National Voice Conferencing</i>

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

Line Item	FY 2020	FY 2021	FY 2022	FY 2022	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Cost To	Total Cost
			Base	OCO	Total					Complete	
• SPAF 02 SSPARE Spares and Repair....: FAB-T	0.057	0.000	0.000	-	0.000	-	-	-	-	-	-

**Remarks**

In FY 2020, PE 1203001F, PE Family of Advanced Beyond Line-of-Sight Terminals, Project 673035, Presidential and National Voice Conferencing efforts were transferred from PE 1203001F, PE Family of Advanced Beyond Line-of-Sight Terminals, Project 672490, Family of Advanced Beyond Line-of-Sight Terminals.

**D. Acquisition Strategy**

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. In February 2019 the AF PEO/NC declared the PNVC Integrator an ACAT II Program based on updated approved budget request. The PNVC End-to-End Integrator program is responsible for requirements traceability, End-to-End system testing, site configuration activities, training and technical manuals, network transition support, identifying deficiencies in the PNVC capability, and enterprise and life cycle support for all PNVC components. Starting in December 2018 PNVC Integration is responsible for all program elements' requests for funding related to the Defense Information Systems and Agency (DISA) components of the PNVC System in accordance with FY 2018 National Defense Authorization Act, Sec. 1661.

PNVC will continue to support component fielding, conduct site integration and checkout, and prepare for and execute integrated developmental test activities in advance of the PNVC system Initial Operating Capability.

Beginning in FY2020, all PNVC funds were transferred from DISA to BPAC 673035, for execution.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203001F / Family of Advanced BLoS Terminals (FAB-T)	<b>Project (Number/Name)</b> 673035 / Presidential and National Voice Conferencing
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<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Product Development	C/CPAF	Not specified. : TBD	0.000	-		-		-		-		-	-	-	-
PNVC Prime Contract	Various	Various : Various, MA	0.000	34.143	Nov 2019	-		-		-		-	-	-	-
PNVC Technical Mission Analysis	Various	Various : Various, MA	0.000	3.980	Dec 2019	-		-		-		-	-	-	-
PNVC Enterprise SE&I	Various	Various : Various, MA	0.000	4.075	Dec 2019	-		-		-		-	-	-	-
PNVC GFE/GFP	Various	Various : Various, MA	0.000	-		-		-		-		-	-	-	-
<b>Subtotal</b>			0.000	42.198		-		-		-		-	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Test and Evaluation	C/CPAF	Not specified. : TBD	0.000	-		-		-		-		-	-	-	-
PNVC Government Test and LDTO Support	Various	Various : Various	0.000	1.081	Apr 2020	-		-		-		-	-	-	-
<b>Subtotal</b>			0.000	1.081		-		-		-		-	-	-	N/A

<b>Management Services (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
Management Services	C/CPAF	Not specified. : TBD	0.000	-		-		-		-		-	-	-	-
PNVC FFRDC	MIPR	TBD : TBD	0.000	5.616	Nov 2019	-		-		-		-	-	-	-
PNVC A&AS	Various	Various : Various TBD	0.000	1.941	Dec 2019	-		-		-		-	-	-	-
PNVC Other Support	Various	Various : MA	0.000	0.525	Nov 2019	-		-		-		-	-	-	-
<b>Subtotal</b>			0.000	8.082		-		-		-		-	-	-	N/A

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2022 Air Force</b>										<b>Date: May 2021</b>			
<b>Appropriation/Budget Activity</b> 3600 / 7				<b>R-1 Program Element (Number/Name)</b> PE 1203001F / Family of Advanced BLoS Terminals (FAB-T)				<b>Project (Number/Name)</b> 673035 / Presidential and National Voice Conferencing					
	<b>Prior Years</b>	<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	0.000	51.361		0.000		-		-		-	-	-	N/A

**Remarks**  
 In FY 2020, PE 1203001F, PE Family of Advanced Beyond Line-of-Sight Terminals, Project 673035, Presidential and National Voice Conferencing efforts were transferred from PE 1203001F, PE Family of Advanced Beyond Line-of-Sight Terminals, Project 672490, Family of Advanced Beyond Line-of-Sight Terminals.



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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i>	<b>Project (Number/Name)</b> 673035 / <i>Presidential and National Voice Conferencing</i>

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b><i>PNVC Integrator</i></b>	
Phase I Ground Development Test 1	
Test, Integration, & Check Out	
Deficiency Workoff	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i>	<b>Project (Number/Name)</b> 673035 / <i>Presidential and National Voice Conferencing</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>PNVC Integrator</i></b>				
Phase I Ground Development Test 1	2	2020	3	2020
Test, Integration, & Check Out	1	2020	1	2020
Deficiency Workoff	1	2020	1	2020

**Note**

FAB-T / FET was started in prior year BPAC 672490.

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203001F / Family of Advanced BLoS Terminals (FAB-T)	<b>Project (Number/Name)</b> 673040 / Force Element Terminal
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
673040: Force Element Terminal	0.000	107.040	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

In FY2021, PE 1203001F, Family of Advanced BLoS Terminals efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1203001SF, Family of Advanced BLoS Terminals from Appropriation 3600, Budget Activity [07] due to the creation of a new Appropriation for Space Force.

In FY 2020, PE 1203001F, Family of Advanced Beyond Line-of-Sight Terminals, Project 673040, Force Element Terminal efforts were transferred from PE 1203001F, PE Family of Advanced Beyond Line-of-Sight Terminals, Project 672490, Family of Advanced Beyond Line of Sight Terminals to provide program transparency.

The Force Element Terminal (FET) program provides secure, protected, and survivable communications for the strategic and tactical warfighter through airborne based MILSATCOM terminals. The FET will provide the B-52, and RC-135 aircraft with worldwide nuclear and non-nuclear survivable, anti-jam, Low Probability of Detect (LPD)/Low Probability of Intercept (LPI), data and voice communications. The FET will be interoperable with Milstar, AEHF, Enhanced Polar Systems - Recapitalization (EPS-R), and Evolved Strategic SATCOM (ESS) Satellite constellations utilizing both Low Data Rate (LDR) and Extended Data Rate (XDR) waveforms.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver FAB-T FET weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F.

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

	FY 2020	FY 2021	FY 2022
<b>Title:</b> FAB-T FET	107.040	0.000	0.000
<b>Description:</b> Description: Continue development of Force Element Terminals. Development activities include, but are not limited to, FET design, development and qualification testing.			
<b>FY 2021 Plans:</b> N/A			
<b>FY 2022 Plans:</b> N/A			
<b>Accomplishments/Planned Programs Subtotals</b>	107.040	0.000	0.000

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203001F / Family of Advanced BLoS Terminals (FAB-T)	<b>Project (Number/Name)</b> 673040 / Force Element Terminal

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

Line Item	FY 2020	FY 2021	FY 2022	FY 2022	FY 2022	FY 2023	FY 2024	FY 2025	FY 2026	Cost To	
			Base	OCO	Total					Complete	Total Cost
• RDTE 04 672490: FET	0.000	0.000	0.000	-	0.000	-	-	-	-	-	-
• APAF 05 FBLOST: FAB-T	9.610	0.000	0.000	-	0.000	-	-	-	-	-	-
• SPAF 01 FBLOST: FAB-T	32.105	0.000	0.000	-	0.000	-	-	-	-	-	-
• RDTE 07 PNVC: PNVC	0.000	0.000	0.000	-	0.000	-	-	-	-	-	-
• APAF 06 Aircraft Spares and Repa...: FAB-T	0.000	0.000	0.000	-	0.000	-	-	-	-	-	-
• SPAF 02 SSPARE Spares and Repair...: FAB-T	0.057	0.000	0.000	-	0.000	-	-	-	-	-	-

**Remarks**

**D. Acquisition Strategy**

FET Acquisition Strategy: Per the Acquisition Strategy Panel briefed to SAF/AQ on February 7, 2019, FET is pursuing a Rapid Prototyping development Section 804 approach of the National Defense Authorization Act for FY 2016 (Public Law 114-92). FET will award a development effort in FY 2020 leading to a production decision in FY 2023. The development effort includes system design and build of sufficient test assets to allow for expeditious development, testing, qualification and integration support of the FET capability. FET will meet B-52 and RC-135 platform requirements to support USSTRATCOM's Strategic Nuclear Command Control and Communication (NC3) mission.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force												Date: May 2021				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 7				PE 1203001F / Family of Advanced BLoS Terminals (FAB-T)				673040 / Force Element Terminal								
<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
Product Development	C/CPAF	Not specified. : TBD	0.000	-		-		-		-		-	-	-	-	
FAB-T FET Development Contracts	Various	TBD : TBD, MA	0.000	85.988	Dec 2019	-		-		-		-	-	-	-	
FAB-T FET Technical Mission Analysis	Various	TBD : TBD, MA	0.000	0.303	Dec 2019	-		-		-		-	-	-	-	
<b>Subtotal</b>			0.000	86.291		-		-		-		-	-	-	N/A	
<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
Support	C/CPAF	Not specified. : TBD	0.000	-		-		-		-		-	-	-	-	
FAB-T FET Enterprise SE&I	Various	Various : Various, MA	0.000	0.315		-		-		-		-	-	-	-	
<b>Subtotal</b>			0.000	0.315		-		-		-		-	-	-	N/A	
<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Test and Evaluation	C/CPAF	Not specified. : TBD	0.000	-		-		-		-		-	-	-	-	
FAB-T FET Test & Evaluation and Assets	PO	Multiple Agencies : TBD	0.000	5.864	Jan 2020	-		-		-		-	-	-	-	
<b>Subtotal</b>			0.000	5.864		-		-		-		-	-	-	N/A	
<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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	
Management Services	C/CPAF	Not specified. : TBD	0.000	-		-		-		-		-	-	-	-	

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203001F / Family of Advanced BLoS Terminals (FAB-T)	<b>Project (Number/Name)</b> 673040 / Force Element Terminal
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<b>Management Services (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
FAB-T FET Other Support	Various	Various : Various, MA	0.000	0.670	Oct 2019	-		-		-		-	-	-	-
FAB-T FET FFRDC	Various	Various : Various, MA	0.000	7.100	Oct 2019	-		-		-		-	-	-	-
FAB-T FET A&AS	Various	Various : Various, MA	0.000	6.800	Jan 2020	-		-		-		-	-	-	-
<b>Subtotal</b>			0.000	14.570		-		-		-		-	-	-	N/A

<b>Project Cost Totals</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
	0.000	107.040	0.000	-	-	-	-	-	N/A

**Remarks**  
 In FY 2020, PE 1203001F, PE Family of Advanced Beyond Line-of-Sight Terminals, Project 673040, Force Element Terminal efforts were transferred from PE 1203001F, PE Family of Advanced Beyond Line-of-Sight Terminals, Project 672490, Family of Advanced Beyond Line of Sight Terminals.

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i>	<b>Project (Number/Name)</b> 673040 / <i>Force Element Terminal</i>

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>FET</b>	
FAB-T Force Element Terminal Development	
FAB-T FET Parts Hardness Testing	
FAB-T FET Design, Fabrication and Development of Prototypes and Test Assets	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203001F / <i>Family of Advanced BLoS Terminals (FAB-T)</i>	<b>Project (Number/Name)</b> 673040 / <i>Force Element Terminal</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>FET</i></b>				
FAB-T Force Element Terminal Development	1	2020	4	2020
FAB-T FET Parts Hardness Testing	1	2020	1	2020
FAB-T FET Design, Fabrication and Development of Prototypes and Test Assets	1	2020	4	2020



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203110F / <i>Satellite Control Network (SPACE)</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	54.850	0.000	0.000	0.000	0.000	-	-	-	-	-	-
673276: <i>Satellite Control Network</i>	-	54.850	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

In FY2021, PE 1203110F, Satellite Control Network (SPACE) efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1203110SF Satellite Control Network (SPACE) from Appropriation 3600, Budget Activity 07 due to the creation of a new Appropriation for Space Force.

FY 2020 received a Congressional mark that reduces DCO-S by -\$5M for unjustified request. That reduction was not accounted for correctly in the database and reflected a -\$4M reduction.

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 over 170 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 490 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 2019 the AFSCN supported 11 space vehicle emergencies resulting in the preservation of \$4.1B 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 2019, the AFSCN supported 19 launches delivering \$13.7B 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 Community, and civil users. These efforts support cyber hardening, Defensive Cyberspace Operations (DCO-S) and and Systems Engineering & Integration (SE&I) activities for the space enterprise, as well as align with the evolving future space domain demands through Resilient Enterprise Ground (REG) to include transmit and receive, and data transport.

AFSCN Deficiency Resolution: Provides test, cyber security, requirements management, and system architecture support to the AFSCN.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203110F / <i>Satellite Control Network (SPACE)</i>
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Resilient Enterprise Ground (REG): Provides the means to communicate with all future spacecraft through diverse communication networks. The program is pursuing more capable ground based antennas, space based communication links, augmenting the existing ASFCN with commercial and civil antennas, upgrading satellite scheduling to commercial standards, and developing infrastructure for long haul communications driven by increase in antennas, cyber security and resilience requirements.

In FY 2021, Defensive Cyber Operations Space (DCO-S) funds in PE 1203614F JSpOC Mission System moved to PE 1203110F Satellite Control Network to consolidate Air Force Space DCO-S development activities.

Space acquisition must respond with speed and agility to emerging adversary threats. Space & Missile Systems Center (SMC) has transformed the organization and implementation of space acquisition to an enterprise approach, maximizing innovation and resiliency, leveraging international, commercial, and mission partnerships, and managing program /project priorities according to an integrated unclassified /classified enterprise space architecture. Expanding the appropriate acquisition authorities and contract mechanisms to deliver capability sooner, SMC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or re-purpose capabilities.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver AFSCN weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392F and 1206398F.

Funding in this exhibit was previously budgeted in PE 0305110F Satellite Control Network.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	57.891	0.000	0.000	0.000	0.000
Current President's Budget	54.850	0.000	0.000	0.000	0.000
Total Adjustments	-3.041	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	-2.041	0.000			
• Other Adjustments	-1.000	0.000	0.000	0.000	0.000

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 1203110F / <i>Satellite Control Network (SPACE)</i>		
<b>Change Summary Explanation</b> Correct previous President's budget is \$56.891M. Added "other adjustment" in order to retain correct SBIR value.				
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> AFSCN Deficiency Resolution		1.355	0.000	0.000
<b>Description:</b> Provides test, cyber security, requirements management, and system architecture support to the AFSCN. Additionally, the Air Force is investigating multiple cyber defense tools for integration onto the AFSCN baseline.				
<b>FY 2021 Plans:</b> N/A				
<b>FY 2022 Plans:</b> N/A				
<b>Title:</b> Satellite Operations Transmit and Receive		9.704	0.000	0.000
<b>Description:</b> Provide enterprise transmit, receive and resource management solutions to enable continuous satellite operations (SATOPS) during contested, degraded and operationally denied environment.				
<b>FY 2021 Plans:</b> N/A				
<b>FY 2022 Plans:</b> N/A				
<b>Title:</b> Defensive Cyberspace Operations - Space (DCO-S)		40.061	0.000	0.000
<b>Description:</b> FY 2020 received a Congressional mark that reduces DCO-S by -\$5M for unjustified request. That reduction was not accounted for correctly in the database and reflected a -\$4M reduction. The correct total for DCO-S in FY 2020 is \$41M, not \$42M.				
Funding supports cyber hardening and Defensive Cyberspace Operations for Space (DCO-S) activities for the space enterprise. Provides space enterprise defensive cyber solutions to counter advanced persistence cyber threats, through rapid fielding of operational prototypes using agile development methods.				
This effort implements a combined Development/Security/Operations (DEVSECOPS) framework which incorporates methodologies, technologies, and tools to deeply embed security best practices into the modern development workflow and tool-chain. This effort will institute four product lines: Manticore (detect), Pegasus (protect), Chimera (identify), and Kraken (respond).				

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203110F / <i>Satellite Control Network (SPACE)</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
The DCO-S capabilities are developed and deployed as an agile program, leveraging a DEVSECOPS framework to facilitate rapid and timely fielding to operations.			
<b>FY 2021 Plans:</b> N/A			
<b>FY 2022 Plans:</b> N/A			
<b>Title:</b> Enterprise Systems Engineering and Integration	3.730	0.000	0.000
<b>Description:</b> 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 baselines are synchronized. SE&I will develop and recommend investment strategies to keep the AFSCN operating well beyond the Future Years Defense Plan.			
<b>FY 2021 Plans:</b> N/A			
<b>FY 2022 Plans:</b> N/A			
<b>Accomplishments/Planned Programs Subtotals</b>	54.850	0.000	0.000

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• SPAF 01 Line Item AFSCOM: <i>AF Satellite Comm System</i>	60.948	0.000	0.000	-	0.000	-	-	-	-	-	-
• RDTE 07 1203182F: <i>Spacelift Range System (SPACE)</i>	20.837	0.000	0.000	-	0.000	-	-	-	-	-	-

**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.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

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

**R-1 Program Element (Number/Name)**  
PE 1203110F / *Satellite Control Network (SPACE)*

Limited RDT&E will be applied to the Consolidated AFSCN Modifications, Maintenance, and Operations (CAMMO) contract when sustaining engineering expertise is needed to finalize Government-approved architectures. Federally Funded Research and Development Corporation 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.

Resilient Enterprise Ground (REG) activities will leverage existing prototypes and risk reduction activities. The Air Force plans to pursue the use of Other Transaction Authority for Resilient Enterprise Ground for Multi Band Multi Mission (MBMM) and Commercial Augmentation Segmentation (CAS).

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203110F / <i>Satellite Control Network (SPACE)</i>	<b>Project (Number/Name)</b> 673276 / <i>Satellite Control Network</i>
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Resilient Enterprise Ground Scheduling	Various	Stotler-Henke : Colorado Springs, CO	-	5.076	Jan 2020	-		-		-		-	-	-	-
AFSCN Deficiency Resolution	Various	Various : Colorado Springs, CO	-	1.355	Jul 2020	-		-		-		-	-	-	-
Resilient Enterprise Ground Multi-Band Multi-Mission	MIPR	DIU : Mountain View, CA	-	0.330	Aug 2020	-		-		-		-	-	-	-
Defensive Cyberspace Operations - Space (DCO-S)	Various	TBD : Colorado Springs	-	40.061	Dec 2019	-		-		-		-	-	-	-
Enterprise Systems Engineering and Integration	C/CPIF	ENSCO : Colorado Springs, CO	-	3.730	Nov 2019	-		-		-		-	-	-	-
Technical Mission Analysis	RO	Aerospace Corp : El Segundo, CA	-	1.417	Oct 2019	-		-		-		-	-	-	-
<b>Subtotal</b>			-	51.969		-		-		-		-	-	-	N/A

<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FFRDC	Various	Aerospace Corp, : El Segundo, CA	-	0.873	Apr 2020	-		-		-		-	-	-	-
A&AS	Various	Gartner : Colorado Springs, CO	-	2.008	Apr 2020	-		-		-		-	-	-	-
<b>Subtotal</b>			-	2.881		-		-		-		-	-	-	N/A

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>		-	54.850	0.000	-	-	-	-	N/A



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203110F / <i>Satellite Control Network (SPACE)</i>	<b>Project (Number/Name)</b> 673276 / <i>Satellite Control Network</i>

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>AFSCN</b>	
AFSCN Deficiency Resolution	
REG Satellite Operations Transmits and Receive	
REG Defensive Cyberspace Operations for Space (DCO-S)	



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203110F / <i>Satellite Control Network (SPACE)</i>	<b>Project (Number/Name)</b> 673276 / <i>Satellite Control Network</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>AFSCN</b>				
AFSCN Deficiency Resolution	1	2020	4	2020
REG Satellite Operations Transmits and Receive	1	2020	4	2020
REG Defensive Cyberspace Operations for Space (DCO-S)	1	2020	4	2020

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	5.322	0.000	0.000	0.000	0.000	-	-	-	-	-	-
67A014: <i>R&amp;D Space &amp; Missile Operations</i>	-	5.322	0.000	0.000	0.000	0.000	-	-	-	-	-	-

**Note**

In FY2020, funding for the Enterprise Ground Services (EGS) Project 673140 was transferred to a dedicated Program Element (1206770F). In FY2021, PE 1203173F, Space and Missile Test and Evaluation Center efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1203173SF Space and Missile Test and Evaluation Center from Appropriation 3600, Budget Activity 07 due to the creation of a new Appropriation for Space Force.

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

The Research and Development Space and Missile Operations (RDSMO) program, executed by the Innovation and Prototyping 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 prototype experimental, demonstration, and operational satellites at the RDT&E Support Complex (RSC) and the Mobile Range Flight (MRF) at Kirtland, NM and at Schriever AFB, CO. The RDSMO program develops, acquires, delivers, integrates, tests, operates and sustains the Multi-Mission Satellite Operations Center (MMSOC) satellite command and control (C2) Ground System Enterprise (GSE) and fixed/deployable telemetry, tracking, and commanding (TT&C) antenna systems in support of AF and DoD missions. The RDSMO program is responsible for transitions of designated satellite missions to the operational command upon user needs. In addition, RDSMO supports the deployment and sustainment of Enterprise Ground Services (EGS) in multiple locations as AFSPC transitions to an Enterprise-based ground C2. Funds in the General Information Technology (Space) line procures Information Technology products to support RDSMO.

