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**Department of Defense
Fiscal Year (FY) 2017 President's Budget Submission**

February 2016



Air Force

Justification Book Volume 2 of 3

Research, Development, Test & Evaluation, Air Force

Vol-II

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Air Force • President's Budget Submission FY 2017 • RDT&E Program

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Department of Defense
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 Exhibit R-1 FY 2017 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

27 Jan 2016

Appropriation -----	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Research, Development, Test & Eval, AF	23,619,928	25,194,457	17,100	25,211,557	28,112,251	32,905	28,145,156
Total Research, Development, Test & Evaluation	23,619,928	25,194,457	17,100	25,211,557	28,112,251	32,905	28,145,156

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Summary Recap of Budget Activities	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Basic Research	538,586	530,253		530,253	500,024		500,024
Applied Research	1,090,419	1,240,141		1,240,141	1,260,152		1,260,152
Advanced Technology Development	606,365	710,377		710,377	725,805		725,805
Advanced Component Development & Prototypes	1,362,546	1,561,351		1,561,351	2,847,833		2,847,833
System Development & Demonstration	3,516,726	3,907,650		3,907,650	4,075,804	425	4,076,229
Management Support	1,495,139	1,184,667		1,184,667	1,245,577		1,245,577
Operational Systems Development	15,010,147	16,060,018	17,100	16,077,118	17,457,056	32,480	17,489,536
Total Research, Development, Test & Evaluation	23,619,928	25,194,457	17,100	25,211,557	28,112,251	32,905	28,145,156
Summary Recap of FYDP Programs							
Strategic Forces	458,400	606,099		606,099	636,723		636,723
General Purpose Forces	1,504,009	1,608,728	300	1,609,028	2,203,903		2,203,903
Intelligence and Communications	1,634,882	1,568,630		1,568,630	1,850,451	4,715	1,855,166
Mobility Forces	223,007	303,822		303,822	505,020		505,020
Research and Development	8,505,587	8,808,727		8,808,727	9,680,261	425	9,680,686
Central Supply and Maintenance	89,056	111,467		111,467	105,997		105,997
Training Medical and Other	2,538	3,272		3,272	3,114		3,114
Administration and Associated Activities	108,250	110,346		110,346	30,441		30,441
Support of Other Nations	3,790	2,315		2,315	4,784		4,784
Classified Programs	11,090,409	12,071,051	16,800	12,087,851	13,091,557	27,765	13,119,322
Total Research, Development, Test & Evaluation	23,619,928	25,194,457	17,100	25,211,557	28,112,251	32,905	28,145,156

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Management Support	1,495,139	1,184,667		1,184,667	1,245,577		1,245,577
Operational Systems Development	15,010,147	16,060,018	17,100	16,077,118	17,457,056	32,480	17,489,536
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Appropriation: 3600F Research, Development, Test & Eval, AF
 Program

Line No	Element Number	Item	Act	FY 2015 (Base & OCO)	FY 2016 Base Enacted	FY 2016 OCO Enacted	FY 2016 Total Enacted	FY 2017 Base	FY 2017 OCO	FY 2017 Total	S e c
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1	0601102F	Defense Research Sciences	01	382,332	374,721		374,721	340,812		340,812	U
2	0601103F	University Research Initiatives	01	142,752	141,754		141,754	145,044		145,044	U
3	0601108F	High Energy Laser Research Initiatives	01	13,502	13,778		13,778	14,168		14,168	U
		Basic Research		538,586	530,253		530,253	500,024		500,024	
4	0602102F	Materials	02	114,302	133,734		133,734	126,152		126,152	U
5	0602201F	Aerospace Vehicle Technologies	02	101,053	122,969		122,969	122,831		122,831	U
6	0602202F	Human Effectiveness Applied Research	02	95,727	110,221		110,221	111,647		111,647	U
7	0602203F	Aerospace Propulsion	02	168,628	185,926		185,926	185,671		185,671	U
8	0602204F	Aerospace Sensors	02	118,654	152,175		152,175	155,174		155,174	U
9	0602601F	Space Technology	02	96,425	109,122		109,122	117,915		117,915	U
10	0602602F	Conventional Munitions	02	86,328	99,851		99,851	109,649		109,649	U
11	0602605F	Directed Energy Technology	02	126,189	115,105		115,105	127,163		127,163	U
12	0602788F	Dominant Information Sciences and Methods	02	146,951	169,183		169,183	161,650		161,650	U
13	0602890F	High Energy Laser Research	02	36,162	41,855		41,855	42,300		42,300	U
		Applied Research		1,090,419	1,240,141		1,240,141	1,260,152		1,260,152	
14	0603112F	Advanced Materials for Weapon Systems	03	38,262	46,665		46,665	35,137		35,137	U
15	0603199F	Sustainment Science and Technology (S&T)	03	14,900	18,378		18,378	20,636		20,636	U
16	0603203F	Advanced Aerospace Sensors	03	34,100	42,001		42,001	40,945		40,945	U
17	0603211F	Aerospace Technology Dev/Demo	03	86,275	100,622		100,622	130,950		130,950	U