The primary objective of the MMSOC C2/GSE environment is to develop the capability to rapidly support R&D, prototype 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 hardware and software infrastructure 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 satellite and C2 systems and concepts; and (4) deliver operational flexibility for new and legacy satellite missions. A secondary objective of MMSOC is to provide a foundational C2 platform and product line for the Enterprise Ground Services (EGS) effort to build upon and to meet the evolving initiatives of the current and future space enterprise.

Space acquisition must respond with speed and agility to emerging adversary threats. Space and Missile Systems Center (SMC) has transformed the organization and implementation of space acquisition to an enterprise approach, maximizing innovation and resiliency, leveraging international, commercial, and mission partnerships, and managing program/project priorities according to an integrated unclassified /classified enterprise space architecture. Expanding the appropriate acquisition authorities and contract mechanism to deliver capability sooner, SMC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new, or repurpose capabilities.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>
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This program may include necessary civilian pay expenses required to manage, execute, and deliver warfighting space capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392F and 1206398F.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	4.566	0.000	0.000	0.000	0.000
Current President's Budget	5.322	0.000	0.000	0.000	0.000
Total Adjustments	0.756	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	0.885	0.000			
• SBIR/STTR Transfer	-0.129	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

**Change Summary Explanation**

FY 2020: Reprogramming due to BTR approval for RSC Facility Upgrades.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>				<b>Project (Number/Name)</b> 67A014 / <i>R&amp;D Space &amp; Missile Operations</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
67A014: <i>R&amp;D Space &amp; Missile Operations</i>	-	5.322	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

**Note**

In FY2021, PE 1203173F, Space and Missile Test and Evaluation Center efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1203173SF Space and Missile Test and Evaluation Center from Appropriation 3600, Budget Activity 07 due to the creation of a new Appropriation for Space Force.

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

The Research and Development Space and Missile Operations (RDSMO) program, executed by the Innovation and Prototyping 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 prototype experimental, demonstration, and operational satellites at the RDT&E Support Complex (RSC) and the Mobile Range Flight (MRF) at Kirtland, NM and at Schriever AFB, CO. The RDSMO program develops, acquires, delivers, integrates, tests, operates and sustains the Multi-Mission Satellite Operations Center (MMSOC) satellite command and control (C2) Ground System Enterprise (GSE) and fixed/deployable telemetry, tracking, and commanding (TT&C) antenna systems in support of AF and DoD missions and transitions designated satellite missions to the operational command upon user needs. In addition, RDSMO supports the deployment and sustainment of Enterprise Ground Services (EGS) in multiple locations as US Space Force (USSF) HQ transitions to an Enterprise-based ground C2. Funds in the General Information Technology (Space) line in appropriation 3021, Space Procurement Air Force, procures Information Technology products to support RDSMO.

The primary objective of the MMSOC C2/GSE environment is to develop the capability to rapidly support R&D, prototype 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 hardware and software infrastructure 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 satellite and C2 systems and concepts; and (4) deliver operational flexibility for new and legacy satellite missions. A secondary objective of MMSOC is to provide a foundational C2 platform and product line for the Enterprise Ground Services (EGS) effort to build upon and to meet the evolving initiatives of the current and future space enterprise.

Space acquisition must respond with speed and agility to emerging adversary threats. Space & Missile Systems Center (SMC) has transformed the organization and implementation of space acquisition to an enterprise approach, maximizing innovation and resiliency, leveraging international, commercial, and mission partnerships, and managing program/project priorities according to an integrated unclassified/classified enterprise space architecture. Expanding the appropriate acquisition authorities and contract mechanisms to deliver capability sooner, SMC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose capabilities.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>	<b>Project (Number/Name)</b> 67A014 / <i>R&amp;D Space &amp; Missile Operations</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> MMSOC Development <b>Description:</b> Evolution of the Ground Services Architecture (GSA) through the Multi-Mission Satellite Operations Center (MMSOC). Development, integration, and test of common services for space vehicle prototype and operational capabilities, including shared orbital analysis and mission planning tools, data distribution and dissemination, cyber defense, cloud computing, multi-security level operations, and enhanced ground entry points for geosynchronous proto-ops. <b>FY 2021 Plans:</b> N/A <b>FY 2022 Plans:</b> N/A <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A	5.322	0.000	0.000
<b>Accomplishments/Planned Programs Subtotals</b>	5.322	0.000	0.000

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• SPAF 01 GNRLIT: <i>General Information Tech - Space</i>	1.894	0.000	0.000	-	0.000	-	-	-	-	-	-

**Remarks**  
 In FY2021, P-1 Line Item GNRLIT/General Information Technology efforts were transferred to Appropriation 3022F, Procurement, Space Force, from Appropriation 3021F due to the creation of a new Appropriation for Space Force.

**D. Acquisition Strategy**  
 Modernize ground system capabilities and leverage MMSOC sustainment as a test bed for new ground service development, integration testing and operationalization. This includes integration and testing of early EGS prototypes for the Space Based Infra-Red System (SBIRS) Highly Elliptical Orbit (HEO) Migration to EGS (HOME), Operationally Responsive Space (ORS)-5, Evolved Expendable Launch Vehicle (EELV) Secondary Payload Adapter (ESPA) Augmented Geostationary Laboratory Experiment (EAGLE), Mycroft, Long Duration Propulsive ESPA (LDPE), AFSPC-12 payload, NTS-3 and Tetra prototyping projects, the Space Force competitively awarded the new Engineering, Development, Integration, and Sustainment (EDIS) Contract to support MMSOC, MRF and EGS activities. Additionally, MMSOC is using a competitively awarded Space Test and Engineering Contract (STEC) and uses Advisory & Assistance Support (A&AS) contracts. These contracts are all managed by Space and Missile Systems Center (SMC).

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>	<b>Project (Number/Name)</b> 67A014 / <i>R&amp;D Space &amp; Missile Operations</i>
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Ground Services R&D Engineering, Development, Integration, and Test	C/Various	Various : TBD	-	1.091	Oct 2019	-		-		-		-	-	-	-
RSC Modernization	Various	Various : TBD	-	2.209	Oct 2019	-		-		-		-	-	-	-
Core Services Development and Configuration	MIPR	Various : TBD	-	0.350	Nov 2019	-		-		-		-	-	-	-
Service Bus Architecture Standards	MIPR	NASA Goddard : Greenbelt, MD	-	0.000		-		-		-		-	-	-	-
Information Assurance Engineering	MIPR	SAF/FMBIB : Albuquerque, NM	-	0.000		-		-		-		-	-	-	-
<b>Subtotal</b>			-	3.650		-		-		-		-	-	-	N/A

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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	C/CPAF	Not specified. : TBD	-	0.620	Jul 2020	-		-		-		-	-	-	-
<b>Subtotal</b>			-	0.620		-		-		-		-	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Test and Engineering Contract (STEC) (MMSOC)	C/CPAF	LINQUEST : Kirtland, AFB, NM	-	0.263	Oct 2019	-		-		-		-	-	-	-
<b>Subtotal</b>			-	0.263		-		-		-		-	-	-	N/A

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>	<b>Project (Number/Name)</b> 67A014 / <i>R&amp;D Space &amp; Missile Operations</i>
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<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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- METIS	Various	Various : Kirtand, AFB, NM	-	0.789	Mar 2020	-		-		-		-	-	-	-
<b>Subtotal</b>			-	0.789		-		-		-		-	-	-	N/A
<b>Project Cost Totals</b>			-	5.322		0.000		-		-		-	-	-	N/A

**Remarks**  
 In FY2021, PE 1203173F, Space and Missile Test and Evaluation Center efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1203173SF Space and Missile Test and Evaluation Center from Appropriation 3600, Budget Activity 07 due to the creation of a new Appropriation for Space Force.



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>	<b>Project (Number/Name)</b> 67A014 / <i>R&amp;D Space &amp; Missile Operations</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>MMSOC Development</b>																												
MMSOC Ground Services Architecture (GSA) Evolution																												
GSA Backwards Compatibility, Test, and Mission Schedule Relief																												
Core Services Development and Configuration																												
MMSOC Space Test Program Satellite-2 (STPSat-2)																												
MMSOC Space Test Program Satellite-3 (STPSat-3) (Customer Funded)																												
MMSOC CloudSat Supt (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)																												
Navigation Technology Satellite NTS-3																												
MMSOC Evolved Expendable Launch Vehicle (EELV) Secondary Payload Adapter (ESPA) Augmented Geostationary Laboratory Experiment (EAGLE) Support (Customer Funded)																												
MMSOC Mycroft Support (Customer Funded)																												
MMSOC Long Duration Propulsive ESPA-1 (Customer Funded)																												

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>												<b>Date: May 2021</b>					
<b>Appropriation/Budget Activity</b> 3600 / 7						<b>R-1 Program Element (Number/Name)</b> PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>						<b>Project (Number/Name)</b> 67A014 / <i>R&amp;D Space &amp; Missile Operations</i>					

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	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
AFSPC-12 Payload Support	[REDACTED]																											

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203173F / <i>Space and Missile Test and Evaluation Center</i>	<b>Project (Number/Name)</b> 67A014 / <i>R&amp;D Space &amp; Missile Operations</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>MMSOC Development</i></b>				
MMSOC Ground Services Architecture (GSA) Evolution	1	2020	4	2020
GSA Backwards Compatibility, Test, and Mission Schedule Relief	1	2020	4	2020
Core Services Development and Configuration	1	2020	4	2020
MMSOC Space Test Program Satellite-2 (STPSat-2)	1	2020	4	2020
MMSOC Space Test Program Satellite-3 (STPSat-3) (Customer Funded)	1	2020	4	2020
MMSOC CloudSat Supt (Customer Funded)	1	2020	4	2020
MMSOC Green Propellant Infusion Mission (GPIM) Support (Customer Funded)	1	2020	4	2020
MMSOC Demonstration and Science Experiment (DSX) Support (Customer Funded)	1	2020	4	2020
MMSOC ORS-5 Support (Customer Funded)	1	2020	4	2020
Navigation Technology Satellite NTS-3	1	2020	4	2020
MMSOC Evolved Expendable Launch Vehicle (EELV) Secondary Payload Adapter (ESPA) Augmented Geostationary Laboratory Experiment (EAGLE) Support (Customer Funded)	1	2020	4	2020
MMSOC Mycroft Support (Customer Funded)	1	2020	4	2020
MMSOC Long Duration Propulsive ESPA-1 (Customer Funded)	1	2020	4	2020
AFSPC-12 Payload Support	1	2020	4	2020

**Note**

Note: This schedule reflects RDSMO support to the customer funded missions and may not directly align with customer program office schedules.

In FY2021, PE 1203173F, Space and Missile Test and Evaluation Center efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1203173SF Space and Missile Test and Evaluation Center from Appropriation 3600, Budget Activity 07 due to the creation of a new Appropriation for Space Force.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203174F / <i>Space Innovation, Integration and Rapid Technology Development</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	36.890	0.000	0.000	0.000	0.000	-	-	-	-	-	-
67A011: <i>Space Analysis and Application Development</i>	-	36.890	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

In FY 2021, PE 1203174F, Space Innovation, Integration and Rapid Technology Development efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1203174SF, Space Innovation, Integration and Rapid Technology Development from Appropriation 3600, Budget Activity 07 due to the creation of a new Appropriation for Space Force.

Located at Peterson AFB, Colorado, the Space Innovation, Integration and Rapid Technology Development (SIIRTD) 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. Space Training Simulators develop and upgrades space training emulators using Standard Space Trainer (SST) to meet Space Mission Force (SMF) threat-based, advanced training requirements as well as funds connection to Distributed Mission Operations (DMO) training networks. Finally, 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.

Space acquisition must respond with speed and agility to emerging adversary threats. Space & Missile Systems Center (SMC) is transforming the organization and implementation of space acquisition to an enterprise approach, maximizing innovation and resiliency, leveraging international, commercial, and mission partnerships, and managing program/project priorities according to an integrated unclassified/classified enterprise space architecture. Expanding the appropriate acquisition authorities and contract mechanisms to deliver capability sooner, SMC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose capabilities.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver SIIRTD weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392F and 1206398F.

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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force				<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 1203174F / <i>Space Innovation, Integration and Rapid Technology Development</i>				
<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	
Previous President's Budget	33.292	0.000	0.000	0.000	0.000	
Current President's Budget	36.890	0.000	0.000	0.000	0.000	
Total Adjustments	3.598	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	-1.402	0.000				
• Other Adjustments	5.000	0.000	0.000	0.000	0.000	
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>				<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Model/Tool Development and Capability Upgrades				7.467	0.000	0.000
<b>Description:</b> Develops, verifies, and validates models for space mission areas and modifies existing models to portray new capabilities that meet the national senior leader intent. 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. Rapidly meet downward-directed guidance implementing the system resiliency and situational awareness necessary to win in a contested space domain. Activities may include, but are not limited to, acquisition, program office support, studies, technical analysis, prototyping, etc. The space M&S is used for military utility analyses, trade studies, and other space program evaluations supporting OSD, Joint Staff, Headquarters Air Force, Headquarters United States Space Force, and the Space and Missile Center.						
<b>FY 2021 Plans:</b> N/A						
<b>FY 2022 Plans:</b> N/A						
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A						
<b>Title:</b> Model Verification				1.732	0.000	0.000
<b>Description:</b> Conduct verification of model changes resulting from model development and modification efforts.						
<b>FY 2021 Plans:</b>						

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 1203174F / <i>Space Innovation, Integration and Rapid Technology Development</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
Continue to conduct verification of model changes resulting from model development and modification efforts. <b>FY 2022 Plans:</b> N/A <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A				
<b>Title:</b> Model Validation <b>Description:</b> Conduct validations of model changes resulting from model development and modification efforts. <b>FY 2021 Plans:</b> N/A <b>FY 2022 Plans:</b> N/A <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A		1.622	0.000	0.000
<b>Title:</b> Standardized Space Trainer Simulators <b>Description:</b> Develop/upgrade Standard Space Trainer (SST) simulators to meet Space Mission Force (SMF) threat-based, advanced training requirements as well as build connectivity to Distributed Mission Operations (DMO) training networks. Follows direction set out in USAF Operational Training Infrastructure (OTI) Flight Plan, as well as meets STRATCOM Integrated Priority List (IPL) priorities. <b>FY 2021 Plans:</b> N/A <b>FY 2022 Plans:</b> N/A <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A		26.069	0.000	0.000
<b>Accomplishments/Planned Programs Subtotals</b>		36.890	0.000	0.000
<b>D. Other Program Funding Summary (\$ in Millions)</b> N/A				

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Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force Date: May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203174F / <i>Space Innovation, Integration and Rapid Technology Development</i>
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**D. Other Program Funding Summary (\$ in Millions)**

**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. Also procures Information Technology (IT) hardware & software infrastructure for the Distributed Communications Architecture for ACC.

**E. Acquisition Strategy**  
Any new projects funded in this program will be awarded using competitive procedures to the maximum extent possible.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203174F / <i>Space Innovation, Integration and Rapid Technology Development</i>	<b>Project (Number/Name)</b> 67A011 / <i>Space Analysis and Application Development</i>
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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 models & tools software	C/CPFF	SigmaTek : Colorado Springs, CO	-	0.296	Mar 2020	-		-		-		-	-	-	-
Develop/modify software tools/models	C/CPFF	Perduco Group : Colorado Springs, CO	-	10.525	Jan 2020	-		-		-		-	-	-	-
Space Training Simulator Development	C/CPFF	Sonalysts Inc : San Diego, CA	-	26.069	Dec 2020	-		-		-		-	-	-	-
<b>Subtotal</b>			-	36.890		-		-		-		-	-	-	N/A

**Remarks**  
Note: FY 2020 includes an -\$5.0M database error; correct total Space Training Simulator Development for FY 2020 is \$26.994M

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	-	36.890	0.000	-	-	-	-	-	N/A

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>			<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203174F / <i>Space Innovation, Integration and Rapid Technology Development</i>	<b>Project (Number/Name)</b> 67A011 / <i>Space Analysis and Application Development</i>	

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>SIIRTD</b>	
Model development/modification, verification, and validation	
Space Training Simulators	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203174F / <i>Space Innovation, Integration and Rapid Technology Development</i>	<b>Project (Number/Name)</b> 67A011 / <i>Space Analysis and Application Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>SIIRTD</b>				
Model development/modification, verification, and validation	1	2020	4	2026
Space Training Simulators	1	2020	4	2026

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203182F / <i>Spacelift Range System (SPACE)</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	20.128	0.000	0.000	0.000	0.000	-	-	-	-	-	-
674137: <i>Launch and Test Range System (LTRS) Modernization</i>	-	20.128	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

In FY2021, PE 1203182F, Spacelift Range System,(Space) efforts were transferred to Appropriations 3620, Research, Development, Test & Evaluation, Space Force, PE 1203182SF Spacelift Range System (Space) from Appropriation 3600, Budget Activity 07 due to the creation of a new Appropriations for Space Force.

FY 2020 received a Congressional mark that increases by 10M for space launch services. That increase and enacted request was not accounted for correctly in the database and reflected a -15M overall reduction. The correct total for LTRS in FY 2020 is 20.837M, not 5.837M.

The Spacelift Range System (SLRS), also known as 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.

The Air Force requires RDT&E funds to conduct digital data processing and transport prototype and proof of concept projects supporting Range of the Future (ROTF) launch operations. Funds will provide engineering and analysis to develop promising technology and validate LTRS architecture ability to meet the accelerating National launch requirement and introduce advanced data transport formats. These include demonstration of virtualized and remote data processing as well as dispersed and disaggregated flight tracking. Funds can be used to support sustainment of Major Range and Test Facility Base (MRTFB) activities.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver LTRS weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392F and 1206398F.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203182F / <i>Spacelift Range System (SPACE)</i>
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Funding in this exhibit was previously budgeted in PE 0305182F, Space Lift Range System.

Space acquisition must respond with speed and agility to emerging adversary threats. Space & Missile Systems Center (SMC) has transformed the organization and implementation of space acquisition to an enterprise approach, maximizing innovation and resiliency, leveraging international, commercial, and mission partnerships, and managing program/project priorities according to an integrated unclassified/classified enterprise space architecture. Expanding the appropriate acquisition authorities and contract mechanisms to deliver capability sooner, SMC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose 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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	5.837	0.000	0.000	0.000	0.000
Current President's Budget	20.128	0.000	0.000	0.000	0.000
Total Adjustments	14.291	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	10.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.709	0.000			
• Other Adjustments	5.000	0.000	0.000	0.000	0.000

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

**Project:** 674137: *Launch and Test Range System (LTRS) Modernization*

Congressional Add: *Launch Range Services and Capability*

	<b>FY 2020</b>	<b>FY 2021</b>
Congressional Add Subtotals for Project: 674137	10.000	-
Congressional Add Totals for all Projects	10.000	-

**Change Summary Explanation**

FY2020: +\$10M Congressional addition for space launch services and capability  
Also +\$5M correction of topline funding level.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203182F / <i>Spacelift Range System (SPACE)</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Title:</b> LTRS Range Technology Integration</p> <p><b>Description:</b> Provides Advisory and Assistance Services (A&amp;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). Strategically executes experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose capabilities.</p> <p><b>FY 2021 Plans:</b> N/A</p> <p><b>FY 2022 Plans:</b> N/A</p>	6.965	0.000	0.000
<p><b>Title:</b> Enterprise Systems Engineering and Integration to Support Government-Controlled Baseline</p> <p><b>Description:</b> SE&amp;I manages the government controlled system and subsystem level baseline requirements including analysis of future changes to the fielded baseline. SE&amp;I provides "government as the integrator" engineering support to ensure multiple separate modernizations and the sustainment baseline are synchronized. SE&amp;I will develop and recommend investment strategies to keep the Eastern and Western Ranges operating well beyond the FYDP.</p> <p><b>FY 2021 Plans:</b> N/A</p> <p><b>FY 2022 Plans:</b> N/A</p>	3.163	0.000	0.000
<b>Accomplishments/Planned Programs Subtotals</b>	10.128	0.000	0.000

	<b>FY 2020</b>	<b>FY 2021</b>
<b>Congressional Add:</b> Launch Range Services and Capability	10.000	-
<b>FY 2020 Accomplishments:</b> N/A		
<b>Congressional Adds Subtotals</b>	10.000	-

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203182F / <i>Spacelift Range System (SPACE)</i>
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**D. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• SPAF 01 Line Item SPRNGE: <i>Spacelift Range System Space</i>	116.654	-	-	-	-	-	-	-	-	-	-
• RDTE 07 1203110F: <i>Satellite Control Network (SPACE)</i>	54.850	-	-	-	-	-	-	-	-	-	-

**Remarks**

**E. Acquisition Strategy**

Due to fielded LTRS age and obsolescence issues, many systems need to be replaced (e.g. communications systems at ER and 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.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203182F / <i>Spacelift Range System (SPACE)</i>	<b>Project (Number/Name)</b> 674137 / <i>Launch and Test Range System (LTRS) Modernization</i>
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Enterprise Systems Engineering and Integration	C/FPIF	ENSCO INC : Falls Church, VA	-	3.600	Oct 2019	-		-		-		-	-	-	-
LTRS Range of the Future (ROTF) Technology Integration	C/Various	Various : TBD	-	6.338	May 2020	-		-		-		-	-	-	-
Launch Range Services and Capability	MIPR	NASA : Wallops, VA	-	9.600	Mar 2020	-		-		-		-	-	-	-
<b>Subtotal</b>			-	19.538		-		-		-		-	-	-	N/A

<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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	RO	Aerospace : El Segundo, CA	-	0.406	Nov 2019	-		-		-		-	-	-	-
OTHER SUPPORT	PO	Various : El Segundo, CA	-	0.184	Nov 2019	-		-		-		-	-	-	-
<b>Subtotal</b>			-	0.590		-		-		-		-	-	-	N/A

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	-	20.128	0.000	-	-	-	-	-	N/A

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203182F / <i>Spacelift Range System (SPACE)</i>	<b>Project (Number/Name)</b> 674137 / <i>Launch and Test Range System (LTRS) Modernization</i>

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>LTRS</b>	
Range Technology Integration	██████████
Enterprise SE&I	██████████

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203182F / <i>Spacelift Range System (SPACE)</i>	<b>Project (Number/Name)</b> 674137 / <i>Launch and Test Range System (LTRS) Modernization</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>LTRS</b>				
Range Technology Integration	1	2020	4	2020
Enterprise SE&I	1	2020	4	2020

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203265F / <i>GPS III Space Segment</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	3,231.667	47.178	0.000	0.000	0.000	0.000	-	-	-	-	-	-
67A019: <i>GPS III</i>	3,231.667	47.178	0.000	0.000	0.000	0.000	-	-	-	-	-	-

**Program MDAP/MAIS Code:** 292

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

In FY2021, PE 1203265F, GPS III Space Segment efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1203265SF GPS III Space Segment from Appropriation 3600, Budget Activity 7 due to the creation of a new Appropriation for Space Force.

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 ensure continued sustainment and operations of GPS for military and civilian purposes, and 51 USC Sec. 50112, which requires that GPS comply with certain standards and facilitate international cooperation.

The system is composed of three segments: User Equipment (funded under Program Element (PE) 1203164F), Space (funded under this PE and PE 1203269F) and a Control Network (funded under PE 1203165F and PE 1206423F). The satellites broadcast high-accuracy data using precisely synchronized signals that are received and processed by user equipment installed in military platforms. The user 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 (USNDS) 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) supporting the GPS constellation and is funded in PE 1203265F. GPS III SVs will deliver significant enhancements, including a new international civil (L1C) Galileo-compatible signal, and enhanced anti-jam power. GPS III SVs 03-10 are in the Production and Deployment Phase.

PE 1203265F funds GPS III and supports the Research, Development, Test, and Evaluation (RDT&E) of GPS III SVs 01-02 and risk-reducing simulators through a systems engineering approach that matures and delivers SVs for launch. This PE includes SVs 01-02 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 United States (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 delivery of the GPS Next Generation Operational Control System (OCX).

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203265F / <i>GPS III Space Segment</i>	
<p>Starting in Fiscal Year (FY) 2019, PE 1203269F funded the RDT&amp;E of GPS III F (SVs 11-12), which included Non-Recurring Engineering (NRE) support efforts. GPS III F includes design activity, risk-reducing simulators, and systems engineering associated with delivering the new capabilities required of GPS III F SVs, including backward compatibility, dual band Telemetry, Tracking, and Control (TT&amp;C), integration of Government Furnished Equipment (GFE) hosted payloads, a new international civil (L1C) Galileo-compatible signal, and the Regional Military Protection (RMP) capability that provides the ability to deliver high-power regional Military Code (M-Code) signals in specific areas of intended effect.</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 and after 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>GPS supports the early deployment of Global M-Code to meet the congressional mandate limiting user equipment purchases to M-Code-capable receivers starting in FY 2017. Funds in this PE 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 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.</p> <p>Impacts of the M-Code deployment include:</p> <ul style="list-style-type: none"> <li>-Compliance with The Air Force Space Command Commander's mandate to provide global monitoring necessary for early M-Code operational use and verification of Navigation Warfare (NAVWAR) effects.</li> <li>-Direction to improve the resiliency of the GPS capability.</li> <li>-Confirmation that Enterprise modernization efforts are integrated and properly deployed.</li> <li>-Testing and Verification of M-Code capability on MGUE/GPS III solution and early M-Code use tied to MGUE fielding.</li> </ul> <p>The feasibility studies and preliminary engineering analyses that are funded by this budget item will determine whether an initiative to host 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 U.S. GPS satellite constellation.</p> <p>Space acquisition must respond with speed and agility to emerging adversary threats. Space &amp; Missile Systems Center (SMC) has transformed the organization and implementation of space acquisition to an enterprise approach, maximizing innovation and resiliency, leveraging international, commercial, and mission partnerships, and managing program/project priorities according to an integrated unclassified/classified enterprise space architecture. Expanding the appropriate acquisition authorities and contract mechanisms to deliver capability sooner, SMC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose capabilities.</p> <p>This PE may include necessary civilian pay expenses required to manage, execute, and deliver GPS III Space Segment weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in PEs 1206392F and 1206398F.</p>		

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203265F / <i>GPS III Space Segment</i>
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This PE encompasses the GPS III (SVs 01-10), COps, MCEU, M-Code Hosted Payload, and prior to FY 2019, GPS III Follow-On (GPS IIIF) Production Readiness 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.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	42.440	0.000	0.000	0.000	0.000
Current President's Budget	47.178	0.000	0.000	0.000	0.000
Total Adjustments	4.738	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	6.012	0.000			
• SBIR/STTR Transfer	-1.274	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

**Change Summary Explanation**

FY2020 \$6.012M increase for GPS III Mission Readiness Campaign

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 1203265F / GPS III Space Segment				<b>Project (Number/Name)</b> 67A019 / GPS III			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
67A019: GPS III	3,231.667	47.178	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

GPS III is the next-generation SV supporting the GPS constellation and is funded in PE 1203265F. GPS III SVs will deliver significant enhancements, including a new international civil (L1C) Galileo-compatible signal, and enhanced anti-jam power. GPS III SVs 04-10 are in the Production and Deployment Phase.

PE 1203265F funds GPS III and supports RDT&E of GPS III SVs 01-02 and risk-reducing simulators through a systems engineering approach that matures and delivers SVs for launch. This program includes SVs 01-02 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 delivery of the GPS OCX program.

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 and post 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.

GPS supports the early deployment of Global M-Code to meet a congressional mandate limiting user equipment purchase to M-Code capable receivers starting in FY 2017. 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 GPS OCX, supports 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 The Air Force Space Command Commander's mandate to provide global monitoring necessary for early M-code operational use and verification of NAVWAR effects.
- Direction to improve the resiliency of the GPS capability.
- Confirmation that Enterprise modernization efforts are integrated and properly deployed.
- 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 an initiative to host 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 U.S. GPS satellite constellation.



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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203265F / GPS III Space Segment	<b>Project (Number/Name)</b> 67A019 / GPS III
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This PE encompasses the GPS III (SVs 01-10), COps, MCEU, M-Code Hosted Payload, and prior to FY2019, GPS III Follow-On (GPS IIIF) Production Readiness efforts.

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Title:</b> GPS III SVs 01-02</p> <p><b>Description:</b> Development, test, and evaluation of GPS III SVs 01-02 and associated simulators, engineering studies and analyses, trade studies, system development, test and evaluation efforts, and integrated logistics support products.</p>	29.588	-	-
<p><b>Title:</b> Architecture Evolution Plan (AEP) M-Code Monitoring</p> <p><b>Description:</b> The M-Code Early Use (MCEU) program initiative will cover the development costs associated with updating the legacy control segment software, AEP, with additional capabilities needed to provide M-Code operations. MCEU will provide the Combined Space Operations Center (CSpOC) 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 Operations and Maintenance (O&amp;M) funding as a Form-Fit- Functional replacement for the legacy Monitor Station Receiver Element (MSRE) Y-Code receivers. MCEU will add a software upgrade to MSTIC receivers to allow it to process M-Code signals. Prime contract was awarded to start software development and test activities; includes insertion of Legacy Hot Start, Demilitarized Zone, and Receiver Protection Profile requirements into the MCEU baseline.</p>	17.590	-	-
<b>Accomplishments/Planned Programs Subtotals</b>	47.178	-	-

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• SPAF 01 Line Item GPS III: GPS III	34.845	-	-	-	-	-	-	-	-	-	-

**Remarks**

**D. Acquisition Strategy**

The GPS III next generation space segment (SV 01-10) 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 accuracy, 3+ year increased design life, a new international civil (L1C) signal compatible with the European Galileo system, and a satellite bus capable of supporting future SV capability additions.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203265F / <i>GPS III Space Segment</i>	<b>Project (Number/Name)</b> 67A019 / <i>GPS III</i>
<p>RDT&amp;E funding for SVs 11 and 12 is in PE 1203269F and PE 1203269SF, Project GPS IIIF. Procurement funding for SVs 13-32 is captured in PE 1203269F and PE 1203269SF, Project GPS IIIF.</p> <p>The AF is using its research laboratories to mature an On-Orbit Reprogrammable Digital Waveform Generator (ORDWG) which provide signal flexibility to change the signal form while the satellite is on-orbit. This effort is funded with AFRL's S&amp;T funding and PE 1203265F to increase the number of alternate navigation payloads and inform future PNT architectures.</p> <p>On 19 July 2016, PEO Space approved the Acquisition Strategy Document (ASD) for the COps effort. The strategy enables contingency constellation sustainment capability for GPS III PNT. GPS III COps is needed because GPS OCX will not deliver in time to support initial GPS III SV 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 AEP control segment.</p> <p>On 21 Jan 2017, PEO Space approved the Acquisition Strategy for the MCEU program. The MCEU acquisition strategy enables the GPS Enterprise to provide core M-Code capabilities to the warfighter prior to GPS OCX delivery. MCEU will also support the scheduled operational testing of 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 acquires this capability by using the existing GPS III prime contract vehicle to modify the operational AEP software.</p> <p>The Air Force approved reinstatement of a previously deferred Key Support Area (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 was funded through both O&amp;M and SPAF funds in FY 2016-FY 2018. Performance monitoring, integration, and test will be conducted by the MCEU program and sustained under the Global Positioning Operations Support and Sustainment Division contract with Lockheed Martin.</p>		

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203265F / GPS III Space Segment	<b>Project (Number/Name)</b> 67A019 / GPS III
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<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
GPS III Development	C/CPIF	Lockheed Martin : Denver, CO	2,463.786	3.190	Dec 2018	-		-		-		-	-	-	2,624.496
GPS III SV01-02 On Orbit Incentive Fee	C/CPIF	Lockheed Martin : Denver, CO	6.000	11.453	Jan 2020	-		-		-		-	-	-	22.500
GPS III Development 11+	C/Various	Lockheed Martin : Denver, CO	41.590	-		-		-		-		-	-	-	41.590
GPS III Development_COps	C/CPIF	Lockheed Martin : Denver, CO	125.171	-		-		-		-		-	-	-	128.863
GPS III Development_MCEU	C/CPIF	Lockheed Martin : Denver, CO	51.985	11.512	Oct 2019	-		-		-		-	-	-	72.157
GPS III Technical Mission Analysis	MIPR	Various : Various	30.494	6.504	Oct 2019	-		-		-		-	-	-	-
GPS III Enterprise SE&I	C/CPAF	TASC : El Segundo, CA	99.080	1.073	Oct 2019	-		-		-		-	-	-	100.823
GPS III Launch Support	RO	45th : Cape Canaveral, FL	80.369	7.241		-		-		-		-	-	-	-
GPS III Production SMI	C/CPFF	Various : Various	36.156	-		-		-		-		-	-	-	-
GPS III Enterprise Ground Service	C/CPAF	N/A : N/A	7.500	-		-		-		-		-	-	-	7.500
<b>Subtotal</b>			2,942.131	40.973		-		-		-		-	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
GPS III T&E	Various	Various : TBD	36.124	-		-		-		-		-	-	-	-
<b>Subtotal</b>			36.124	-		-		-		-		-	-	-	N/A



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**Exhibit R-4, RDT&E Schedule Profile:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203265F / GPS III Space Segment	<b>Project (Number/Name)</b> 67A019 / GPS III
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	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>GPS III</b>	
GPS III SV01/02 On-Orbit Engineering Support/Performance Validation	
<b>COps/MCEU</b>	
COps Fielding Readiness Review (FRR)	
COps Operational Test Readiness Certification	
MCEU Fielding Readiness Review	

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**Exhibit R-4A, RDT&E Schedule Details:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203265F / GPS III Space Segment	<b>Project (Number/Name)</b> 67A019 / GPS III
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>GPS III</b>				
GPS III SV01/02 On-Orbit Engineering Support/Performance Validation	1	2020	4	2020
<b>COps/MCEU</b>				
COps Fielding Readiness Review (FRR)	2	2020	2	2020
COps Operational Test Readiness Certification	3	2020	3	2020
MCEU Fielding Readiness Review	4	2020	4	2020

**Note**

GPS III SV 02 was launched on 22 August 2019  
 GPS III SV01/SV02 will perform on-going on-orbit engineering support and performance validation through FY 2025  
 COps/MCEU schedule milestones adjusted to match approved Acquisition Program Baseline threshold dates

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203400F / <i>Space Superiority Intelligence</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	14.428	0.000	0.000	0.000	0.000	-	-	-	-	-	-
67A051: <i>Space Superiority - Advanced Intelligence Systems</i>	-	14.428	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**Note**  
 In FY 2021, PE 1203400F, Space Superiority Intelligence efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force. PE 1203330SF, Space Superiority ISR, Budget Activity 7, due to the creation of a new Appropriation for Space Force.

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

The Space Superiority Intelligence program provides Intelligence, Surveillance, and Reconnaissance (ISR) and Electronic Support (ES) for key find, fix, track, target, engage and assess (F2T2EA) requirements supporting Space Superiority activities meeting Combatant Command (CCMD) needs. SSI funds developmental intelligence activities to support new space superiority capability acquisition and development. SSI provides funds for developmental ISR Planning and direction, Collection, Processing and exploitation, Analysis and production, Dissemination and integration (PCPAD) capabilities providing Battlespace Awareness and Space Domain Awareness (SDA) in support of Space Superiority and Space Control. This includes funding for fixed and transportable intelligence collection, Processing/Exploitation and Dissemination (PED), analysis and production capabilities that are modular (plug-and-play), meet Risk Management Framework Accreditation requirements and can keep pace with technological advances and emerging threats. It provides intelligence support systems for SDA activities that provide the requisite current and predictive knowledge of space events and threat conditions and intelligence support to Space Security and Defense Programs (SSDP) by providing architectural survivability analysis of critical mission assets for mission assurance, as well as network analysis. It also supports specialized/tailored, phased threat system analysis and studies (A&S), test support, lab equipment, and Material Acquisition and Exploitation (MAE) for system development, 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.

Space acquisition must respond with speed and agility to the proliferation of emerging space adversary threats and new technologies. In support of these nascent, cutting edge space acquisition capabilities, Space Superiority Intelligence provides exquisite, crucial cryptologic and ISR through transformational collection and production activities through the rapid development and fielding of fixed and transportable intelligence architectures capable of front-end collection and analysis of new technologies in near real time. Space Superiority and Space Control is only realized through Space Superiority Intelligence support on the front end of space acquisition, allowing maximized innovation and resiliency in support of changing program/project priorities to rapidly respond and to operate in the contested space domain, as well as supporting lifecycle experimentation, prototyping, and risk reduction.

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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203400F / <i>Space Superiority Intelligence</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	14.428	16.810	18.343	0.000	18.343
Current President's Budget	14.428	0.000	0.000	0.000	0.000
Total Adjustments	0.000	-16.810	-18.343	0.000	-18.343
• 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	-16.810			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-18.343	0.000	-18.343

**Change Summary Explanation**

In FY 2021, PE 1203400F, Space Superiority Intelligence efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force. PE 1203330SF, Space Superiority ISR, Budget Activity 7, due to the creation of a new Appropriation for Space Force.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<b>Title:</b> Advanced Intelligence Systems for Space Superiority	14.428	0.000	0.000	0.000	0.000
<b>Description:</b> Develops transportable and fixed PCPAD capabilities.					
<b>FY 2021 Plans:</b> N/A					
<b>FY 2022 Base Plans:</b> N/A					
<b>FY 2022 OCO Plans:</b> N/A					
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A					
<b>Accomplishments/Planned Programs Subtotals</b>	14.428	0.000	0.000	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: PB 2022 Air Force Date: May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203400F / <i>Space Superiority Intelligence</i>
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**D. Other Program Funding Summary (\$ in Millions)**

**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 SDA, SSDP, 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.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203400F / <i>Space Superiority Intelligence</i>	<b>Project (Number/Name)</b> 67A051 / <i>Space Superiority - Advanced Intelligence Systems</i>
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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	C/CPFF	Various : TBD	-	0.446	Apr 2020	0.000	Nov 2020	0.000	Nov 2021	-		0.000	-	-	-
Architecture upgrades to SDA, SSDP, and Space Superiority	C/CPFF	Various : TBD	-	9.260	Jan 2020	0.000	Dec 2020	0.000	Dec 2021	-		0.000	-	-	-
Data analysis and product development for R&D	C/CPFF	Various : TBD	-	2.838	Nov 2019	0.000	Nov 2020	0.000	Nov 2021	-		0.000	-	-	-
Intelligence systems testing and data collection	C/CPFF	Various : TBD	-	1.491	Feb 2020	0.000	Feb 2021	0.000	Feb 2022	-		0.000	-	-	-
<b>Subtotal</b>			-	14.035		0.000		0.000		-		0.000	-	-	N/A

<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
A&AS	C/CPFF	Various : TBD	-	0.300	Apr 2020	0.000	Nov 2020	0.000	Nov 2021	-		0.000	-	-	-
Mission Support	Various	Not specified. : TBD	-	0.093		0.000	Oct 2020	0.000	Oct 2021	-		0.000	-	-	-
<b>Subtotal</b>			-	0.393		0.000		0.000		-		0.000	-	-	N/A

			Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			-	14.428	0.000	0.000	-	0.000	-	-	N/A

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203400F / <i>Space Superiority Intelligence</i>	<b>Project (Number/Name)</b> 67A051 / <i>Space Superiority - Advanced Intelligence Systems</i>

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b><i>Space Superiority Intelligence</i></b>	
Architecture upgrade for SDA, SSDP, and Space Superiority	
Data analysis and product development for R&D intelligence	
Deployment for testing and data collection	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203400F / <i>Space Superiority Intelligence</i>	<b>Project (Number/Name)</b> 67A051 / <i>Space Superiority - Advanced Intelligence Systems</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>Space Superiority Intelligence</i></b>				
Architecture upgrade for SDA, SSDP, and Space Superiority	1	2020	4	2026
Data analysis and product development for R&D intelligence	1	2020	4	2026
Deployment for testing and data collection	1	2020	4	2026

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203614F / <i>JSpOC Mission System</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	0.000	82.044	0.000	0.000	0.000	0.000	-	-	-	-	-	-
67A035: <i>Enterprise Space BMC2</i>	0.000	82.044	0.000	0.000	0.000	0.000	-	-	-	-	-	-

**Program MDAP/MAIS Code:** N82

**Note**

In FY 2019, Project 67A031, Joint Space Operations Mission System (JMS) Mission Applications, was completed. The \$1.999M entry in FY 2020 is the result of a database error.

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

In FY2021, PE1203614F, Joint Space Operations Center (JSpOC) Mission System, Project 67A035, Enterprise Space BMC2 efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, Budget Activity 08, PE 1208248SF, Space C2 from Appropriation 3600, Budget Activity 07 due to the creation of a new Appropriation for Space Force and a new Budget Activity for Software and Digital Technology Pilot Programs.

The Air Force is developing a Space Command and Control (Space C2) and Space Domain Awareness (SDA) capability for the Joint Force Space Component Commander (JFSCC). The enterprise-wide system will provide a common government infrastructure and standards for rapid prototyping of dynamic SSA and Battle Management Command and Control (BMC2) applications to address the evolving and dynamic threat. The system will provide a collaborative environment that will enhance and modernize SDA and BMC2 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). Funding includes technical studies, development, experimentation, integration and related support costs.

Space acquisition must respond with speed and agility to emerging adversary threats. Space & Missile Systems Center (SMC) has transformed the organization and implementation of space acquisition to an enterprise approach, maximizing innovation and resiliency, leveraging international, commercial, and mission partnerships, and managing program/project priorities according to an integrated unclassified/classified enterprise space architecture. Expanding the appropriate acquisition authorities and contract mechanisms to deliver capability sooner, SMC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose capabilities.

This Program Element may include necessary civilian pay expenses required to manage, execute, and deliver Space C2 weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in Program Elements 1206392F and 1206398F.

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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203614F / <i>JSpOC Mission System</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	89.760	0.000	0.000	0.000	0.000
Current President's Budget	82.044	0.000	0.000	0.000	0.000
Total Adjustments	-7.716	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	7.570	0.000			
• SBIR/STTR Transfer	-10.287	0.000			
• Other Adjustments	-4.999	0.000	0.000	0.000	0.000

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203614F / JSpOC Mission System	<b>Project (Number/Name)</b> 67A035 / Enterprise Space BMC2
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
67A035: Enterprise Space BMC2	0.000	82.044	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The Enterprise provides a SDA & BMC2 System that allows JFSCC to meet dynamic and emerging threats. Continuously develop capabilities that include, but are not limited to, SSA, battle space awareness, dynamic planning and tasking, 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, systems engineering, integration and related support costs.