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18	0603216F	Aerospace Propulsion and Power Technology	03	126,729	178,594		178,594	94,594		94,594	U
19	0603270F	Electronic Combat Technology	03	45,548	46,946		46,946	58,250		58,250	U
20	0603401F	Advanced Spacecraft Technology	03	65,207	61,813		61,813	61,593		61,593	U
21	0603444F	Maui Space Surveillance System (MSSS)	03	13,185	12,853		12,853	11,681		11,681	U
22	0603456F	Human Effectiveness Advanced Technology Development	03	21,142	25,448		25,448	26,492		26,492	U
23	0603601F	Conventional Weapons Technology	03	41,385	43,036		43,036	102,009		102,009	U
24	0603605F	Advanced Weapons Technology	03	33,681	35,195		35,195	39,064		39,064	U
25	0603680F	Manufacturing Technology Program	03	51,613	52,630		52,630	46,344		46,344	U
26	0603788F	Battlespace Knowledge Development and Demonstration	03	34,338	46,196		46,196	58,110		58,110	U
		Advanced Technology Development		606,365	710,377		710,377	725,805		725,805	
27	0603260F	Intelligence Advanced Development	04	5,408	5,032		5,032	5,598		5,598	U
28	0603438F	Space Control Technology	04	5,799	4,057		4,057	7,534		7,534	U
29	0603742F	Combat Identification Technology	04	10,606	21,790		21,790	24,418		24,418	U
30	0603790F	NATO Research and Development	04	2,309	4,736		4,736	4,333		4,333	U
31	0603791F	International Space Cooperative R&D	04	806							U
32	0603830F	Space Security and Defense Program	04	30,592	30,771		30,771	32,399		32,399	U
33	0603851F	Intercontinental Ballistic Missile - Dem/Val	04	30,388	39,765		39,765	108,663		108,663	U
34	0603859F	Pollution Prevention - Dem/Val	04	965							U
35	0604015F	Long Range Strike - Bomber	04	883,363	736,228		736,228	1,358,309		1,358,309	U

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36	0604257F	Advanced Technology and Sensors	04					34,818		34,818	U
37	0604317F	Technology Transfer	04	4,683	7,612		7,612	3,368		3,368	U
38	0604327F	Hard and Deeply Buried Target Defeat System (HDBTDS) Program	04		54,637		54,637	74,308		74,308	U
39	0604422F	Weather System Follow-on	04	30,890	56,044		56,044	118,953		118,953	U
40	0604425F	Space Situation Awareness Systems	04					9,901		9,901	U
41	0604776F	Deployment & Distribution Enterprise R&D	04					25,890		25,890	U
42	0604857F	Operationally Responsive Space	04	20,000	18,437		18,437	7,921		7,921	U
43	0604858F	Tech Transition Program	04	79,887	266,514		266,514	347,304		347,304	U
44	0605230F	Ground Based Strategic Deterrent	04		75,166		75,166	113,919		113,919	U
45	0201184F	Counter Narco-Terrorism Program Office	04	650							U
46	0207110F	Next Generation Air Dominance	04	18,224	8,830		8,830	20,595		20,595	U
47	0207455F	Three Dimensional Long-Range Radar (3DELRR)	04	85,832	8,139		8,139	49,491		49,491	U
48	0305164F	NAVSTAR Global Positioning System (User Equipment) (SPACE)	04	152,144	141,861		141,861	278,147		278,147	U
49	0305236F	Common Data Link Executive Agent (CDL EA)	04					42,338		42,338	U
50	0306250F	Cyber Operations Technology Development	04		81,732		81,732	158,002		158,002	U
51	0306415F	Enabled Cyber Activities	04					15,842		15,842	U