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

	FY 2020	FY 2021	FY 2022
<b>Title:</b> Enterprise Space BMC2	82.044	0.000	0.000
<b>Description:</b> This program delivers a robust and responsive Space Domain Awareness (SDA) and Battle Management Command and Control (BMC2) capability to meet emerging threats. The program will deliver capability for decision makers trying to prevent a conflict from extending to space, or winning it if it does. Capabilities and associated infrastructure include, but are not limited to, SDA, Indications & Warning (I&W), Transmit/Receive, Space Control, Tactical Operations; and Common Data Management Layer, Platforms and Infrastructure; Cyber and Threat Warning. Other activities include dedicated Systems Engineering & Integration (SE&I), Test & Evaluation (T&E), Model Based Systems Engineering (MBSE) and prototype Validation & Verification to support these efforts.			
<b>FY 2021 Plans:</b> NA			
<b>FY 2022 Plans:</b> N/A			
<b>Accomplishments/Planned Programs Subtotals</b>			
	82.044	0.000	0.000

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

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• SPAF 01 SPCMOD: Space Mods	10.368	0.000	0.000	-	0.000	-	-	-	-	-	-

**Remarks**

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203614F / <i>JSpOC Mission System</i>	<b>Project (Number/Name)</b> 67A035 / <i>Enterprise Space BMC2</i>
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**D. Acquisition Strategy**

The Air Force is employing agile software development practices such as flexible requirements, frequent user interaction, and rapid delivery and deficiency retirement. This strategy focuses on rapidly delivering capability to warfighters, leveraging commercial, industry and government partners. Currently there are multiple competitive contractors and no prime contractor, a prime contractor is to be determined.



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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203614F / JSpOC Mission System	<b>Project (Number/Name)</b> 67A035 / Enterprise Space BMC2
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ESBMC2 Government Capability Development	Various	Various : Various	0.000	0.000		-		-		-		-	-	-	-
ESBMC2 Enterprise Systems Engineering & Integration	Various	Various : Various	0.000	10.050	Dec 2019	-		-		-		-	-	-	-
ESBMC2 Tools	Various	Various : Various	0.000	0.000		-		-		-		-	-	-	-
ESBMC2 Technical Mission Analysis (WS)	MIPR	Various : Various	0.000	0.000		-		-		-		-	-	-	-
Catalyst Campus/PaaS	C/TBD	Not specified. : TBD	0.000	29.580	Jan 2020	-		-		-		-	-	-	-
Commercial Capability	C/Various	Not specified. : TBD	0.000	19.034	Dec 2019	-		-		-		-	-	-	-
Dynamic SSA Integration	C/TBD	Not specified. : TBD	0.000	11.553	Nov 2019	-		-		-		-	-	-	-
Weapon System Integration	C/TBD	Not specified. : TBD	0.000	0.210	Feb 2020	-		-		-		-	-	-	-
<b>Subtotal</b>			0.000	70.427		-		-		-		-	-	-	N/A

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Civilian Reimbursable Budget Authority	Various	SMC : El Segundo, CA	0.000	0.124	Jan 2020	-		-		-		-	-	-	-
Database error	C/CPAF	Not specified. : TBD	0.000	0.000		-		-		-		-	-	-	-
<b>Subtotal</b>			0.000	0.124		-		-		-		-	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Various	Various : Various	0.000	1.582	Nov 2019	-		-		-		-	-	-	-
<b>Subtotal</b>			0.000	1.582		-		-		-		-	-	-	N/A



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**Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203614F / JSpOC Mission System	<b>Project (Number/Name)</b> 67A035 / Enterprise Space BMC2
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	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>ESBMC2</b>	
Platform/Infrastructure	
Program Increment 4-7	
Program Increment 8-11	
Data Management	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203614F / JSpOC Mission System	<b>Project (Number/Name)</b> 67A035 / Enterprise Space BMC2

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>ESBMC2</b>				
Platform/Infrastructure	1	2020	4	2020
Program Increment 4-7	1	2020	4	2020
Program Increment 8-11	4	2020	4	2020
Data Management	1	2020	4	2020

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>					<b>R-1 Program Element (Number/Name)</b> PE 1203620F / <i>National Space Defense Center</i>							
COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	2.649	0.000	0.000	0.000	0.000	-	-	-	-	-	-
670004: <i>OTHER STRATCOM ACTIVITIES</i>	-	2.649	0.000	0.000	0.000	0.000	-	-	-	-	-	-

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

The Department of the Air Force has determined this National Space Defense Center (NSDC) budget request will not transfer to the Research, Development, Test & Evaluation, Space Force appropriation as previously stated in the FY21 budget request.

This program will provide systems engineering and architecture support for the NSDC's operational infrastructure integrating mission partner networks, data and other hardware and software solutions into NSDC's technical baseline. Additionally, this program will provide for agile requirements development, operational and developmental test activities, and technical support between program offices and the operations center, supporting software Development in Operations (DevOps). 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.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver NSDC capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392F and 1206398F.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	2.653	2.687	2.751	0.000	2.751
Current President's Budget	2.649	0.000	0.000	0.000	0.000
Total Adjustments	-0.004	-2.687	-2.751	0.000	-2.751
• 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	-2.687	-2.751	0.000	-2.751

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 1203620F / <i>National Space Defense Center</i>				<b>Project (Number/Name)</b> 670004 / <i>OTHER STRATCOM ACTIVITIES</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
670004: <i>OTHER STRATCOM ACTIVITIES</i>	-	2.649	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

This program develops and integrates Battle Management and Command and Control (BMC2) applications for the Joint Task Force - Space Defense (JTF-SD) (component for the National Space Defense Center (NSDC)). This includes integrating hardware and software prototypes to support various networks developed by mission partners and integrating applications developed by the Space C2 program to ensure relevant and accurate situational awareness to mission partners. The JTF-SD (and NSDC) allows the national security space community to effectively respond to 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. Accomplishments/Planned Programs (\$ in Millions)**

	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Application Development	2.649	0.000	0.000
<b>Description:</b> Develop and field Space Battle Management Command and Control capabilities.			
<b>FY 2021 Plans:</b> FY2021 Plans: Continue to analyze and assess mission partner and Intelligence Community networks and achieve authorization to connect to JTF-SD infrastructure. Partner with test agency to support developmental and operational test activities and shadow operations for agile DevOps environment. Rapidly respond to be able to implement system resiliency and situational awareness capability necessary to operate in the contested space domain. Activities include program office support, studies, technical analysis, experimentation, prototyping, and technical feedback to developers.			
<b>FY 2022 Plans:</b> FY2022 Plans: Continue to analyze, assess, and provide operations center support for mission partner and Intelligence Community networks and achieve authorization to connect to JTF-SD infrastructure. Partner with test agency to perform developmental and operational test activities and shadow operations for agile DevOps environment. Increase integration efforts for Space C2 applications. Rapidly respond to be able to implement system resiliency and situational awareness capability necessary to operate in the contested space domain. Activities may include, but are not limited to program office support, studies, technical analysis, experimentation, and prototyping.			
<b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> FY 2022 increased compared to FY 2021. Justification for this increase is described in the plans above.			
<b>Accomplishments/Planned Programs Subtotals</b>	2.649	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force		Date: May 2021
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1203620F / National Space Defense Center	Project (Number/Name) 670004 / OTHER STRATCOM ACTIVITIES

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

N/A

**Remarks**

**D. Acquisition Strategy**

NSDC provides funds to other AF/DoD organizations to execute on their contracts in support of NSDC requirements. Additionally, NSDC provides contract support to develop and document the technical baseline through systems engineering and technical assistance support.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203620F / National Space Defense Center	<b>Project (Number/Name)</b> 670004 / OTHER STRATCOM ACTIVITIES
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<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
SHADOW OPERATIONS CENTER DEVELOPMENT	Various	Various : Colorado Springs, CO	-	0.000		-		-		-		-	-	-	-
BMC2 APPLICATION DEVELOPMENT AND INTEGRATION	Various	Various: : Colorado Springs, CO	-	1.000	Jan 2020	-		-		-		-	-	-	-
SYSTEM ENGINEERING	Various	Various: : Colorado Springs, CO	-	0.000		-		-		-		-	-	-	-
<b>Subtotal</b>			-	1.000		-		-		-		-	-	-	N/A

<b>Management Services (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
A&AS	Various	Various: : Colorado Springs, CO	-	0.500	Jan 2020	-		-		-		-	-	-	-
FFRDC	Various	Various: : Colorado Springs, CO	-	1.149	Dec 2019	-		-		-		-	-	-	-
<b>Subtotal</b>			-	1.649		-		-		-		-	-	-	N/A

<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>	-	2.649	0.000	-	-	-	-	N/A

**Remarks**



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203620F / <i>National Space Defense Center</i>	<b>Project (Number/Name)</b> 670004 / <i>OTHER STRATCOM ACTIVITIES</i>

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>NSDC INFRASTRUCTURE</b>	
SUSTAINMENT/SUPPORT	[REDACTED]
<b>BMC2 APPLICATION DEVELOPMENT AND INTEGRATION</b>	
APPLICATION DEVELOPMENT AND INTEGRATION	[REDACTED]
<b>SHADOW OPERATIONS CENTER</b>	
SHADOW OPERATIONS APPS	[REDACTED]

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203620F / <i>National Space Defense Center</i>	<b>Project (Number/Name)</b> 670004 / <i>OTHER STRATCOM ACTIVITIES</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>NSDC INFRASTRUCTURE</i></b>				
SUSTAINMENT/SUPPORT	1	2021	4	2023
<b><i>BMC2 APPLICATION DEVELOPMENT AND INTEGRATION</i></b>				
APPLICATION DEVELOPMENT AND INTEGRATION	1	2021	4	2023
<b><i>SHADOW OPERATIONS CENTER</i></b>				
SHADOW OPERATIONS APPS	1	2021	2	2021

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development	<b>R-1 Program Element (Number/Name)</b> PE 1203873F I Ballistic Missile Defense Radars
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	15.335	0.000	0.000	0.000	0.000	-	-	-	-	-	-
674820: Sensor Development	-	15.335	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

No FY 2022 funding requested.

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 2020</u>	<u>FY 2021</u>	<u>FY 2022 Base</u>	<u>FY 2022 OCO</u>	<u>FY 2022 Total</u>
Previous President's Budget	15.881	0.000	0.000	0.000	0.000
Current President's Budget	15.335	0.000	0.000	0.000	0.000
Total Adjustments	-0.546	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	-0.546	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

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

	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>
<b>Title:</b> ADPE Rehost Upgrade, Phase II	15.335	0.000	0.000
<b>Description:</b> The Automated Data Processing Equipment (ADPE) Rehost project Phase II, Part 1 is complete. The ADPE-R project Phase II, Part 2 will transition to a traditional acquisition approach with two distinct capability deliveries. The Mission Computer replacement will be completed first, followed by a modernized Signal Processor, Radar Controller and Receiver. The approach will modernize these systems with an innovative hardware and software-based open architecture solution supported by switching solutions and modernized development environments.			
<b>FY 2021 Plans:</b>			

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 1203873F / <i>Ballistic Missile Defense Radars</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
N/A				
<b>FY 2022 Plans:</b> N/A				
<b>Accomplishments/Planned Programs Subtotals</b>		15.335	0.000	0.000
<b>D. Other Program Funding Summary (\$ in Millions)</b> N/A				
<b>Remarks</b>				
<b>E. Acquisition Strategy</b> See PE 1203873SF, Ballistic Missile Defense Radars, Project 674820, Sensor Development				

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203873F / <i>Ballistic Missile Defense Radars</i>	<b>Project (Number/Name)</b> 674820 / <i>Sensor Development</i>
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ADPE Phase II, Development; S/W & H/W integration	TBD	Various : TBD	-	11.555	Jan 2020	-		-		-		-	-	-	-
<b>Subtotal</b>			-	11.555		-		-		-		-	-	-	N/A

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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 (integration)	C/CPAF	various : TBD	-	1.190	Feb 2020	-		-		-		-	-	-	-
<b>Subtotal</b>			-	1.190		-		-		-		-	-	-	N/A

<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Support	TBD	Various : TBD	-	2.590	Mar 2020	-		-		-		-	-	-	-
<b>Subtotal</b>			-	2.590		-		-		-		-	-	-	N/A

			Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>			-	15.335	0.000	-	-	-	-	-	N/A

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203873F / <i>Ballistic Missile Defense Radars</i>	<b>Project (Number/Name)</b> 674820 / <i>Sensor Development</i>

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>ADPE Rehost Phase II</b>	
Prototype Phase I completion MDA Funded RDT&E	█
Prototype Phase 2 Requirements, Infrastructure & Early Development	██████████
Phase 2 Hardware/Software Development	██████████

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203873F / <i>Ballistic Missile Defense Radars</i>	<b>Project (Number/Name)</b> 674820 / <i>Sensor Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>ADPE Rehost Phase II</i></b>				
Prototype Phase I completion MDA Funded RDT&E	1	2020	1	2020
Prototype Phase 2 Requirements, Infrastructure & Early Development	3	2020	4	2020
Phase 2 Hardware/Software Development	3	2020	4	2020

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203913F / <i>NUDET Detection System (SPACE)</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	49.300	0.000	0.000	0.000	0.000	-	-	-	-	-	-
672808: <i>Nuc Detonation Det Sys (sensors)</i>	-	49.300	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

In FY2021, PE1203913F, NUDET Detection System (SPACE) efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1203913F, NUDET Detection System (SPACE) from Appropriation 3600, Budget Activity 07 due to the creation of a new Appropriation for Space Force.

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 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 (SEI&T) 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 USNDS program in Program Element (PE) 1203913F with Research, Development, Test and Evaluation (RDT&E), Space Procurement, Air Force (SPAF), and Operations and Maintenance (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) and Space Test Platform (STP) 3. 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 five deployable mobile ground segment survivable Ground Nuclear Detonation Detection System 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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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203913F / <i>NUDET Detection System (SPACE)</i>
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The upgrades to the GNTs are the survivable/endurable UGNT which are funded with RDT&E in this PE. The UGNT provides NUDET Detection Reports to end users through survivable/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 Survivable (SBIRS) / 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 Mobile Ground System (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, Secretary of Defense (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 III and GPS IIIF are funded in their respective PEs.

Space acquisition must respond with speed and agility to emerging adversary threats. Space & Missile Systems Center (SMC) has transformed the organization and implementation of space acquisition to an enterprise approach, maximizing innovation and resiliency, leveraging international, commercial, and mission partnerships, and managing program/project priorities according to an integrated unclassified/classified enterprise space architecture. Expanding the appropriate acquisition authorities and contract mechanisms to deliver capability sooner, SMC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose capabilities.

This PE may include necessary civilian pay expenses required to manage, execute, and deliver NUDET Detection System (SPACE) weapon system capability. The use of such program funds is in addition to the civilian pay expenses budgeted in PEs 1206392F and 1206398F.

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>B. Program Change Summary (\$ in Millions)</b>	<b><u>FY 2020</u></b>	<b><u>FY 2021</u></b>	<b><u>FY 2022 Base</u></b>	<b><u>FY 2022 OCO</u></b>	<b><u>FY 2022 Total</u></b>
Previous President's Budget	49.300	0.000	0.000	0.000	0.000
Current President's Budget	49.300	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

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 1203913F / <i>NUDET Detection System (SPACE)</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Title:</b> Integration with SBIRS S2E2 Mobile Ground Terminals (SMGTs) and On-orbit support</p> <p><b>Description:</b> Support the Integration and test activities between UGNTs and the S2E2 SMGTs, which together provide NUDET Detection Reports and missile warning data to end users through survivable/endurable USNDS communications via Milstar/AEHF circuits. The UGNTs deploy as an integral part of the SBIRS S2E2 SMGS units also in support of ITW/AA and NFM. Support program scope analyzation for USNDS receiver and Integrated Data Denial (IDD) components. Additional support costs includes such activities as; receiver system engineering support, on-orbit NDS sensor integration, conceptual hardware and software design, check-out/support, testing, and system engineering.</p> <p><b>FY 2021 Plans:</b> N/A</p> <p><b>FY 2022 Plans:</b> N/A</p>		22.802	0.000	0.000
<p><b>Title:</b> USNDS System Engineering and Architecture Design</p> <p><b>Description:</b> The future USNDS build consists of an ICADS satellite ground data processing system and UGNT trailers that accommodate the new NDS payload on GPS IIIF family of vehicles and are an upgrade to the current USNDS 6 program. USNDS ICADS reports endoatmospheric, transition and near-space nuclear detonations as detected by the USNDS sensors aboard the GPS satellites, DSP satellites and SABRS equipped satellites. ICADS processes NDS, State-of-Health (SOH), and navigation data from GPS IIIF. USNDS UGNT provide NUDET Detection Reports to end users through survivable/endurable USNDS communications via Milstar/AEHF circuits. USNDS also consists of the Integrated Data Denial (IDD). IDD is a Communications Security (COMSEC) device associated with the USNDS. IDD provides decryption of satellite position data and NDS sensor data used to detect, locate, and report nuclear detonations in earth's atmosphere or near-space in near real time. This IDD effort contains cryptographic modifications mandated by National Security Agency (NSA). In addition, parts obsolescence requires the start of a new IDD design and manufacturing effort.</p> <p><b>FY 2021 Plans:</b> N/A</p> <p><b>FY 2022 Plans:</b> N/A</p>		26.498	0.000	0.000
<b>Accomplishments/Planned Programs Subtotals</b>		49.300	0.000	0.000

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203913F / <i>NUDET Detection System (SPACE)</i>
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**D. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• SPAF 01 Line Item NUDETS: <i>Nudet Detection Sys Space</i>	8.918	-	-	-	-	-	-	-	-	-	-

**Remarks**

**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 DOE to Sandia, Lawrence Livermore, Los Alamos National Laboratories and other agencies on existing DOE/NNSA contracts. The purpose of the USNDS Technology Risk Reduction (TRR) is to reduce risks for future USNDS Ground Segment updates.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203913F / NUDET Detection System (SPACE)	<b>Project (Number/Name)</b> 672808 / Nuc Detonation Det Sys (sensors)
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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, GNT/UGNT, and Integration Support	MIPR	Sandia National Laboratory : Albuquerque, NM	-	12.365	Nov 2019	-		-		-		-	-	-	-
USNDS Technical Mission Analysis	MIPR	Aerospace : El Segundo, CA	-	2.272	Dec 2019	-		-		-		-	-	-	-
USNDS Enterprise SE&I	C/CPAF	TASC : El Segundo, CA	-	0.680	Dec 2019	-		-		-		-	-	-	-
USNDS System Engineering and Architecture	MIPR	Sandia National Labs : Albuquerque, NM	-	22.695	Jan 2020	-		-		-		-	-	-	-
<b>Subtotal</b>			-	38.012		-		-		-		-	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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 On-orbit Sensor Testing	MIPR	Various : LANL, SNL, NM	-	4.417	Dec 2019	-		-		-		-	-	-	-
<b>Subtotal</b>			-	4.417		-		-		-		-	-	-	N/A

<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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 FFRDC	Various	Aerospace, MITRE : El Segundo, CA	-	1.452	Dec 2019	-		-		-		-	-	-	-
USNDS A&AS	Various	Various : Various	-	4.888	Nov 2019	-		-		-		-	-	-	-
USNDS Other Support	C/CPAF	Various : Various	-	0.531	Nov 2019	-		-		-		-	-	-	-
<b>Subtotal</b>			-	6.871		-		-		-		-	-	-	N/A

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2022 Air Force							<b>Date:</b> May 2021				
<b>Appropriation/Budget Activity</b> 3600 / 7			<b>R-1 Program Element (Number/Name)</b> PE 1203913F / NUDET Detection System (SPACE)				<b>Project (Number/Name)</b> 672808 / Nuc Detonation Det Sys (sensors)				
	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>		
<b>Project Cost Totals</b>	-	49.300	0.000	-	-	-	-	-	N/A		

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203913F / <i>NUDET Detection System (SPACE)</i>	<b>Project (Number/Name)</b> 672808 / <i>Nuc Detonation Det Sys (sensors)</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>UGNT</b>																												
Acceptance, Test, Support, Readiness Campaign, Integration UGNT 2019 1-5																												
<b>USNDS</b>																												
NDS Payload Checkout and Activation																												
<b>Integration with SMGT Trailers</b>																												
Integration with SMGT trailers																												
<b>USNDS System Engineering and Architecture Design</b>																												
USNDS System Engineering and Architecture Design																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203913F / <i>NUDET Detection System (SPACE)</i>	<b>Project (Number/Name)</b> 672808 / <i>Nuc Detonation Det Sys (sensors)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>UGNT</i></b>				
Acceptance, Test, Support, Readiness Campaign, Integration UGNT 2019 1-5	1	2020	4	2020
<b><i>USNDS</i></b>				
NDS Payload Checkout and Activation	1	2020	4	2020
<b><i>Integration with SMGT Trailers</i></b>				
Integration with SMGT trailers	1	2020	4	2020
<b><i>USNDS System Engineering and Architecture Design</i></b>				
USNDS System Engineering and Architecture Design	1	2020	4	2020



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203940F / <i>Space Situation Awareness Operations</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	16.228	0.000	0.000	0.000	0.000	-	-	-	-	-	-
67A017: <i>Sensor Service Life Extension Program</i>	-	16.228	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

In FY 2021, PE 1203940F, Space Situation Awareness Operations efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1203940SF Space Situation Awareness Operations from Appropriation 3600, Budget Activity 07 due to the creation of a new Appropriation for Space Force.

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.

Service Life Extension Programs (SLEPs) are efforts to upgrade, operationalize and extend the life of operational SSA sensors. These SLEPs 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 SLEPs themselves 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. These efforts may include prototyping and technology demonstrations.

Global Sensor Watch (GSW) Program provides an integrated SSA Tip & Cue capability that implements a survivable architecture providing overlapping, assured, and viable surveillance options for executing event response, multiple level security processing of SSA data and automated cross-sensor tipping & cueing worldwide. 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 both space objects of interest and new foreign launches; optimizing commercial, intelligence community (IC) & Missile Defense Agency sensors to better support BMC2; developing & executing Joint Functional Space Component Command (JFSCC) exercises such as Combined Space Operations Center and National Space Defense Center Experimentation, Test and Training Initiative to test & optimize Space Control capabilities, Concept of Operations (CONOPS) development to increase probability of survival for blue assets, and refining requirements across the space enterprise; enhancing sensor performance

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203940F / <i>Space Situation Awareness Operations</i>
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to close the solar exclusion gap leveraging technologies such as optical daylight tracking and incorporating commercial & IC sensors; and improving legacy paths to support bi-directional machine-to-machine sensor communications enabling a more complete BMC2 capability.

Ground Based Radar Upgrades improves the sensitivity, search capabilities and CONOPS of existing ground-based SSA sensors to better support custody and fire control timelines.

Programs and projects in the space warfighting enterprise are evaluating ways to maximize innovation, resiliency, and our ability to rapidly respond to known and emerging threats. Space enterprise efforts aim to execute technology risk reduction efforts, integration of new or repurposed capabilities, enterprise decision-making tools, experimentation, and rapid prototyping and fielding via all appropriate acquisition authorities and contract mechanisms.

Funding for this exhibit is contained in PE 12034940F.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	17.834	0.000	0.000	0.000	0.000
Current President's Budget	16.228	0.000	0.000	0.000	0.000
Total Adjustments	-1.606	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	-1.085	0.000			
• SBIR/STTR Transfer	-0.521	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

**Change Summary Explanation**

FY 2020: -\$1.085M decrease for higher Air Force Space priorities.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Global Sensor Watch Program	10.860	0.000	0.000
<b>Description:</b> Global Sensor Watch (GSW) Program provides an integrated SSA Tip and Cue capability that implements a survivable architecture that provides overlapping, assured, and viable surveillance options for executing event response, multiple			

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1203940F / <i>Space Situation Awareness Operations</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p>level security processing of SSA data and automated cross-sensor tipping and cueing around the globe. Other efforts to support Battle Management Command &amp; Control (BMC2) in space include developing &amp; deploying advanced software algorithms to identify, acquire, characterize, and maintain custody of deep space SHIOs; optimizing intelligence community &amp; MDA sensors to better support BMC2; developing &amp; executing JFCC Space exercises to test &amp; 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 and improving legacy communication paths to support bi-directional machine-to-machine sensor communications enabling a more complete BMC2 capability.</p> <p><b>FY 2021 Plans:</b> N/A</p> <p><b>FY 2022 Plans:</b> N/A</p>			
<p><b>Title:</b> Space Surveillance Telescope DT&amp;E/OT&amp;E</p> <p><b>Description:</b> Space Surveillance Telescope (SST) provides rapid un-cued search, detection and tracking of dim objects in deep space and offers enhanced capabilities addressing critical space situational awareness gaps. SST relocation from White Sands Missile Range, NM to Western Australia is expected complete in FY 2021. Efforts include executing SST sensor reassembly, subsystem integration and testing subsequent to Australian facility delays. This includes completion of SST integration into a new facility, SST subsystem and system testing &amp; Developmental Test/Operational Test and Evaluation (DT/OT&amp;E).</p> <p><b>FY 2021 Plans:</b> N/A</p> <p><b>FY 2022 Plans:</b> N/A</p>	5.368	0.000	0.000
<b>Accomplishments/Planned Programs Subtotals</b>	16.228	0.000	0.000

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

**Remarks**

**E. Acquisition Strategy**  
The acquisition strategies for the Global Sensor Watch and Space Surveillance Telescope programs includes a mix of modifications to existing Air Force contracts and directing funds to other AF or DoD organizations for contract support.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203940F / <i>Space Situation Awareness Operations</i>	<b>Project (Number/Name)</b> 67A017 / <i>Sensor Service Life Extension Program</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
GSW Operationalization	C/TBD	Multiple : Colorado Springs, CO	-	6.170	Dec 2019	-		-		-		-	-	-	-
GSW SW Development 1	Various	AFRL : Various	-	1.000	Nov 2019	-		-		-		-	-	-	-
GSW SW Development 2	Various	MIT/LL : Lexington, MA	-	1.000	Nov 2019	-		-		-		-	-	-	-
GSW SW Development 3	Various	Sandia National Labs : Albuquerque, NM	-	0.500	Nov 2019	-		-		-		-	-	-	-
Space Surveillance Telescope	Various	Multiple : Exmuth Australia	-	5.368	Oct 2019	-		-		-		-	-	-	-
<b>Subtotal</b>			-	14.038		-		-		-		-	-	-	N/A

<b>Management Services (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
A&AS	Various	Multiple : Colorado Springs, CO	-	1.290	Oct 2019	-		-		-		-	-	-	-
FFRDC	Various	Multiple : Colorado Springs, CO	-	0.800	Dec 2019	-		-		-		-	-	-	7.788
Other Support	Various	Muliple : Colorado Springs, CO	-	0.100	Oct 2019	-		-		-		-	-	-	16.626
<b>Subtotal</b>			-	2.190		-		-		-		-	-	-	N/A

<b>Project Cost Totals</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
-	-	16.228	0.000	-	-	-	-	-	N/A

**Remarks**



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1203940F / <i>Space Situation Awareness Operations</i>	<b>Project (Number/Name)</b> 67A017 / <i>Sensor Service Life Extension Program</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Sensor SLEP</b>				
Global Sensor Watch (GSW) Program	1	2020	4	2020
GSW Operationalization	1	2020	4	2020
GSW SW Development 1 (Operationalized)	1	2020	4	2020
GSW SW Development 2 (Legacy)	2	2020	4	2020
SST OT&E	1	2020	4	2020

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**Exhibit R-2, RDT&E Budget Item Justification: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	4,505.418	439.560	0.000	0.000	0.000	0.000	-	-	-	-	-	-
67A021: OCX	3,986.383	380.342	0.000	0.000	0.000	0.000	-	-	-	-	-	-
67A025: <i>GPS Enterprise Integrator</i>	519.035	59.218	0.000	0.000	0.000	0.000	-	-	-	-	-	-

**Program MDAP/MAIS Code:** 456

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

In FY 2021, PE 1206423F, Global Positioning System III - Operational Control Segment efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1206423SF Global Positioning System III - Operational Control Segment from Appropriation 3600, Budget Activity 07 due to the creation of a new Appropriation for Space Force.

The Global Positioning System (GPS) is a space based Positioning, Navigation and Timing (PNT) 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 Title 10 United States Code (USC) Sec 2281 which requires that the Secretary of Defense (SECDEF) 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.

Program Element (PE) 1206423F funds Research, Development, Test and Evaluation (RDT&E) for the GPS Next Generation Operational Control System (OCX), the upgrade to OCX called OCX Block 3F to incorporate Regional Military Protection (RMP), command and control functionality for GPS III Follow-on (GPS IIIF) satellites, and the GPS Enterprise Integrator (EI). 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 Department of Defense (DoD) information assurance and cybersecurity controls and capabilities. OCX Block 3F will upgrade OCX with new capabilities to synchronize with GPS IIIF Space Segment capabilities. GPS EI 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 support efforts such as engineering studies and analyses, architectural engineering studies, trade studies, technology needs forecasting, modernization initiatives, systems engineering, system development, resolving obsolescence issues, 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 United States (U.S.) Military and Allies' use of GPS. Additionally, funds ensure OCX efforts meet current and future Joint Requirements Oversight Council (JROC) approved required capabilities.

OCX Block 3F will upgrade OCX with new capabilities to synchronize with GPS IIIF Space Segment and Military GPS User Equipment (MGUE) Increment 2 capabilities. This includes advanced concept development such as systems analysis, modernized control segment development, modernization/deployment of 17

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i>	
<p>monitoring stations, 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 Block 3F will maintain backward compatibility and support the legacy constellation develop solutions necessary to command, control and monitor GPS IIIIF, to include advance collection and integration of RMP high power regional M-code signals, rapid warfighter effects and support to GPS auxiliary payloads.</p> <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 Position, Navigation, and Timing (PNT) capability to support the warfighter and over four billion national security, civil, Allied and commercial GPS users.</p> <p>The GPS EI project includes critical efforts associated with the Government's responsibility to accomplish integration of multiple prime contracts across the three GPS enterprise segments along with the transition to sustainment and operational communities. GPS EI maintains the current architecture and system definition, controls and validates interfaces, ensures compatibility across current Generation II and III systems, and ongoing developments such as GPS IIIIF space systems, OCX control systems, and MGUE Inc 1 and MGUE Inc 2 systems. GPS EI also develops/manages plans for execution and fielding of new capability like the new Military Code for use at the earliest opportunity. Further, GPS EI 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 EI project funds the technical evolution, risk reduction, enterprise-level testing and delivery of all PNT Enterprise capabilities. The GPS EI project also assists in the analysis and assessment of futures technology to continue the advancement of the PNT enterprise ensuring PNT capabilities continue to be at the forefront. Examples for Generation II include electronic protection; for Generation III, additional anti-jamming protection and additional civil signals. To accomplish this, GPS EI delivers Test and Verification capabilities, Requirements and Interface Management, and Systems Integration support across the Space, Control, and User Segments. In this capacity, GPS EI is responsible for managing this cross-program work to provide these and other capabilities.</p> <p>GPS EI'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 GPS EI: 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 EI performs all these efforts across all PNT programs in all acquisition phases. The Government owns the GPS Enterprise system requirements and integration, and highly leverages the GPS EI 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>In FY 2023, PE 1206423F, Global Positioning System III - Operational Control Segment, Project 67A025, GPS Enterprise Integrator efforts will be transferred to PE 1203269SF, Global Positioning System IIIIF, Project 653170, Space Programs, in order to continue enterprise integration activities.</p>		



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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i>
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Space acquisition must respond with speed and agility to emerging adversary threats. Space & Missile Systems Center (SMC) has transformed the organization and implementation of space acquisition to an enterprise approach, maximizing innovation and resiliency, leveraging international, commercial, and mission partnerships, and managing program/project priorities according to an integrated unclassified/classified enterprise space architecture. Expanding the appropriate acquisition authorities and contract mechanisms to deliver capability sooner, SMC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose capabilities.

This PE may include necessary civilian pay expenses required to manage, execute, and deliver OCX weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in PEs 1206392F and 1206398F.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	445.302	0.000	0.000	0.000	0.000
Current President's Budget	439.560	0.000	0.000	0.000	0.000
Total Adjustments	-5.742	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	9.904	0.000			
• SBIR/STTR Transfer	-15.646	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

**Change Summary Explanation**

FY 2020: +\$9.904 increase for IBM to HPE Replacement

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**Exhibit R-2A, RDT&E Project Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1206423F / <i>Global Positioning System III</i> <i>I - Operational Control Segment</i>	<b>Project (Number/Name)</b> 67A021 / OCX
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
67A021: OCX	3,986.383	380.342	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

GPS is a space-based PNT distribution system which operates through all weather. This project funds the research and development for OCX. This includes, but is not limited to, advanced concept development, systems engineering and analysis, modernized control segment and mission planning development, modernization/ deployment of 17 monitoring stations, 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 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 Allied use of GPS. Additionally, funds will ensure efforts to meet current and future 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 fields the advanced operational capability to control the advanced features of the modernized military signals (L1M and L2M M-Code). Blocks 1 & 2 are being delivered concurrently as a result of the Oct 2016 Nunn-McCurdy review.

OCX Block 3F will modify OCX Blocks 1 and 2 to field new capabilities in support of the GPS III Follow-On (GPS IIIF) production program and incorporate Regional Military Protection (RMP) to handle future threats. OCX Block 3F will upgrade OCX with new capabilities to synchronizes with GPS IIIF Space Segment and Military GPS User Equipment (MGUE) Increment 2 capabilities. OCX Block 3F will maintain backward compatibility with the existing capabilities to support the legacy GPS constellation and integrate into Block 1 and 2 and future efforts to support GPS IIIF. The OCX Block 3F effort will develop solutions necessary to command, control, and monitor GPS IIIF spacecraft and include advance collection and integration of RMP high-power regional Military Code (M-Code) signals, rapid warfighter effects, and support to GPS IIIF auxiliary payloads (including Search and Rescue (SAR), Nuclear Detonation (NUDET) Detection System (NDS)).

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1206423F / <i>Global Positioning System II</i> <i>I - Operational Control Segment</i>	<b>Project (Number/Name)</b> 67A021 / <i>OCX</i>

<b>B. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> OCX Development <b>Description:</b> Development of GPS OCX system to launch GPS III, operate a mixed GPS II and GPS III constellation, and provide for a robust Information Assurance system.  <b>FY 2021 Plans:</b> N/A  <b>FY 2022 Plans:</b> N/A  <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> N/A	350.283	0.000	0.000
<b>Title:</b> Technical Support <b>Description:</b> 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 (SE) including Technical Mission Analysis (TMA), Modernization SE and Technical Support, and Test and Evaluation (T&E).	30.059	-	-
<b>Accomplishments/Planned Programs Subtotals</b>	380.342	0.000	0.000

<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• RDTE 07 PE 1203265F: <i>GPS III Space Segment</i>	47.178	0.000	0.000	-	0.000	-	-	-	-	-	-
• SPAF 01 GPSIII: <i>GPS III Space Segment</i>	34.845	0.000	0.000	-	0.000	-	-	-	-	-	-
• RDTE 05 PE 1203269F: <i>GPS III Follow-On</i>	427.210	0.000	0.000	-	0.000	-	-	-	-	-	-
• SPAF 01 GPS03C: <i>GPSIII Follow On</i>	389.975	0.000	0.000	-	0.000	-	-	-	-	-	-

**Remarks**

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force		Date: May 2021
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1206423F / <i>Global Positioning System II</i> <i>I - Operational Control Segment</i>	Project (Number/Name) 67A021 / <i>OCX</i>

**D. Acquisition Strategy**

The Air Force is pursuing a "Block" approach for OCX in order 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 Command and Control (C2)) on-ramps for the follow-on contract for GPS III Space Vehicles (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. The OCX Block 3F program is structured as a tailored ACAT II program with an award in FY 2021. OCX Block 3F is utilizing an agile software development approach and updates the Block I & II baseline in order to deliver OCX Block 3F requirements.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1206423F / <i>Global Positioning System III</i> <i>I - Operational Control Segment</i>	<b>Project (Number/Name)</b> 67A021 / OCX
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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	3,150.818	338.036	Dec 2019	-		-		-		-	-	-	4,413.394
GPS OCX Technical Mission Analysis	MIPR	Various : Various	62.884	13.211	Dec 2019	-		-		-		-	-	-	-
GPS OCX Enterprise SE&I	C/CPAF	TASC : El Segundo, CA	54.932	4.208	Dec 2019	-		-		-		-	-	-	88.187
GPS OCX Modernization/ SE & Technical Support	Various	Various : Various	67.041	3.121	Dec 2019	-		-		-		-	-	-	-
GPS OCX AMCS Facility Dev	Various	Various : Various	2.392	0.068		-		-		-		-	-	-	-
GPS OCX Standard Space Trainer (SST)	C/CPAF	Sonalyt, Inc : Waterford, CT	22.500	5.000	Dec 2019	-		-		-		-	-	-	34.000
GPS OCX Enterprise Mission Planning	C/CPIF	Booz Allen Hamilton Eng Services : El Segundo, CA	22.100	5.800	Jan 2020	-		-		-		-	-	-	33.700
GPS OCX Phase A Development	Various	Various : Various	289.000	-		-		-		-		-	-	-	289.000
<b>Subtotal</b>			3,671.667	369.444		-		-		-		-	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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/Various	Various : Various	12.493	1.521	Mar 2020	-		-		-		-	-	-	-
<b>Subtotal</b>			12.493	1.521		-		-		-		-	-	-	N/A

<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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 FFRDC	MIPR	Various : Various	148.051	4.874	Oct 2019	-		-		-		-	-	-	-



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1206423F / <i>Global Positioning System II</i> <i>I - Operational Control Segment</i>	<b>Project (Number/Name)</b> 67A021 / <i>OCX</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>OCX</b>																												
Block 0/1/2 Preoperational Support																												
1.7/2.1 Integration and Test																												
Monitor Station /Legacy Ground Antenna Installs																												
GPS System Simulator (GSYS) Accreditation																												
Iteration 1.7/2.1 FQT Test Readiness Review (TRR)																												
Block 1 FQT																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1206423F / <i>Global Positioning System II</i> <i>I - Operational Control Segment</i>	<b>Project (Number/Name)</b> 67A021 / OCX

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>OCX</b>				
Block 0/1/2 Preoperational Support	1	2020	4	2020
1.7/2.1 Integration and Test	1	2020	1	2020
Monitor Station /Legacy Ground Antenna Installs	1	2020	1	2020
GPS System Simulator (GSYS) Accreditation	1	2020	1	2020
Iteration 1.7/2.1 FQT Test Readiness Review (TRR)	2	2020	2	2020
Block 1 FQT	2	2020	2	2020



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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force										<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600 / 7					<b>R-1 Program Element (Number/Name)</b> PE 1206423F / <i>Global Positioning System II I - Operational Control Segment</i>				<b>Project (Number/Name)</b> 67A025 / <i>GPS Enterprise Integrator</i>			
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>FY 2023</b>	<b>FY 2024</b>	<b>FY 2025</b>	<b>FY 2026</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
67A025: <i>GPS Enterprise Integrator</i>	519.035	59.218	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

The GPS Program Office established and maintains the technical baseline and is responsible for the successful fielding of all the GPS Segments (space, control, and user). In order to successfully execute these responsibilities, GPS Enterprise Integrator (EI) creates an enterprise architecture, integrates segment products, verifies the enterprise requirements are adequately met, develops and implements various Systems Engineering documents, defines methods of verification, conducts integrated system test and test analysis, develops and manages the Enterprise technical baseline which reflect multiple stakeholder requirements; Stakeholders include the Department of Defense (DoD), foreign governments, industry, and the general public (through four public interface specifications). Furthermore, GPS EI ensures PNT capabilities meet the warfighter's, civil agencies, commercial entities, international treaties, and over four billion global GPS users needs. Moreover, GPS EI is responsible for delivering a reliable PNT signal capability to military operators, the civil user community, and international partners. In addition, GPS EI validates the system performance in various mission threat scenarios during its development as well as provides in-depth technical expertise to enhance government control, oversight and program accountability. GPS EI is also responsible for all aspects of schedule and technical alignment across the GPS segments (space, control, and user).

More specifically, GPS EI is responsible for technical baseline management, integration, synchronizing, testing, and verifying GPS III, GPS IIIF, Operational Control System (OCS), OCX, Military Global Positioning System User Equipment (MGUE) Increment 1 and Increment 2, and other PNT investment projects. Additionally, GPS EI is responsible for creating and managing plans that provide early exercise of the products under development, compatibility analysis, and inter-segment testing. The inter-segment tests are required to prove OCX interoperability with GPS III satellites and Modernized User Equipment. More importantly, it ensures backwards compatibility with legacy systems such as, GPS Block II satellites, OCS and legacy user equipment. The GPS EI also manages the process through which the JROC validated requirements are matured and flowed down to the system segments, while remaining consistent with various interfaces. This enables the GPS system to meet Title 10 of the USC, Sec 2281, mandated PNT capabilities, and various other obligations to the international community that provide inter-operable PNT signals.

GPS EI also supports GPS spectrum protection at international forums such as the International Telecommunications Union. Such support consists of advocating on behalf of the United States (U.S.) Government when negotiating with foreign partners. In addition, GPS EI provides technical expertise to maintain relationships with other U.S. government agencies that include the Federal Aviation Administration (FAA), National Geospatial-Intelligence Agency (NGA), National Aeronautics and Space Administration (NASA) and Departments of State (DOS), Transportation (DoT), Homeland Security (DHS), and Commerce (DOC). GPS EI Spectrum also ensures GPS priority for eight essential spectrum signals, including those required for civil air navigation and safety of life. Spectrum Protection prevents encroachment from commercial or foreign entities, which results in the preservation of warfighter's reliable signal. As a result, military operations and the integrity of the global economic infrastructure are protected.

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i>	<b>Project (Number/Name)</b> 67A025 / <i>GPS Enterprise Integrator</i>
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GPS EI also manages GPS and other navigation system performance monitoring and publishes performance specifications and reports to ensure anomalies with GPS can be resolved. In addition GPS EI provides technical expertise for the development for GPS program technical baselines and public specifications to make certain that the Department of Defense (DOD) fulfills its commitment to the world for civilian GPS Service.