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52	0901410F	Contracting Information Technology System	04					5,782		5,782	U
		Advanced Component Development & Prototypes		1,362,546	1,561,351		1,561,351	2,847,833		2,847,833	
53	0604233F	Specialized Undergraduate Flight Training	05	12,903							U
54	0604270F	Electronic Warfare Development	05	7,815	843		843	12,476		12,476	U
55	0604281F	Tactical Data Networks Enterprise	05	30,282	59,996		59,996	82,380		82,380	U
56	0604287F	Physical Security Equipment	05	3,926	5,973		5,973	8,458		8,458	U
57	0604329F	Small Diameter Bomb (SDB) - EMD	05	66,374	29,083		29,083	54,838		54,838	U
58	0604421F	Counterspace Systems	05	22,654	24,134		24,134	34,394	425	34,819	U
59	0604425F	Space Situation Awareness Systems	05	9,031	29,288		29,288	23,945		23,945	U
60	0604426F	Space Fence	05	191,708	240,692		240,692	168,364		168,364	U
61	0604429F	Airborne Electronic Attack	05	26,555	8,358		8,358	9,187		9,187	U
62	0604441F	Space Based Infrared System (SBIRS) High EMD	05	308,788	291,510		291,510	181,966		181,966	U
63	0604602F	Armament/Ordnance Development	05	28,667	37,654		37,654	20,312		20,312	U
64	0604604F	Submunitions	05	2,543	2,506		2,506	2,503		2,503	U
65	0604617F	Agile Combat Support	05	41,857	56,178		56,178	53,680		53,680	U
66	0604618F	Joint Direct Attack Munition	05					9,901		9,901	U
67	0604706F	Life Support Systems	05	14,697	8,187		8,187	7,520		7,520	U
68	0604735F	Combat Training Ranges	05	9,812	11,795		11,795	77,409		77,409	U
69	0604800F	F-35 - EMD	05	566,937	586,953		586,953	450,467		450,467	U

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70	0604853F	Evolved Expendable Launch Vehicle Program (SPACE) - EMD	05	225,600	227,784		227,784	296,572		296,572	U
71	0604932F	Long Range Standoff Weapon	05	3,438	16,143		16,143	95,604		95,604	U
72	0604933F	ICBM Fuze Modernization	05	57,893	142,551		142,551	189,751		189,751	U
73	0605030F	Joint Tactical Network Center (JTNC)	05					1,131		1,131	U
74	0605213F	F-22 Modernization Increment 3.2B	05	163,877	140,640		140,640	70,290		70,290	U
75	0605214F	Ground Attack Weapons Fuze Development	05	5,177	3,598		3,598	937		937	U
76	0605221F	KC-46	05	763,224	592,364		592,364	261,724		261,724	U
77	0605223F	Advanced Pilot Training	05	8,201	10,395		10,395	12,377		12,377	U
78	0605229F	CSAR HH-60 Recapitalization	05	100,000	156,085		156,085	319,331		319,331	U
79	0605278F	HC/MC-130 Recap RDT&E	05	4,497							U
80	0605431F	Advanced EHF MILSATCOM (SPACE)	05	294,455	228,095		228,095	259,131		259,131	U
81	0605432F	Polar MILSATCOM (SPACE)	05	99,788	71,867		71,867	50,815		50,815	U
82	0605433F	Wideband Global SATCOM (SPACE)	05	28,345	52,185		52,185	41,632		41,632	U
83	0605458F	Air & Space Ops Center 10.2 RDT&E	05	83,245	47,629		47,629	28,911		28,911	U
84	0605931F	B-2 Defensive Management System	05	95,440	271,961		271,961	315,615		315,615	U
85	0101125F	Nuclear Weapons Modernization	05	148,281	212,121		212,121	137,909		137,909	U
86	0207171F	F-15 EPAWSS	05		180,681		180,681	256,669		256,669	U
87	0207701F	Full Combat Mission Training	05	8,831	18,082		18,082	12,051		12,051	U
88	0305176F	Combat Survivor Evader Locator	05		993		993	29,253		29,253	U
89	0307581F	JSTARS Recap	05	70,879	44,343		44,343	128,019		128,019	U