GPS EI also provides the PNT enterprise expertise in System Safety, Enterprise level System Security Engineering covering Acquisition Systems Program Security (i.e., personnel, industrial, operations, information, sensitive compartmented information, communication, and physical), Program Protection, Foreign Disclosure, Public Release reviews, Mission System Certification and Accreditation, and Enterprise Cybersecurity. GPS EI is accountable for the development, execution, and analysis of the PNT Enterprise Segments, cybersecurity, and associated test cases necessary to deliver a secure operational system.

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

	FY 2020	FY 2021	FY 2022
<b>Title:</b> GPS Enterprise Integrator	59.218	-	-
<b>Description:</b> The integration and technical baseline control of all elements of the GPS system (space/control/user) in support of both military and civil users. Test and verification of integrated system performance in preparation for operational test and evaluation.			
<b>Accomplishments/Planned Programs Subtotals</b>			
	59.218	-	-

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

Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• RDTE 04 PE 1203164F: <i>NAVSTAR Global Positioning System (User Equipment) (Space)</i>	308.215	-	-	-	-	-	-	-	-	-	-
• RDTE 07 PE 1203265F: <i>GPS III Space Segment</i>	47.178	-	-	-	-	-	-	-	-	-	-
• RDTE 05 PE 1203269F: <i>GPS III Follow-On</i>	427.210	-	-	-	-	-	-	-	-	-	-
• RDTE 07 PE 1203913F: <i>NUDET Detection System</i>	49.300	-	-	-	-	-	-	-	-	-	-
• SPAF 01 Line Item GPSIII: <i>GPS III Space Segment</i>	34.845	-	-	-	-	-	-	-	-	-	-
• SPAF 01 GPS IIIF <i>SPAF: GPS IIIF SPAF</i>	389.975	-	-	-	-	-	-	-	-	-	-

**Remarks**

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Exhibit R-2A, RDT&E Project Justification: PB 2022 Air Force		Date: May 2021
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 1206423F / Global Positioning System II I - Operational Control Segment	Project (Number/Name) 67A025 / GPS Enterprise Integrator

**D. Acquisition Strategy**

In accordance with a "back to basics" acquisition approach 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. This complex inter-segment integration 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. The GPS EI function of the SE&I contractor is currently funded within this PE. The SE&I effort was awarded in 2015 through a full and open competition with strategy built in year over year cost reductions as requirements stabilize. A SE&I follow-on is planned for award in the 4th Quarter of FY 2021. In FY 2023, the GPS EI effort will transition from PE 1206423SF to PE 1203269SF, Appn 3620.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i>	<b>Project (Number/Name)</b> 67A025 / <i>GPS Enterprise Integrator</i>
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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	234.203	22.959	Dec 2019	-		-		-		-	-	-	309.213
GPS EI Technical Mission Analysis 1	MIPR	Aerospace : El Segundo, CA	106.012	9.794	Dec 2019	-		-		-		-	-	-	-
GPS EI Technical Mission Analysis 2	Various	MITRE : Various	104.884	11.500	Nov 2019	-		-		-		-	-	-	-
GPS EI MRTA/MSTA	C/CPIF	Draper Labs : Cambridge, MA	14.022	3.400	Dec 2019	-		-		-		-	-	-	25.641
GPS EI Enterprise Mission Planning	C/CPFF	Various : El Segundo, CA	1.320	-		-		-		-		-	-	-	-
GPS EI Cybersecurity	Various	Various : El Segundo, CA	25.485	6.985	Dec 2019	-		-		-		-	-	-	-
GPS EI Additional Product Development	Various	Various : Various	6.777	2.176	Dec 2019	-		-		-		-	-	-	-
<b>Subtotal</b>			492.703	56.814		-		-		-		-	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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 System Test	Various	Various : El Segundo, CA	0.294	-		-		-		-		-	-	-	-
<b>Subtotal</b>			0.294	-		-		-		-		-	-	-	N/A

<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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 FFRDC	Various	Various : El Segundo, CA	1.748	1.265	Dec 2019	-		-		-		-	-	-	-



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1206423F / <i>Global Positioning System II</i> <i>I - Operational Control Segment</i>	<b>Project (Number/Name)</b> 67A025 / <i>GPS Enterprise Integrator</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>GPS III AFL</b>																												
GPS III SV03 Available for Launch	■																											
GPS III SV04 Available for Launch	■	■																										
GPS III SV05 Available for Launch			■	■																								
GPS III SV06 Available for Launch				■	■																							
<b>IST</b>																												
IST Preparation and Support	■	■	■																									
IST 3-3/MGUE Verification Testing (Phase II-IV)	■	■	■																									
IST 2-5/GPS III and COps Verification Testing	■																											
IST 2-6/MCEU Verification Testing			■	■																								
<b>Enterprise</b>																												
M-Code Early Use	■	■	■																									
SMPS Updates (v5B3 and v5C)	■	■	■																									
Preparation and Support for OCS to OCX transition	■	■	■																									

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1206423F / <i>Global Positioning System III - Operational Control Segment</i>	<b>Project (Number/Name)</b> 67A025 / <i>GPS Enterprise Integrator</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>GPS III AFL</b>				
GPS III SV03 Available for Launch	1	2020	1	2020
GPS III SV04 Available for Launch	1	2020	2	2020
GPS III SV05 Available for Launch	2	2020	4	2020
GPS III SV06 Available for Launch	3	2020	4	2020
<b>IST</b>				
IST Preparation and Support	1	2020	4	2020
IST 3-3/MGUE Verification Testing (Phase II-IV)	1	2020	4	2020
IST 2-5/GPS III and COps Verification Testing	1	2020	2	2020
IST 2-6/MCEU Verification Testing	3	2020	4	2020
<b>Enterprise</b>				
M-Code Early Use	1	2020	4	2020
SMPS Updates (v5B3 and v5C)	1	2020	4	2020
Preparation and Support for OCS to OCX transition	1	2020	4	2020

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1206770F / <i>Enterprise Ground Services</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	114.824	0.000	0.000	0.000	0.000	-	-	-	-	-	-
673140: <i>Enterprise Ground Services EGS</i>	-	114.824	0.000	0.000	0.000	0.000	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

In FY 2021, PE 1206770F, Enterprise Ground Services efforts were transferred to Appropriation 3620, Research, Development, Test & Evaluation, Space Force, PE 1206770SF Enterprise Ground Services from Appropriation 3600, Budget Activity 07 due to the creation of a new Appropriation for Space Force.

The Enterprise Ground Services (EGS) program will provide a robust enterprise ground architecture for United States Space Force satellite systems. EGS capability will become the primary ground command and control (C2) suite of services for the Space Force enterprise to meet evolving current and future space domain demands. EGS is based on Multi-Mission Satellite Operations Center (MMSOC) C2 capabilities developed under the Research and Development Space and Missile Operations (RDSMO) program.

The EGS program will perform technology maturation, development, prototyping and operational mission transition for increased commonality and resiliency in space program systems. EGS will focus efforts on the rapid development and deployment of tactical C2 services, developing and integrating on-premise and cloud infrastructure and laboratories at multiple sites, advanced concept exploration, prototype development and demonstrations, user experience maturation, training and Concept of Operations (CONOPs) refinement, cybersecurity operations and operational mission training support. These efforts will require support such as systems engineering, integration and test, standards and interface development, architecture development, enhanced cybersecurity development and implementation. Programs and projects in the space warfighting enterprise are evaluating ways to maximize innovation, resiliency, and the ability to rapidly respond to known and emerging threats. Space enterprise efforts aim to execute technology risk-reduction efforts and integrate new or repurposed capabilities, enterprise decision-making tools, experimentation, and rapid prototyping and fielding via all appropriate acquisition authorities and contract mechanisms.

Over the Future Years Defense Program (FYDP), EGS will be developing and deploying C2 services and software applications that support integrating legacy and new missions such as Missile Warning; Missile Defense; MILSATCOM; Positioning, Navigation, and Timing; Environmental Monitoring; Space Domain Awareness; and various classified and experimental satellites and missions to the EGS open architecture. The modifications to catalog software applications provided by EGS are being made in an agile development, security, and operations (DevSecOps) environment.

Space acquisition must respond with speed and agility to emerging adversary threats. The Space and Missile Systems Center (SMC) has transformed the organization and implementation of space acquisition to an enterprise approach, maximizing innovation and resiliency, leveraging international, commercial, and mission partnerships, and managing program/project priorities according to an integrated unclassified/classified enterprise space architecture. Expanding the appropriate

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 1206770F / <i>Enterprise Ground Services</i>
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acquisition authorities and contract mechanisms to deliver capability sooner, SMC will strategically execute experimentation, prototyping, risk reduction, and other efforts to develop new or repurpose capabilities.

The program element may include necessary civilian pay expenses required to manage, execute, and deliver EGS capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 1206392F and 1206398F.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	118.870	0.000	0.000	0.000	0.000
Current President's Budget	114.824	0.000	0.000	0.000	0.000
Total Adjustments	-4.046	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	-4.046	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> Enterprise Ground Services (EGS) Development	53.929	0.000	0.000
<b>Description:</b> Integrate common applications and services, refine standards and interfaces, develop and implement cybersecurity and cryptography requirements, refine training and CONOPs, and mature advanced concepts. Support prototype mission partner demonstrations and integration and test of mission-unique software. Expand the development environment in order to develop software applications and services in support of integrating additional satellite missions.			
<b>FY 2021 Plans:</b> N/A			
<b>FY 2022 Plans:</b> N/A			
<b>Title:</b> EGS Pre-Operations (Pre-Ops) Support	8.778	0.000	0.000

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>		<b>R-1 Program Element (Number/Name)</b> PE 1206770F / <i>Enterprise Ground Services</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p><b>Description:</b> Maintain EGS hardware and software baselines, update software licenses, cyber security, help desk operations, and associated training.</p> <p><b>FY 2021 Plans:</b> N/A</p> <p><b>FY 2022 Plans:</b> N/A</p>				
<p><b>Title:</b> EGS Deployment</p> <p><b>Description:</b> Rapidly deploy tactical C2 services and space domain capabilities to support customer-funded mission integration with EGS activities including future mission acquisition planning and risk-reduction efforts.</p> <p><b>FY 2021 Plans:</b> N/A</p> <p><b>FY 2022 Plans:</b> N/A</p>		52.117	0.000	0.000
<b>Accomplishments/Planned Programs Subtotals</b>		114.824	0.000	0.000
<b>D. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>Remarks</b>				
FY 2019 EGS funds were allocated in the RDSMO Program Element (PE) 1203173F; in FY 2020 EGS was established as PE 1206770F.				
<b>E. Acquisition Strategy</b>				
The EGS acquisition strategy focuses on rapidly delivering C2 prototypes and operational capabilities to warfighters, while leveraging industry best practices for agile development and continuous integration/delivery (CI/CD). One of the key tenets of the EGS acquisition strategy is to maintain government ownership of the technical baseline. As a result, EGS uses a combination of existing and new contracts and agreements with industry and academia to procure prototypes, platform services, system engineering services, and pre-ops support for mission users. EGS will leverage the two Small Business Innovation Research (SBIR) Phase III contracts that were awarded in late FY 2019 to scale EGS capabilities and enable more rapid development and deployment of tactical C2 services to operational users. Additionally, EGS provides development, integration, and pre-ops support for mission users through a contract awarded in FY 2020.				

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1206770F / Enterprise Ground Services	<b>Project (Number/Name)</b> 673140 / Enterprise Ground Services EGS
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<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
EGS Development	Various	Various : Various	-	35.177	Nov 2019	-		-		-		-	-	-	-
EGS Pre-Ops Support	Various	Various : Various	-	8.778	Dec 2019	-		-		-		-	-	-	-
EGS Deployment	Various	Various : Various	-	36.131	Nov 2019	-		-		-		-	-	-	-
EGS Technical Mission Analysis	RO	Aerospace : El Segundo, CA	-	5.000	Oct 2019	-		-		-		-	-	-	-
Enterprise Systems Engineering and Integration (SE&I)	Various	MITRE : Bedford, MA	-	15.986	Oct 2019	-		-		-		-	-	-	-
<b>Subtotal</b>			-	101.072		-		-		-		-	-	-	N/A

<b>Management Services (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
FFRDC	RO	Aerospace : El Segundo, CA	-	7.100	Oct 2019	-		-		-		-	-	-	-
A&AS Support	Various	Varioius : Various	-	6.150	Dec 2019	-		-		-		-	-	-	-
Other Support	Various	Various : El Segundo, CA	-	0.502	Dec 2019	-		-		-		-	-	-	-
<b>Subtotal</b>			-	13.752		-		-		-		-	-	-	N/A

<b>Project Cost Totals</b>	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
	-	114.824	0.000	-	-	-	-	-	N/A

**Remarks**  
 FY 2018-2019 Enterprise Ground Services (EGS) funds were allocated in the RDSMO Program Element (PE) 1203173F and in FY 2020 EGS funds transferred to Program Element (PE) 1206770F, Project 673140.

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**Exhibit R-4, RDT&E Schedule Profile: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1206770F / <i>Enterprise Ground Services</i>	<b>Project (Number/Name)</b> 673140 / <i>Enterprise Ground Services EGS</i>
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	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
<b><i>EGS Development</i></b>																																
System Integration Lab (SIL)	██████████																															
Space Management Battle Lab (SMBL)	██████████																															
Development to Operations (DevOps)	██████████																															
<b><i>EGS Deployment</i></b>																																
EGS Deployment	██████████																															
Buckley AFB Initial Capability		██																														
<b><i>EGS Pre-Ops Support</i></b>																																
EGS Pre-Ops Support	██████████																															
Mission Integration	██████████																															
-HEO Operations Migration to EGS (HOME)			██																													
-Mission Partner				██																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 1206770F / <i>Enterprise Ground Services</i>	<b>Project (Number/Name)</b> 673140 / <i>Enterprise Ground Services EGS</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>EGS Development</i></b>				
System Integration Lab (SIL)	1	2020	4	2020
Space Management Battle Lab (SMBL)	1	2020	4	2020
Development to Operations (DevOps)	1	2020	4	2020
<b><i>EGS Deployment</i></b>				
EGS Deployment	1	2020	4	2020
Buckley AFB Initial Capability	2	2020	2	2020
<b><i>EGS Pre-Ops Support</i></b>				
EGS Pre-Ops Support	1	2020	4	2020
Mission Integration	1	2020	4	2020
-HEO Operations Migration to EGS (HOME)	3	2020	3	2020
-Mission Partner	4	2020	4	2020

**Note**

Singular events depicted above represent milestones. All milestones include effort prior to and after the event. This schedule aligns with USSF/CSO approved EGS Long Term Solution Roadmap.

EGS Initial Enterprise Capability milestone includes initial delivery and maturation of tactical C2 enterprise services and space domain capabilities.

EGS Deployment milestones include initial build-outs of EGS enclaves at operational sites. Continuous Integration/Continuous Deployment is on-going.

EGS Pre-Ops support milestones include phased initial integration of mission partners and EGS. Pre-ops support is on-going.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 8: Software and Digital Technology Pilot Programs</i>	<b>R-1 Program Element (Number/Name)</b> PE 0608158F / <i>Strategic Mission Planning and Execution System - Software Pilot Program</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	96.100	0.000	96.100	-	-	-	-	-	-
685029: <i>Strategic Mission Planning and Execution System (SMPES)</i>	-	0.000	0.000	96.100	0.000	96.100	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

BA-08 Pilot Program - PEO Digital C2 Portfolio Software. Capabilities Include:

INTEGRATED STRATEGIC PLANNING AND ANALYSIS NETWORK (ISPAN): The mission of USSTRATCOM is to conduct global operations in coordination with other Combatant Commands, Services, and appropriate U.S. Government agencies to deter and detect strategic attacks against the U.S. and its allies. It provides full-spectrum global strike, and coordinated space, missile defense, and information operations capabilities to meet both deterrent and decisive national security objectives. USSTRATCOM will also provide operational space support, integrated missile defense, global command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR), and specialized planning expertise to the joint warfighter. ISPAN enables USSTRATCOM to carry out these missions. It is one of DoD's most complex classified computer systems and the only national force level planning system.

ISPAN Increment 5 (INC5) Program is conducting continuous, ongoing agile software development activities producing a secure software development environment. In addition, INC5 purchases software licenses for developer tools and development environments for unclassified, secret, and top-secret agile software development. The agile software development staff maintains hardware, system configuration, storage, back-up and recovery for contractor development and systems integration. The program supports agile processes including code repositories, configuration management, continuous integration/continuous delivery (CI/CD) pipelines, automation testing, automation validation and delivery. The agile developer environment meets classified, security regulations/criteria which includes TS which will promote competition even among offers without TS classified environments.

Mission Planning and Analysis System (MPAS) - MPAS consists of 17 separate subsystems. MPAS enables USSTRATCOM to accomplish its unique mission of developing Joint Staff Level I through Level IV nuclear and conventional attack options for national and theater requirements. Force planning is more complicated due to weapons reductions, increased accuracy requirements and delivery options, changing targeting requirements, shortened timelines for senior leader decision-making, and reduced financial resources to develop and sustain these national planning capabilities. ISPAN Increment 4 modernized MPAS and allowed it to fulfill the requirements for a more timely, flexible, and agile planning. ISPAN Increment 5 is a follow-on to ISPAN Increment 4 and provides new capabilities of Resiliency and Consequence of Execution analysis.

Global Adaptive Planning Collaborative Information Environment (GAP-CIE) - GAP CIE is a Joint Operation Planning application for rapid integrated Course of Action (COA) development that supports Strategic and Operational Situational Awareness of Global Events, Crisis Action Planning, and Campaign/Contingency Plan

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 8: Software and Digital Technology Pilot Programs</i>	<b>R-1 Program Element (Number/Name)</b> PE 0608158F / <i>Strategic Mission Planning and Execution System - Software Pilot Program</i>
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development for all DoD Planners. GAP CIE is a Web-based, collaborative Joint Operation Planning (JOP) tool for the combatant commander and strategic level. The system provides contingency and crisis action planning, allowing multiple combatant command staffs, other agencies and subordinate commands to collaborate online. Provides enterprise applications and communications support services for joint courses of action development in support of the USSTRATCOM mission; makes available collaborative information capabilities to Combatant Commands, Service components, agencies, and Joint Staff. Provides collaborative joint operations planning, orders development & shared awareness "Dashboards".

GAP CIE itself is a part of U.S. Strategic Command's Integrated Strategic Planning and Analysis Network (ISPAN), which is an operational planning and analysis network modernization program that supports the command's global strike, missile defense and information operations, along with nuclear deterrence responsibilities. GAP CIE includes two functional components - the GAP CIE planning environment, and the Global Situational Awareness Tool (GSAT). The planning environment provides Deliberative Planning, Crisis Action Planning, and Decision Support tools, while GSAT allows commanders to view geospatial, temporal and relational planning data. Both parts allow subject matter experts to share situational awareness, according to the original presolicitation.

Nuclear Planning and Execution System (NPES) - NPES is a National C2 automated information system (AIS) that supports all phases of nuclear conflict. The requirement includes all facets of Cyber investments as it relates NPES Legacy enhancements, test, communication systems and operational server integration with fixed command centers, distributed sites, and mobile platforms. NPES Legacy is a joint program, with the Air Force assigned lead service responsibilities. All NPES funding covers current and future cyber related investments necessary for a successful operational application/system delivery, for fixed command centers, distributive sites and mobile platforms. Provides for various levels of support of all Command and Control Software Engineering (C2SES) projects. Also, provides communications, security and human factor engineering support (current and future) as it pertains to the successful operation of NPES. Supports all communication interfaces with software development, data management, software re-engineering and NPES Operations to include requirements validation and training. Support is to maintain the systems at all NPES sites and platforms. Modernizes Decision Support/Knowledge Management, Information Visualization, Integrated/fused depiction of global battle space, Common Missile Event Picture, Strategic/Theater tracks/overlays, and Collaboration.

This program is in Budget Activity 8, Software and Digital Technology Pilot Program because this budget activity includes funding provided for expenses necessary for agile development, test and evaluation, procurement, production and modification, and the operation and maintenance of these programs.



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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 8: Software and Digital Technology Pilot Programs</i>	<b>R-1 Program Element (Number/Name)</b> PE 0608158F / <i>Strategic Mission Planning and Execution System - Software Pilot Program</i>
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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	96.100	0.000	96.100
Total Adjustments	0.000	0.000	96.100	0.000	96.100
• 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	96.100	0.000	96.100

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<b>Title:</b> Strategic Mission Planning and Execution System - Development	0.000	0.000	44.684	0.000	44.684
<b>Description:</b> Plan and execute strategies to deliver war fighting outcomes by leveraging NDAA Section 804, and Continuous Integration/Continuous Delivery software practices. This PE now contains four previous efforts, and have been combined into one effort under the BA-08 Pilot Program.					
ISPAN Increment 5: Modernizes the Mission Planning and Analysis System software (MPAS) that develops Joint Staff Level I through Level IV nuclear and conventional attack options for national and theater requirements.					
The Global Adaptive Planning Collaborative Information Environment (GAP-CIE): This system provides contingency and crisis action planning, allowing multiple combatant command staffs, other agencies and subordinate commands to collaborate online.					
The Nuclear Planning and Execution System (NPES): is a National C2 automated information system (AIS) that supports all phases of nuclear conflict.					
Decision Support Service (DSS) directly supports the senior leader decision making calculus. DSS will improve situational awareness, aggregate strategic-level information, provide a common visual display, be resilient, and mobile. DSS is supported by WHMO, OSD, NLCC, and CJCS.					
<b>FY 2021 Plans:</b>					

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 8: Software and Digital Technology Pilot Programs</i>	<b>R-1 Program Element (Number/Name)</b> PE 0608158F / <i>Strategic Mission Planning and Execution System - Software Pilot Program</i>
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**C. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>See the following individual programs:                      PE 0301112F, Nuclear Planning and Execution System (NPES): Project 673768, (NPES), and Project 674212: NLCC Decision Support System.                      PE 0101313F, Integrated Strategic Planning &amp; Analysis Network (ISPAN): WSC 833560 Integrated Strategic Planning and Analysis Network (ISPAN).                      PE 0301112F, Strategic Command and Control: WSC 833140 Nuclear Planning and Execution System (NPES).                      PE 0101324F, Integrated Strategic Planning &amp; Analysis Network, Increment 5 Project 675029 (ISPAN Inc5).</p> <p><b>FY 2022 Base Plans:</b>                      Funds will be used for Section 804 Beta Phase development and fielding activities to develop software architecture for the previously listed individual programs.</p> <p>This initiative realigns funding from various appropriations for selected Software Pilot Programs to a new Software and Digital Technology Budget Activity (BA) "BA-08" in the Components' respective Research, Development, Test &amp; Evaluation (RDT&amp;E) appropriations as a BA-08 Pilot Program.</p> <p>NPES:</p> <p>NPES Recap developer will produce sufficient new software capability to enable the user representatives to conduct operational testing &amp; evaluation. it will be the 4th year of SW development with plans to reduce the NPES Recap SW developer teams. -FY22 NPES Recap will fund AFLCMC/HBC in house software development resources to promote competition, a secure developmental environment, and enable developers to build and integrate software at the Top Secret level as part of the agile software development effort</p> <p>Decision Support Service:</p> <ul style="list-style-type: none"> <li>- Complete development of prototype</li> <li>- Begin rapid fielding</li> <li>- Continue development updates IAW Agile developmental principles</li> <li>- Continue Back-end development and data integration</li> <li>- Continue integration with required IT infrastructure</li> <li>- Refine and Implement cybersecurity requirements IAW cybersecurity plan</li> </ul>					

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021				
<b>Appropriation/Budget Activity</b> 3600: Research, Development, Test & Evaluation, Air Force I BA 8: Software and Digital Technology Pilot Programs		<b>R-1 Program Element (Number/Name)</b> PE 0608158F I Strategic Mission Planning and Execution System - Software Pilot Program				
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Beginning in FY22 funding transfers to BA-08. This initiative realigns funding from various appropriations for selected Software Pilot Programs to a new Software and Digital Technology Budget Activity (BA) "BA-08" in the Components' respective Research, Development, Test & Evaluation (RDT&E) appropriations.						
<p>ISPAN Increment 5: Funds will be used for Section 804 Beta Phase development and fielding activities to develop the hardware and software architecture for Mission Planning Analysis System (MPAS), Increment 5 modernization; to include alternate site stand-up, cybersecurity improvements, and continue the life-cycle procurement of commercial based hardware and software components for the MPAS effort.</p> <p><b>FY 2022 OCO Plans:</b> No OCO Requested</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> The increase is due to the inclusion into the BA-08 Software Pilot Program. The conversion of O&amp;M and Procurement funding to RDT&amp;E was realigned from the Mission Planning and Analysis System, the Global Adaptive Planning Collaborative Information Environment, the Nuclear Planning and Execution System, and the Integrated Strategic Planning and Analysis Network.</p> <p>Funding increase of \$44.684M due to transfer of RDT&amp;E Air Force from BPAC's 675029,673768, 674212 into BA-08 SMPES WSC 685029, PE 68158F.</p>						
<p><b>Title:</b> Strategic Mission Planning and Execution System - Procurement</p> <p><b>Description:</b> Procurement will be used to execute modification and maintenance activities. This includes funds transferred from PE 0101324F (AF RDT&amp;E ISPAN Increment 5), PE 0301112F (AF RDT&amp;E and AF Other Procurement NPES Recapitalization), PE 0303255F (NPES Legacy sustainment), 0101313F (Other Procurement ISPAN), and 0101318F (MPAS sustainment).</p> <p><b>FY 2021 Plans:</b> See the following individual programs: PE 0301112F, Nuclear Planning and Execution System (NPES): Project 673768, (NPES), and Project 674212: NLCC Decision Support System. PE 0101313F, Integrated Strategic Planning &amp; Analysis Network (ISPAN): WSC 833560 Integrated Strategic Planning and Analysis Network (ISPAN).</p>		0.000	0.000	5.057	-	5.057

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: Research, Development, Test & Evaluation, Air Force I BA 8: Software and Digital Technology Pilot Programs	<b>R-1 Program Element (Number/Name)</b> PE 0608158F I Strategic Mission Planning and Execution System - Software Pilot Program
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**C. Accomplishments/Planned Programs (\$ in Millions)**

	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
PE 0301112F, Strategic Command and Control: WSC 833140 Nuclear Planning and Execution System (NPES). PE 0101324F, Integrated Strategic Planning & Analysis Network, Increment 5 Project 675029 (ISPAN Inc5).  <b>FY 2022 Base Plans:</b> Funds will be used for Section 804 Beta Phase development and fielding activities to develop the hardware, and software architecture; to include alternate site stand-up, cybersecurity improvements, and continue the life-cycle procurement of commercial based hardware and software components for the effort.  <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> The increase is due to the inclusion into the BA-08 Software Pilot Program. The conversion of O&M and Procurement funding to RDT&E was realigned from the Mission Planning and Analysis System, the Global Adaptive Planning Collaborative Information Environment, the Nuclear Planning and Execution System, and the Integrated Strategic Planning and Analysis Network.  Funding increase of \$5.057M due to transfer of OPAF Air Force from BPAC's 833140 and 833560 into BA-08 SMPES WSC 685029, PE 68158F.					
<b>Title:</b> Strategic Mission Planning and Execution System - O&M  <b>Description:</b> This is an OSD pilot initiative in which all lifecycle funding will be tracked under BA08, Software and Digital Technology Pilot Programs. Pilot programs will test the ability to execute modern software development practices encompassing development, procurement, modification and maintenance activities. The SMPES pilot program in PE 0608158F, BA08 includes funds transferred from PE 0303255F (AF O&M NPES Legacy sustainment), and 0101318F (O&M MPAS sustainment).  <b>FY 2021 Plans:</b> See the following individual programs: PE 0301112F, Nuclear Planning and Execution System (NPES): Project 673768, (NPES), and Project 674212: NLCC Decision Support System. PE 0101313F, Integrated Strategic Planning & Analysis Network (ISPAN): WSC 833560 Integrated Strategic Planning and Analysis Network (ISPAN). PE 0301112F, Strategic Command and Control: WSC 833140 Nuclear Planning and Execution System (NPES). PE 0101324F, Integrated Strategic Planning & Analysis Network, Increment 5 Project 675029 (ISPAN Inc5).  <b>FY 2022 Base Plans:</b>	0.000	0.000	46.359	-	46.359

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 8: Software and Digital Technology Pilot Programs</i>	<b>R-1 Program Element (Number/Name)</b> PE 0608158F / <i>Strategic Mission Planning and Execution System - Software Pilot Program</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>Funds will be used for Section 804 Beta Phase development and fielding activities to develop the hardware and software architecture for Mission Planning Analysis System (MPAS), Increment 5 modernization; to include alternate site stand-up, cybersecurity improvements, and continue the life-cycle procurement of commercial based hardware and software components for the MPAS effort.</p> <p><b><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i></b> The increase of \$46.359M is due to O&amp;M funds transferred from previous programs: Legacy systems must remain online until completion of this effort.</p> <p>PE 0303255F (AF O&amp;M NPES Legacy sustainment), and 0101318F (O&amp;M MPAS and GAP/CIE sustainment), Sub Activity Group 15D.</p>					
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	0.000	96.100	0.000	96.100

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

N/A

**Remarks**

**E. Acquisition Strategy**

Assistant Secretary of the Air Force (Acquisition, Technology & Logistics) (SAF/AQ) designated ISPAN Inc 5 as a FY 2016 NDAA Section 804 Rapid Fielding program and delegated Milestone Decision Authority (MDA) to the Air Force Program Executive Officer (AFPEO) Digital.

Increment 5 will develop and modernize software for the combatant commanders using an Agile DevOps Continuous Delivery / Continuous Integration (CD/CI) acquisition strategy with development contracts that are negotiated and awarded in a competitive environment. The program will consider the best contract options to implement the Agile DevOps CD/CI strategy. Other activities are also accomplished through the use of various contracting vehicles such as Military Interdepartmental Purchase Requests (MIPRs).

Continuous, ongoing agile software development activities; producing a secure software development environment located in existing space at Offutt AFB. Software development environment will meet classification/security regulations/criteria, which will promote competition.

The PEO is the AF PEO Digital. Air Force Life Cycle Management Center at Hanscom AFB (AFLCMC/HB) and the 55 CONS at Offutt AFB are the contracting authorities for ISPAN and provide contracts, legal, and financial management support.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 8	<b>R-1 Program Element (Number/Name)</b> PE 0608158F / <i>Strategic Mission Planning and Execution System - Software Pilot Program</i>	<b>Project (Number/Name)</b> 685029 / <i>Strategic Mission Planning and Execution System (SMPES)</i>
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<b>Product Development (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
(ISPAN) Inc 5 EMD	Various	Offutt AFB : Offutt AFB, NE	-	0.000		0.000		25.927	Jan 2022	-		25.927	-	-	-
(NPES) Primary Development	Various	NG : Offutt AFB : Offutt AFB, NE	-	0.000		0.000		9.942	Nov 2021	-		9.942	-	-	-
(DSS) Prototype Development	C/T&M	NG: Offutt AFB : Offutt AFB, NE	-	0.000		0.000		0.285	Nov 2021	-		0.285	-	-	-
<b>Subtotal</b>			-	0.000		0.000		36.154		-		36.154	-	-	N/A

<b>Support (\$ in Millions)</b>				<b>FY 2020</b>		<b>FY 2021</b>		<b>FY 2022 Base</b>		<b>FY 2022 OCO</b>		<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>			
(ISPAN) Dev Ops Support	Various	Offutt AFB : Offutt AFB, NE	-	0.000		0.000		1.738	Nov 2021	-		1.738	-	-	-
(ISPAN) Engineering and Technical AMS	C/CPFF	Not specified: TBD : TBD	-	0.000		0.000		4.889	Nov 2021	-		4.889	-	-	-
(NPES) Dev Ops Support	C/CPFF	Various : Offutt AFB, NE	-	-		-		7.888	Apr 2022	-		7.888	-	-	-
(MPAS) DevOps Support	C/CPAF	Various: Offutt AFB : Offutt AFB, NE	-	0.000		0.000		35.324	Nov 2021	-		35.324	-	-	-
(GAP-CIE) Dev Ops Support - Global Adaptive Planning Collaborative Information Environment	C/CPFF	Various : Offutt AFB, NE	-	-		-		5.530	Nov 2021	-		5.530	-	-	-
(NPES) Technical Engineering Services	Various	Various : Offutt AFB, NE	-	0.000		0.000		1.229	Nov 2021	-		1.229	-	-	-
(DSS) DevOps Support	Various	TBD: Offutt AFB : Offutt AFB, NE	-	0.000		0.000		0.240	Feb 2022	-		0.240	-	-	-
(DSS) Engineering Test Support	C/CPAF	KBR Wyle: Offutt AFB : Offutt AFB, NE	-	0.000		0.000		0.210	May 2022	-		0.210	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force												Date: May 2021			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 8				PE 0608158F / Strategic Mission Planning and Execution System - Software Pilot Program				685029 / Strategic Mission Planning and Execution System (SMPES)							
<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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
(DSS) Engineering Support	SS/ Various	MITRE: Offutt AFB : Offutt AFB, NE	-	0.000		0.000		0.308		-		0.308	-	-	-
<b>Subtotal</b>			-	0.000		0.000		57.356		-		57.356	-	-	N/A
<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation Item (ISPAN)	Various	Not specified. : TBD	-	0.000		0.000		0.361	Nov 2021	-		0.361	-	-	-
(NPES) T&E	C/CPAF	Various: Offutt AFB : Offutt AFB, NE	-	0.000		0.000		0.523		-		0.523	-	-	-
<b>Subtotal</b>			-	0.000		0.000		0.884		-		0.884	-	-	N/A
<b>Management Services (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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 and Operations (ISPAN)	Various	Offutt AFB : Offutt AFB, NE	-	0.000		0.000		1.706	Nov 2021	-		1.706	-	-	-
<b>Subtotal</b>			-	0.000		0.000		1.706		-		1.706	-	-	N/A
<b>Project Cost Totals</b>			-	0.000		0.000		96.100		-		96.100	-	-	N/A
<b>Remarks</b>															

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<b>Exhibit R-4, RDT&amp;E Schedule Profile: PB 2022 Air Force</b>		<b>Date: May 2021</b>
<b>Appropriation/Budget Activity</b> 3600 / 8	<b>R-1 Program Element (Number/Name)</b> PE 0608158F / <i>Strategic Mission Planning and Execution System - Software Pilot Program</i>	<b>Project (Number/Name)</b> 685029 / <i>Strategic Mission Planning and Execution System (SMPES)</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<b>ISPAN Increment 5</b>																												
ISPAN Inc 5 Development phase									██████████																			
NPES Development phase									██████████																			
DSS Support									██████████																			
GAP-CIE Support									██████████																			



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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 8	<b>R-1 Program Element (Number/Name)</b> PE 0608158F / <i>Strategic Mission Planning and Execution System - Software Pilot Program</i>	<b>Project (Number/Name)</b> 685029 / <i>Strategic Mission Planning and Execution System (SMPES)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>ISPAN Increment 5</i></b>				
ISPAN Inc 5 Development phase	1	2022	4	2022
NPES Development phase	1	2022	4	2022
DSS Support	1	2022	4	2022
GAP-CIE Support	1	2022	4	2022

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 8: Software and Digital Technology Pilot Programs</i>	<b>R-1 Program Element (Number/Name)</b> PE 0608410F / <i>Air &amp; Space Operations Center (AOC) - Software Pilot Program</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	186.915	0.000	186.915	-	-	-	-	-	-
684596: <i>AOC - Software Pilot Program</i>	-	0.000	0.000	186.915	0.000	186.915	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**Note**  
In FY 2022, PE 0608410F, Air & Space Operations Center (AOC), Project 684596, AOC WS Modifications, was transferred from RDT&E, AF, PE 0207410F, Air & Space Operations Center (AOC), Project 674596, AOC WS Modifications, OPAF PE 0207410F, Air & Space Operations Center (AOC), Line Item 834530, AOC, and OMAF Operating Forces, Activity Group, Air Operations, Sub-Activity Group 11C, Combat Enhances Forces, in order to a participate in DoD's Budget Activity 08 (BA08) for Software and Digital Technology Pilot Program.

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

This effort is not a new start. The FY 2018 NDAA Sections 873/874 directed OSD to streamline software development. The Air Operations Center Weapon System (AOC WS) is an OUSD(A&S) pilot initiative in which all lifecycle funding will be tracked under BA08, Software and Digital Technology Pilot Programs. Pilot programs will test the ability to execute modern software development practices encompassing development, procurement, modification and sustainment activities.

The AOC WS, AN/USQ-163 Falconer, the senior element of the Theater Air Control System (TACS), is the weapon system that the Commander, Air Force Forces (COMAFFOR) provides the Combined/Joint Force Air Component Commander (C/JFACC) for planning, executing, and assessing theater-wide air and space operations. The C/JFACC provides air, space and cyber support to the Combined/Joint Forces Commander (C/JFC) by coordinating, deconflicting, and assessing the progress of various weapon systems to advance the C/JFC's campaign. The AOC WS develops operations strategy and planning documents. The weapon system also disseminates tasking orders; executes day-to-day peacetime and combat air, space and cyber operations; and provides rapid reaction to immediate situations by exercising positive control of friendly forces. This program is part of the overarching Kessel Run portfolio.

In FY 2022, funding supports continued software engineering capacity required for AOC WS Modifications to enable the transition from legacy systems (e.g., Theater Battle Management Core System - Force Level (TBMCS FL) and AOC 10.1) to Block 20 modernized applications while delivering, enabling and operating an extensible cloud-based Infrastructure and Platform as a Service (IaaS/PaaS) hosting platform. AOC WS Modifications are required for the AOC to keep pace with evolving COTS/GOTS components, DoD directives, support operational energy security and efficiency objectives, changes in the underlying IT environment, and to remain interoperable, certified, supportable, and compliant through software engineering solutions, integration, testing, fielding, training, and sustainment of new capabilities and upgrades to the AOC WS. Also in FY 2022, AOC WS Modifications activities evolve the AOC utilizing Agile Methodologies and embracing DevOps practices to deliver improved capabilities in support of mission requirements at Geographic and Global (formerly Functional) AOCs, as well as Support and Manpower Augmentation units, keeping the AOC current and interoperable with the Combatant Commands (CCMDs), cyber requirements, and next generation weapon systems/weapons.

The FY 2022 funding request was reduced by \$3.774 million to account for the availability of prior year execution balances in PE 0207410F.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 8: Software and Digital Technology Pilot Programs</i>	<b>R-1 Program Element (Number/Name)</b> PE 0608410F / <i>Air &amp; Space Operations Center (AOC) - Software Pilot Program</i>
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This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 \$0.000M was expended for civilian pay expenses in this program element, and in FY21 \$0.000M is forecasted for civilian pay expenses in this program element.

This program is in Budget Activity 8, Software and Digital Technology Pilot Program because this budget activity includes funding provided for expenses necessary for agile development, test and evaluation, procurement, production and modification, and the operation and maintenance of these programs.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	186.915	0.000	186.915
Total Adjustments	0.000	0.000	186.915	0.000	186.915
• 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	186.915	0.000	186.915

**Change Summary Explanation**

FY 2022: Funding increased due to transfer of RDT&E, AF and OPAF from PE 0207410F, Air & Space Operations Center (AOC), and OMAF from Sub-Activity Group 11C, Combat Enhancement Forces.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
<b>Title:</b> AOC WS Modifications - Development	0.000	0.000	90.027	0.000	90.027
<b>Description:</b> Plan and execute strategies to deliver war fighting outcomes by leveraging commercial best practices for agile software development, scale a modern IaaS/PaaS solution to the AOC WS enterprise, implement improved solutions for platform architecture and Continuous Integration/Continuous Delivery (CI/CD) pipeline, enable objectives that support operational energy and security efficiencies and maintain continuous Authority to Operate (ATO). Conduct software engineering solutions by leveraging agile engineering methodologies to engineer, integrate, and test modifications to the AOC WS leveraging test-driven development.					