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90	0401319F	Presidential Aircraft Replacement (PAR)	05	11,006	82,420		82,420	351,220		351,220	U
91	0701212F	Automated Test Systems	05		14,563		14,563	19,062		19,062	U
		System Development & Demonstration		3,516,726	3,907,650		3,907,650	4,075,804	425	4,076,229	
92	0604256F	Threat Simulator Development	06	24,318	23,844		23,844	21,630		21,630	U
93	0604759F	Major T&E Investment	06	45,985	73,302		73,302	66,385		66,385	U
94	0605101F	RAND Project Air Force	06	31,164	34,918		34,918	34,641		34,641	U
95	0605502F	Small Business Innovation Research	06	324,371							U
96	0605712F	Initial Operational Test & Evaluation	06	8,916	10,476		10,476	11,529		11,529	U
97	0605807F	Test and Evaluation Support	06	691,977	683,308		683,308	661,417		661,417	U
98	0605860F	Rocket Systems Launch Program (SPACE)	06	33,420	21,792		21,792	11,198		11,198	U
99	0605864F	Space Test Program (STP)	06	20,552	28,143		28,143	27,070		27,070	U
100	0605976F	Facilities Restoration and Modernization - Test and Evaluation Support	06	46,955	40,518		40,518	134,111		134,111	U
101	0605978F	Facilities Sustainment - Test and Evaluation Support	06	32,965	27,895		27,895	28,091		28,091	U
102	0606017F	Requirements Analysis and Maturation	06	18,673	22,507		22,507	29,100		29,100	U
103	0606116F	Space Test and Training Range Development	06	22,724	18,940		18,940	18,528		18,528	U
104	0606392F	Space and Missile Center (SMC) Civilian Workforce	06	166,727	176,196		176,196	176,666		176,666	U
105	0308602F	ENTEPRISE INFORMATION SERVICES (EIS)	06	4,912	3,841		3,841	4,410		4,410	U

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106	0702806F	Acquisition and Management Support	06	16,115	15,357		15,357	14,613		14,613	U
107	0804731F	General Skill Training	06	1,425	1,315		1,315	1,404		1,404	U
108	0909999F	Financing for Cancelled Account Adjustments	06	150							U
109	1001004F	International Activities	06	3,790	2,315		2,315	4,784		4,784	U
		Management Support		1,495,139	1,184,667		1,184,667	1,245,577		1,245,577	
110	0603423F	Global Positioning System III - Operational Control Segment	07	334,631	349,181		349,181	393,268		393,268	U
111	0604233F	Specialized Undergraduate Flight Training	07		8,565		8,565	15,427		15,427	U
112	0604445F	Wide Area Surveillance	07	2,000	22,577		22,577	46,695		46,695	U
114	0604618F	Joint Direct Attack Munition	07	2,389							U
115	0605018F	AF Integrated Personnel and Pay System (AF-IPPS)	07	45,250	31,344		31,344	10,368		10,368	U
116	0605024F	Anti-Tamper Technology Executive Agency	07	33,775	26,718		26,718	31,952		31,952	U
117	0605117F	Foreign Materiel Acquisition and Exploitation	07		41,689		41,689	42,960		42,960	U
118	0605278F	HC/MC-130 Recap RDT&E	07		10,807		10,807	13,987		13,987	U
119	0101113F	B-52 Squadrons	07	41,072	74,520		74,520	78,267		78,267	U
120	0101122F	Air-Launched Cruise Missile (ALCM)	07	450	451		451	453		453	U
121	0101126F	B-1B Squadrons	07	4,208	2,245		2,245	5,830		5,830	U
122	0101127F	B-2 Squadrons	07	112,691	108,183		108,183	152,458		152,458	U
123	0101213F	Minuteman Squadrons	07	116,344	166,729		166,729	182,958		182,958	U