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 8: Software and Digital Technology Pilot Programs</i>	<b>R-1 Program Element (Number/Name)</b> PE 0608410F / <i>Air &amp; Space Operations Center (AOC) - Software Pilot Program</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
<p>Utilize CI/CD processes to provide engineering solutions, test, and deliver enhanced operational C2 capabilities including support of multi-domain operations.</p> <p><b>FY 2021 Plans:</b> See PE 0207410F, Air &amp; Space Operations Center (AOC), Project Number 674596, AOC WS Modifications.</p> <p><b>FY 2022 Base Plans:</b></p> <ul style="list-style-type: none"> <li>- Enable the continued transition from legacy applications such as TBMCS FL and AOC 10.1 to Block 20 Modernized applications</li> <li>- Continue supporting software engineering capacity required for AOC WS Modifications to enable transition from legacy AOC 10.1 baseline to AOC WS Block 20 modernized capabilities</li> <li>- Continue to optimize Operational Energy (aviation fuel) use and increase combat capability through operations software development</li> </ul> <p><b>FY 2022 OCO Plans:</b> N/A</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding increased due to continuation of software development to modernize warfighter mission thread capabilities and return program to original development team capacity levels in order to retire legacy AOC mission applications, AOC 10.1 and TBMCS-FL.</p>					
<p><b>Title:</b> AOC WS Modifications - Procurement</p> <p><b>Description:</b> Provides hardware, software, technical documents, fielding support, Capital Equipment Replacement (CER) (e.g., replacing end of life/end of support Direct Mission Support (DMS) and 3rd Party components), core radio system and initial training to standardize the AOC WS to keep it interoperable, supportable and compliant (e.g., certification and accreditation). Also includes integration, test and fielding for cyber security improvements and existing 3rd Party modernized improvements/modifications.</p> <p><b>FY 2021 Plans:</b> See PE 0207410F, Air &amp; Space Operations Center (AOC), Line Item 834530, AOC.</p> <p><b>FY 2022 Base Plans:</b></p> <ul style="list-style-type: none"> <li>- Integration/fielding of improvements/upgrades of existing 3rd Party applications as well as newly developed replacement applications, CER and baseline updates. Address commercial end-of-life and DMS components including components associated with C2 applications (3rd Party COTS/GOTS)</li> </ul>	0.000	0.000	20.795	0.000	20.795

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: Research, Development, Test & Evaluation, Air Force I BA 8: Software and Digital Technology Pilot Programs	<b>R-1 Program Element (Number/Name)</b> PE 0608410F I Air & Space Operations Center (AOC) - Software Pilot Program
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total
- Support moving the AOC WS toward a cloud-based commercially managed Infrastructure and Platform as a Service (IaaS/ PaaS) - Provide Baseline Releases, periodic maintenance upgrades, emergency fixes, cyber security improvements and other activities (e.g., testing activities)  <b>FY 2022 OCO Plans:</b> N/A  <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding increased due to support costs of moving the AOC WS toward a cloud-based commercially managed Infrastructure and Platform as a Service (IaaS/ PaaS).					
<b>Title:</b> AOC WS Modifications - Sustainment  <b>Description:</b> Operations and Maintenance efforts sustain the fielded AOC WS and provide the foundation to transition to AOC WS Block 20. Provides critical integration and sustainment support to legacy 3rd party systems, infrastructure support, on-premise technical support and assistance, addresses cybersecurity requirements, hardware/software license renewals, release engineering services, help desk activities, testing operational, performance, functional and security requirements, quality assurance, configuration management, and documentation support.  <b>FY 2021 Plans:</b> See OMAF Operating Forces, Activity Group, Air Operations, Sub-Activity Group 11C, Combat Enhances Forces.  <b>FY 2022 Base Plans:</b> - Continue sustainment and integration activities to the current AOC WS baseline and support Block 20 Operational C2 presentation of capability as it is delivered  <b>FY 2022 OCO Plans:</b> N/A  <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding increased due to inclusion of operations and maintenance activities into pilot effort and continued sustainment and integration activities to the current AOC WS baseline and to support Block 20 Operational C2 presentation of delivered capabilities.	0.000	0.000	76.093	0.000	76.093
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	0.000	186.915	0.000	186.915

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 8: Software and Digital Technology Pilot Programs</i>	<b>R-1 Program Element (Number/Name)</b> PE 0608410F / <i>Air &amp; Space Operations Center (AOC) - Software Pilot Program</i>
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**D. Other Program Funding Summary (\$ in Millions)**

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF 03 834530: <i>Air &amp; Space Operations Center (AOC)</i>	33.243	15.383	2.224	0.000	2.224	-	-	-	-	-	-

**Remarks**

**E. Acquisition Strategy**

The acquisition strategy builds on agile software engineering solutions and modification of existing capabilities using evolutionary acquisition to standardize and modify the AOC WS. The initial capability was AOC WS Increment 10.0, which fielded the 10.0 configuration to five operational sites, plus a Help Desk and a Formal Training Unit. The second increment, Increment 10.1, upgraded these locations to an integrated baseline and fielded the baseline to additional operational and reserve units worldwide. AOC WS Modifications will leverage commercial best practices of Agile DevOps to scale out a modern virtual private cloud to the AOCs and scale up additional software product teams in support of retiring TBMCS FL and other legacy mission critical applications allowing for eventual disposal of the AOC 10.1 infrastructure. This enables dynamic resource allocation based on current warfighter needs. AOC Modifications operates under authority of FY16 NDAA, Section 804, Middle Tier of Acquisition for Rapid Prototyping and Rapid Fielding, leveraging commercial best practices to reduce timelines by modularizing both the development work and the associated contracting and funding strategies. The program is transitioning to a Software Acquisition Pathway following DoDI 5000.87, Operation of Software Acquisition Pathway Guidance. The desired end state is continuous delivery of all AOC WS software.

AOC WS Modifications will leverage the AOC WS Long-Term Modification and Sustainment (LTM&S) contract which will provide support to government led integration of the AOC WS enterprise. AOC WS Modifications will also use Other Transaction Authority (OTA) to adopt commercial best practices for software development and to scale out a modern Infrastructure as a Service/Platform as a Service (IaaS/PaaS) solution. Activities are also accomplished via Military Interdepartmental Purchase Requests (MIPR). Additionally, significant technical expertise will be sought after via modular contracting approach and provided by Government Agencies, DoD Laboratory, Federally Funded Research and Development Centers (FFRDC), Academia, and Engineering & Professional Acquisition Support Services contractors as well as commercial industry partners.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force												Date: May 2021			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 8				PE 0608410F / Air & Space Operations Center (AOC) - Software Pilot Program				684596 / AOC - Software Pilot Program							
Product Development (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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
AOC WS Modifications Development	C/Variou	Various : Multiple	-	0.000		0.000		75.071	Dec 2021	0.000		75.071	-	-	-
AOC WS Modifications Materials	C/Variou	Various : Mutiple	-	0.000		0.000		19.185	Dec 2021	0.000		19.185	-	-	-
AOC WS Modifications Sustainment	C/Variou	Various : Multiple	-	0.000		0.000		43.206	Dec 2021	0.000		43.206	-	-	-
AOC WS Modifications Other Transaction	Various	Pivotal : Multiple	-	0.000		0.000		1.089	Dec 2021	0.000		1.089	-	-	-
<b>Subtotal</b>			-	0.000		0.000		138.551		0.000		138.551	-	-	N/A
Support (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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
AOC WS Modifications Direct Mission Support	C/TBD	Various : Various	-	0.000		0.000		18.321	Dec 2021	0.000		18.321	-	-	-
<b>Subtotal</b>			-	0.000		0.000		18.321		0.000		18.321	-	-	N/A
Management Services (\$ in Millions)				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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
AOC WS Modifications Engineering Services	Various	Various : Various	-	0.000		0.000		3.703	Oct 2021	0.000		3.703	-	-	-
AOC WS Modifications Program Support	C/Variou	Various : Various	-	0.000		0.000		26.340	Dec 2021	-		26.340	-	-	-
<b>Subtotal</b>			-	0.000		0.000		30.043		0.000		30.043	-	-	N/A
<b>Project Cost Totals</b>			-	0.000		0.000		186.915		0.000		186.915	-	-	N/A



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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis:</b> PB 2022 Air Force							<b>Date:</b> May 2021			
<b>Appropriation/Budget Activity</b> 3600 / 8			<b>R-1 Program Element (Number/Name)</b> PE 0608410F / Air & Space Operations Center (AOC) - Software Pilot Program			<b>Project (Number/Name)</b> 684596 / AOC - Software Pilot Program				
	<b>Prior Years</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>	

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 8	<b>R-1 Program Element (Number/Name)</b> PE 0608410F / Air & Space Operations Center (AOC) - Software Pilot Program	<b>Project (Number/Name)</b> 684596 / AOC - Software Pilot Program

FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

<b>AOC WS Modifications</b>	
AOC WS Modifications Kessel Run	██████████

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 8	<b>R-1 Program Element (Number/Name)</b> PE 0608410F / Air & Space Operations Center (AOC) - Software Pilot Program	<b>Project (Number/Name)</b> 684596 / AOC - Software Pilot Program

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>AOC WS Modifications</b>				
AOC WS Modifications Kessel Run	1	2022	4	2022

**Note**  
See PE 0207410F, Air & Space Operations Center (AOC), Project Number 674596, AOC WS Modifications for prior years development events.

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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 8: Software and Digital Technology Pilot Programs</i>	<b>R-1 Program Element (Number/Name)</b> PE 0608920F / <i>Defense Enterprise Accounting and Management System (DEAMS) - Software Pilot Pro</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	135.263	0.000	135.263	-	-	-	-	-	-
685178: <i>DEAMS Continuous Capability Development</i>	-	0.000	0.000	135.263	0.000	135.263	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

**Note**

In FY2022, DEAMS Continuous Capability Development (CCD) budget controls have been realigned from Research, Development, Test & Evaluation (RDT&E) Program Element (PE) 0901554F Project 675178, Operations & Maintenance (O&M) AG/SAG 042A, and Other Procurement Line Item 834470 and consolidated into Budget Activity 8 in PE 0608920F in order to participate in the DoD's Software & Digital Technology Pilot Program.

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

This effort is not a new start. The FY 2018 NDAA Sections 873/874 directed OSD to streamline software development. The Defense Enterprise Accounting and Management System (DEAMS) has been included in an OSD pilot initiative in which all lifecycle funding will be tracked under BA08, Software and Digital Technology Pilot Programs. Pilot programs will test the ability to execute modern software development practices encompassing development, procurement, modification and maintenance activities. The DEAMS pilot program in PE 0608920F, RDT&E, Air Force, BA08 includes Air Force RDT&E, Other Procurement, and Operations & Maintenance funds transferred from PE 0901554F.

DEAMS is a commercial-off-the-shelf (COTS), Oracle-based software implementation which provides an auditable, modern accounting and finance management capability. It is the Department of the Air Force's (DAF) core accounting and financial management solution and is a key component of the DAF's long-term business process improvements needed to sustain auditability and correct financial system weaknesses. DEAMS supports 17,000 users at 170 installations world-wide supporting all Air Force Major Commands, the U.S. Space Force, and Unified Commands where the DAF is the executive agent.

DEAMS is a joint DAF and United States Transportation Command (USTRANSCOM) Enterprise Resource Planning (ERP) Program that replaces numerous inefficient and/or obsolete legacy accounting and finance systems and provides 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.

The DAF has transitioned DEAMS to the Capability Support Phase, in which enhancements are managed through the Agile software development backlog by the Program Management Office (PMO) and Function Management Office (FMO). Enhancement activities will be implemented via a process of development cycles, in which usable capability is produced after every iteration. The PMO construct, along with the application of Agile principles allows the program to properly plan system requirements, deliver early capability to the end users, achieve early return on investment of taxpayer dollars, mitigate risk, reduce waste, effectively respond to change, and continuously improve processes.

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 8: Software and Digital Technology Pilot Programs</i>	<b>R-1 Program Element (Number/Name)</b> PE 0608920F / <i>Defense Enterprise Accounting and Management System (DEAMS) - Software Pilot Pro</i>
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The DAF is planning to increase DEAMS usage within the acquisition community to include acquisition program executive offices, laboratories, test centers, and air logistics complexes. These deployments will add an additional 4,500 users for a total of 21,500 users.

DEAMS is compliant with the Clinger-Cohen Act and the DoD's Business Enterprise Architecture (BEA). DEAMS is key to DAF compliance with the Financial Improvement and Audit Readiness (FIAR) requirement. This requirement supports performance of a full financial audit as required by title 10 U.S.C. Chapter 9A, Sec 240-D.

This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver DEAMS for emergent or unanticipated weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F. In FY20 0.000M was expended for civilian pay expenses in this program element, and in FY21 0.000M is forecasted for civilian pay expenses in this program element.

This program is in Budget Activity 8, Software and Digital Technology Pilot Program because this budget activity includes funding provided for expenses necessary for agile development, test and evaluation, procurement, production and modification, and the operation and maintenance of these programs.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	135.263	0.000	135.263
Total Adjustments	0.000	0.000	135.263	0.000	135.263
• 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	135.263	0.000	135.263

**Change Summary Explanation**

Current PB: Funding increased due to transfer of RDT&E, AF; OPAF; and O&M funds from PE 0901554F to PE 0608920F. Respective FY21 funding totaled \$121.5M. FY22 request increased to \$135M to enable an increase in the number of development teams to deliver maximum capability sooner and sunset legacy systems.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> DEAMS Continuous Capability Development (CCD) Product Development	0.000	0.000	54.400

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 8: Software and Digital Technology Pilot Programs</i>	<b>R-1 Program Element (Number/Name)</b> PE 0608920F / <i>Defense Enterprise Accounting and Management System (DEAMS) - Software Pilot Pro</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
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**Description:** DEAMS CCD system capabilities will be developed and enhanced through completion of iterative development cycles in accordance with an Agile software development strategy. The DAF is implementing a steady-state incremental development tempo that is more complimentary to the Agile software development process. Development activities include requirements analysis, design, build, test, data conversion, migration from legacy system as required, implementation into the DEAMS baseline, and the resolution of deficiency reports and defects. Activities also include various Advisory and Assistance Services (A&AS) and Program Management Administration (PMA) activities to support the aforementioned development efforts.

**FY 2021 Plans:**  
See PE 0901554F, Defense Accounting and Management System (DEAMS), Project Number 675178, DEAMS Continuous Capability Development.

**FY 2022 Plans:**

- Will continue incremental planning and support initiatives to organize Continuous Capability Development (CCD) backlog requirements into capability-delivering epics. Planned capabilities include, but are not limited to the following:
- Will develop additional Business Intelligence (BI) functionality to enhance reporting capability
- Will implement governance capabilities to effectively shape system behavior to DAF finance business rules and workflow
- Will continue implementing additional Treasury Direct Dispersing capability to bring DEAMS into compliance with OUSD Treasury Disbursing and Collections Initiatives including, but not limited to implementing Military Cost Pay Accounting, implementing acquisition data standards for contract writing systems, and developing accounting capability for base supply purchases
- Will continue to implement Oracle's Splunk platform as an OSD Cybersecurity pilot program to more effectively manage data and enhance decision-space and system performance
- Will continue Operational Test and Evaluation as required by supporting the Adaptive, Relevant Testing concept; expanding automated test activities to decrease time in test and increase product quality; and test, validate, and coordinate capability deployments to the user community
- Will leverage Agile methods and cadence to resolve existing/new defects and add enhancements in the production environment
- Will research, design, and build a secure and continuous process for development and delivery of capabilities (Dev/Sec/Ops)
- Will restructure the system architecture to improve performance of the End of Day/End of Month processing
- Will continue migration/development/transition activities to implement Cloud solution
- Will refine near-term technical requirements/tools to ensure smooth operation of DEAMS and mature development capabilities

**FY 2021 to FY 2022 Increase/Decrease Statement:**

<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>

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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> May 2021		
<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 8: Software and Digital Technology Pilot Programs</i>		<b>R-1 Program Element (Number/Name)</b> PE 0608920F <i>I Defense Enterprise Accounting and Management System (DEAMS) - Software Pilot Pro</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
Increase aligns budget profile with the estimated funding required to increase the number of development teams to deliver maximum capability sooner and sunset legacy systems.				
<p><b>Title:</b> Deployment</p> <p><b>Description:</b> DEAMS will ultimately deploy to approximately 4,500 additional financial managers assigned to major acquisition programs, sustainment centers, reimbursable laboratories, and launch facilities at 15 Air and Space Force locations. The system is currently deployed to all DAF locations, in full or partial capacity; all future deployments will complete the functionality at these locations.</p> <p><b>FY 2021 Plans:</b> See PE 0901554F, Defense Accounting and Management System (DEAMS), Line Item 834470, DEAMS.</p> <p><b>FY 2022 Plans:</b> - Will purchase software licenses for scheduled FY23 deployments (exact qty and user base will vary based on backlog priority)</p> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding for this effort remains relatively unchanged with respect to FY21 request (PE 0901554F, Defense Accounting and Management System (DEAMS), Line Item 834470, DEAMS).</p>		-	0.000	3.103
<p><b>Title:</b> DEAMS Continuous Capability Development (CCD) Support and Sustainment</p> <p><b>Description:</b> DEAMS capabilities will be sustained through numerous Operations &amp; Support activities designed to execute an iterative steady-state software sustainment process. Sustainment activities include day-to-day operations and support, production environment management, system performance, monitoring and tuning, technical debt reduction, refreshes/updates to databases, and information processing capabilities. Activities also include various Advisory and assistance Services (A&amp;AS) and Program Management Administration (PMA) activities to support the aforementioned sustainment operations as well as operational support at multiple Data Centers (DISA/Oracle).</p> <p><b>FY 2021 Plans:</b> See OMAF Operating Forces, Activity Group, Servicewide Activities, Sub-Activity Group 42A, Administration.</p> <p><b>FY 2022 Plans:</b> - Will continue to release new capability into production using Agile methodology and established cadence - Will continue to optimize performance by conducting tuning activities and removing unused code and interfaces - Will continue to deploy fixes to address defects and user-identified problems - Will continue to ensure system security and support the Risk Management Framework (RMF) through continuous monitoring activities</p>		-	0.000	77.760



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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> May 2021
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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 8: Software and Digital Technology Pilot Programs</i>	<b>R-1 Program Element (Number/Name)</b> PE 0608920F / <i>Defense Enterprise Accounting and Management System (DEAMS) - Software Pilot Pro</i>
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	FY 2020	FY 2021	FY 2022
- Will continue to support 24/7 operations for current (17,000) and expanding global user community through activities such as Help Desk operations, functional expertise, technical support, and maintaining licenses - Will continue to improve system efficiency by supporting continuous processes for secure development and delivery of capabilities (Dev/Sec/Ops) and posturing the production system architecture for cloud migration - Will continue program support activities and obtain Authority to Proceed (ATP) for the BCAC Capability Support phase  <b>FY 2021 to FY 2022 Increase/Decrease Statement:</b> Funding for this effort remains unchanged with respect to FY21 request (Operating Forces, Activity Group, Servicewide Activities, Sub-Activity Group 42A, Administration.			
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	0.000	135.263

<b>D. Other Program Funding Summary (\$ in Millions)</b>											
Line Item	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
• OPAF 03 834470: <i>Defense Enterprise Accounting &amp; Mgt Sys</i>	2.285	0.899	-	-	-	-	-	-	-	-	-
• RDTE 07 0901554F: <i>Defense Enterprise Acntng and Mgt Sys (DEAMS)</i>	40.239	40.564	-	-	-	-	-	-	-	-	-

**Remarks**

**E. Acquisition Strategy**

The DAF concluded Increment I deployment and has transitioned DEAMS to the Business Capability Acquisition Cycle's (BCAC) Capability Support Phase. Implementation is accomplished via the Continuous Capability Development program in which requirements are prioritized by the associated Program and Functional Management Offices and organized in the requirements backlog. DEAMS capabilities are developed and sustained in accordance with the selected Agile software implementation strategy. Development activities include requirements analysis, design, build, test, data conversion, migration from legacy system as required, implementation into the DEAMS baseline, and the resolution of deficiency reports and defects. Sustainment activities include day-to-day operations and support, production environment management, and numerous system performance improvement initiatives. This strategy has been refined to enable continual enhancements and process improvements for the life of the system.

The DEAMS program will develop functionality on cadence and release on demand. User experience and mission impact will be considered when determining release dates during the execution cycle.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 8	<b>R-1 Program Element (Number/Name)</b> PE 0608920F / Defense Enterprise Accounting and Management System (DEAMS) - Software Pilot Pro	<b>Project (Number/Name)</b> 685178 / DEAMS Continuous Capability Development
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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: Rapid Acquisition System Integrator	C/Variou s	TBD : TBD	-	-		-		10.200	Dec 2021	-		10.200	-	-	-
DEAMS: Direct mission Support (DBA Support, Architecture Services, FMO SME Support, HW/SW)	Variou s	Variou s : Variou s	-	-		-		34.832	Jan 2022	-		34.832	-	-	-
<b>Subtotal</b>			-	-		-		45.032		-		45.032	-	-	N/A

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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: Rapid Acquisition System Integrator O&S	C/Variou s	TBD : TBD	-	-		-		26.700	Dec 2021	-		26.700	-	-	-
DEAMS: Direct Mission Support (Help Desk, DBA Support, FMO SME Support, Environments)	Variou s	Variou s : Variou s	-	-		-		40.302	Jan 2022	-		40.302	-	-	-
DEAMS: Production Licenses	C/FFP	Not specified. : TBD	-	-		-		3.103	Nov 2021	-		3.103	-	-	-
DEAMS: License Maintenance	C/FFP	Not specified. : TBD	-	-		-		8.217	Jan 2022	-		8.217	-	-	-
<b>Subtotal</b>			-	-		-		78.322		-		78.322	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
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,	Variou s	Variou s : TBD	-	-		-		0.867	Jan 2022	-		0.867	-	-	-



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 8	<b>R-1 Program Element (Number/Name)</b> PE 0608920F / <i>Defense Enterprise Accounting and Management System (DEAMS) - Software Pilot Pro</i>	<b>Project (Number/Name)</b> 685178 / <i>DEAMS Continuous Capability Development</i>

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
<b>DEAMS Inc 1</b>																																
R12 Software Baseline Development	■																															
Reporting	■																															
Disbursing	■																															
Auditing	■																															
Follow-On Operational Test and Evaluation (FOT&E)					■																											
Capability Support Authority to Proceed (CS ATP)									■																							
<b>DEAMS CCD Requirements Implementation</b>																																
Acquisition Planning	■																															
Agile Software Development Contract Award					■																											
Continuous Capability Development									■																							

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 8	<b>R-1 Program Element (Number/Name)</b> PE 0608920F / <i>Defense Enterprise Accounting and Management System (DEAMS) - Software Pilot Pro</i>	<b>Project (Number/Name)</b> 685178 / <i>DEAMS Continuous Capability Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>DEAMS Inc 1</b>				
R12 Software Baseline Development	1	2020	1	2020
Reporting	1	2020	4	2020
Disbursing	1	2020	4	2020
Auditing	1	2020	3	2020
Follow-On Operational Test and Evaluation (FOT&E)	2	2021	3	2021
Capability Support Authority to Proceed (CS ATP)	4	2021	4	2021
<b>DEAMS CCD Requirements Implementation</b>				
Acquisition Planning	1	2020	3	2021
Agile Software Development Contract Award	4	2021	4	2021
Continuous Capability Development	1	2022	4	2022

**Note**

Remaining Inc 1 Requirements will move to CCD as of 1st Quarter FY22

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