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124	0101313F	Strat War Planning System - USSTRATCOM	07	31,046	28,358		28,358	39,148		39,148	U
125	0101314F	Night Fist - USSTRATCOM	07		87		87				U
126	0101316F	Worldwide Joint Strategic Communications	07		5,315		5,315	6,042		6,042	U
128	0102110F	UH-1N Replacement Program	07					14,116		14,116	U
129	0102326F	Region/Sector Operation Control Center Modernization Program	07	1,229				10,868		10,868	U
130	0105921F	Service Support to STRATCOM - Space Activities	07	3,079	8,090		8,090	8,674		8,674	U
131	0205219F	MQ-9 UAV	07	141,528	122,731		122,731	151,373		151,373	U
132	0205671F	Joint Counter RCIED Electronic Warfare	07			300	300				U
133	0207131F	A-10 Squadrons	07		16,200		16,200	14,853		14,853	U
134	0207133F	F-16 Squadrons	07	130,376	166,297		166,297	132,795		132,795	U
135	0207134F	F-15E Squadrons	07	233,898	205,979		205,979	356,717		356,717	U
136	0207136F	Manned Destructive Suppression	07	14,413	14,860		14,860	14,773		14,773	U
137	0207138F	F-22A Squadrons	07	146,291	231,599		231,599	387,564		387,564	U
138	0207142F	F-35 Squadrons	07	39,275	53,921		53,921	153,045		153,045	U
139	0207161F	Tactical AIM Missiles	07	28,820	43,360		43,360	52,898		52,898	U
140	0207163F	Advanced Medium Range Air-to-Air Missile (AMRAAM)	07	79,767	46,160		46,160	62,470		62,470	U
141	0207171F	F-15 EPAWSS	07	37,726							U
142	0207224F	Combat Rescue and Recovery	07	5,095	412		412				U

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143	0207227F	Combat Rescue - Pararescue	07	856	657		657	362		362	U
144	0207247F	AF TENCAP	07	6,974	31,428		31,428	28,413		28,413	U
145	0207249F	Precision Attack Systems Procurement	07	835	1,105		1,105	649		649	U
146	0207253F	Compass Call	07	16,480	14,187		14,187	13,723		13,723	U
147	0207268F	Aircraft Engine Component Improvement Program	07	93,160	103,942		103,942	109,859		109,859	U
148	0207325F	Joint Air-to-Surface Standoff Missile (JASSM)	07	12,414	9,793		9,793	30,002		30,002	U
149	0207410F	Air & Space Operations Center (AOC)	07	25,661	21,102		21,102	37,621		37,621	U
150	0207412F	Control and Reporting Center (CRC)	07		557		557	13,292		13,292	U
151	0207417F	Airborne Warning and Control System (AWACS)	07	172,785	131,812		131,812	86,644		86,644	U
152	0207418F	Tactical Airborne Control Systems	07	3,650	6,001		6,001	2,442		2,442	U
154	0207431F	Combat Air Intelligence System Activities	07	7,291	6,793		6,793	10,911		10,911	U
155	0207444F	Tactical Air Control Party-Mod	07	4,616	12,411		12,411	11,843		11,843	U
156	0207448F	C2ISR Tactical Data Link	07	1,699	1,674		1,674	1,515		1,515	U
157	0207452F	DCAPES	07	806	16,723		16,723	14,979		14,979	U
158	0207590F	Seek Eagle	07	23,472	21,564		21,564	25,308		25,308	U
159	0207601F	USAF Modeling and Simulation	07	11,687	24,945		24,945	16,666		16,666	U
160	0207605F	Wargaming and Simulation Centers	07	5,749	6,035		6,035	4,245		4,245	U
161	0207697F	Distributed Training and Exercises	07	3,251	4,358		4,358	3,886		3,886	U
162	0208006F	Mission Planning Systems	07	58,782	55,835		55,835	71,785		71,785	U

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163	0208059F	Service Support to Other Core Missions - STRATCOM (CYBERCOM Activities)	07	64,751							U
164	0208087F	AF Offensive Cyberspace Operations	07	12,928	12,874		12,874	25,025		25,025	U
165	0208088F	AF Defensive Cyberspace Operations	07	5,436	7,681		7,681	29,439		29,439	U
168	0301017F	Global Sensor Integrated on Network (GSIN)	07		5,974		5,974	3,470		3,470	U
169	0301112F	Nuclear Planning and Execution System (NPES)	07					4,060		4,060	U
175	0301400F	Space Superiority Intelligence	07	10,697	12,315		12,315	13,880		13,880	U
176	0302015F	E-4B National Airborne Operations Center (NAOC)	07	24,963	76,760		76,760	30,948		30,948	U
177	0303001F	Family of Advanced BLoS Terminals (FAB-T)	07		3,895		3,895	42,378		42,378	U
178	0303131F	Minimum Essential Emergency Communications Network (MEECN)	07	87,240	74,712		74,712	47,471		47,471	U
179	0303140F	Information Systems Security Program	07	64,972	46,303		46,303	46,388		46,388	U
180	0303141F	Global Combat Support System	07	692				52		52	U
181	0303142F	Global Force Management - Data Initiative	07		2,470		2,470	2,099		2,099	U
182	0303601F	MILSATCOM Terminals	07	57,930							U
184	0304260F	Airborne SIGINT Enterprise	07	72,910	112,775		112,775	90,762		90,762	U
187	0305099F	Global Air Traffic Management (GATM)	07	4,157	4,217		4,217	4,354		4,354	U
188	0305110F	Satellite Control Network (SPACE)	07	18,806	7,861		7,861	15,624		15,624	U
189	0305111F	Weather Service	07	19,404	29,826		29,826	19,974		19,974	U

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190	0305114F	Air Traffic Control, Approach, and Landing System (ATCALs)	07	25,309	19,392		19,392	9,770		9,770	U
191	0305116F	Aerial Targets	07	8,537	2,515		2,515	3,051		3,051	U
194	0305128F	Security and Investigative Activities	07		472		472	405		405	U
195	0305145F	Arms Control Implementation	07	13,222	9,137		9,137	4,844		4,844	U
196	0305146F	Defense Joint Counterintelligence Activities	07	40	361		361	339		339	U
199	0305173F	Space and Missile Test and Evaluation Center	07	3,490	3,152		3,152	3,989		3,989	U
200	0305174F	Space Innovation, Integration and Rapid Technology Development	07	1,999	1,543		1,543	3,070	4,715	7,785	U
201	0305179F	Integrated Broadcast Service (IBS)	07	8,592	7,860		7,860	8,833		8,833	U
202	0305182F	Spacelift Range System (SPACE)	07	10,134	6,881		6,881	11,867		11,867	U
203	0305202F	Dragon U-2	07	5,511	34,471		34,471	37,217		37,217	U
204	0305205F	Endurance Unmanned Aerial Vehicles	07	20,000	5,000		5,000				U
205	0305206F	Airborne Reconnaissance Systems	07	37,649	60,142		60,142	3,841		3,841	U
206	0305207F	Manned Reconnaissance Systems	07	14,116	13,245		13,245	20,975		20,975	U
207	0305208F	Distributed Common Ground/Surface Systems	07	26,993	22,686		22,686	18,902		18,902	U
208	0305220F	RQ-4 UAV	07	241,828	188,053		188,053	256,307		256,307	U
209	0305221F	Network-Centric Collaborative Targeting	07	11,096	19,587		19,587	22,610		22,610	U
210	0305236F	Common Data Link Executive Agent (CDL EA)	07	32,015	43,796		43,796				U

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211	0305238F	NATO AGS	07	232,851	138,400		138,400	38,904		38,904	U
212	0305240F	Support to DCGS Enterprise	07	17,115	28,336		28,336	23,084		23,084	U
213	0305258F	Advanced Evaluation Program	07					116,143		116,143	U
214	0305265F	GPS III Space Segment	07	204,864	180,359		180,359	141,888		141,888	U
215	0305600F	International Intelligence Technology and Architectures	07	2,270	2,298		2,298	2,360		2,360	U
216	0305614F	JSPOC Mission System	07	83,277	80,669		80,669	72,889		72,889	U
217	0305881F	Rapid Cyber Acquisition	07	3,959	3,149		3,149	4,280		4,280	U
218	0305906F	NCMC - TW/AA System	07					4,951		4,951	U
219	0305913F	NUDET Detection System (SPACE)	07	20,405	14,403		14,403	21,093		21,093	U
220	0305940F	Space Situation Awareness Operations	07	11,017	20,016		20,016	35,002		35,002	U
221	0306250F	Cyber Operations Technology Development	07	7,768	11,980		11,980				U
222	0308699F	Shared Early Warning (SEW)	07	1,119	849		849	6,366		6,366	U
223	0401115F	C-130 Airlift Squadron	07		33,962		33,962	15,599		15,599	U
224	0401119F	C-5 Airlift Squadrons (IF)	07	31,772	22,864		22,864	66,146		66,146	U
225	0401130F	C-17 Aircraft (IF)	07	72,566	48,807		48,807	12,430		12,430	U
226	0401132F	C-130J Program	07	26,715	25,010		25,010	16,776		16,776	U
227	0401134F	Large Aircraft IR Countermeasures (LAIRCM)	07	4,672	6,802		6,802	5,166		5,166	U
228	0401219F	KC-10s	07	2,714	1,799		1,799				U
229	0401314F	Operational Support Airlift	07	27,783	46,453		46,453	13,817		13,817	U
230	0401318F	CV-22	07	37,698	27,776		27,776	16,702		16,702	U

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231	0408011F	Special Tactics / Combat Control	07	8,081	7,929		7,929	7,164		7,164	U
232	0702207F	Depot Maintenance (Non-IF)	07	1,407	1,525		1,525	1,518		1,518	U
233	0708610F	Logistics Information Technology (LOGIT)	07	56,325	67,915		67,915	61,676		61,676	U
234	0708611F	Support Systems Development	07	15,209	12,107		12,107	9,128		9,128	U
235	0804743F	Other Flight Training	07	987	1,836		1,836	1,653		1,653	U
236	0808716F	Other Personnel Activities	07	126	121		121	57		57	U
237	0901202F	Joint Personnel Recovery Agency	07	2,523	5,911		5,911	3,663		3,663	U
238	0901218F	Civilian Compensation Program	07	2,418	3,604		3,604	3,735		3,735	U
239	0901220F	Personnel Administration	07	6,381	4,598		4,598	5,157		5,157	U
240	0901226F	Air Force Studies and Analysis Agency	07	1,346	1,103		1,103	1,523		1,523	U
241	0901279F	Facilities Operation - Administrative	07	3,666							U
242	0901538F	Financial Management Information Systems Development	07	91,766	95,130		95,130	10,581		10,581	U
9999	9999999999	Classified Programs		11,090,409	12,071,051	16,800	12,087,851	13,091,557	27,765	13,119,322	U
		Operational Systems Development		15,010,147	16,060,018	17,100	16,077,118	17,457,056	32,480	17,489,536	
Total Research, Development, Test & Eval, AF				23,619,928	25,194,457	17,100	25,211,557	28,112,251	32,905	28,145,156	

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**Fiscal Year (FY) 2017 President's Budget
RDT&E Descriptive Summaries
Budget Activities
February 2016**

INTRODUCTION AND EXPLANATION OF CONTENTS

1. (U) GENERAL

- A. This document has been prepared to provide information on the United States Air Force (USAF) Research, Development, Test and Evaluation (RDT&E) program elements and projects in the FY 2017 President's Budget (PB).
 - 1) All exhibits in this document have been assembled in accordance with DoD 7000.14R, Financial Management Regulation, Volume 2B, Chapter 5, Section 050402. Exception:
 - a) Exhibit R-1, RDT&E Program, which was distributed under a separate cover due to classification.
 - 2) Other comments on exhibit contents in this document:
 - a) Exhibits R-2/2a and R-3 provide narrative information for all RDT&E program elements and projects within the USAF FY 2017 RDT&E program with the exception of classified program elements. The format and contents of this document are in accordance to the guidelines and requirements of the Congressional committees in so far as possible.
 - b) The "Other Program Funding Summary portion of the R-2 includes, in addition to RDT&E funds, Procurement funds and quantities, Military Construction appropriation funds on specific development programs, Operations and Maintenance appropriation funds where they are essential to the development effort described, and where appropriate, Department of Energy (DOE) costs.

2. (U) CLASSIFICATION

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

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

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	5.408	5.032	5.598	0.000	5.598	5.636	5.609	5.712	5.814	Continuing	Continuing
64536A: <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i>	-	4.298	3.991	4.442	0.000	4.442	4.475	4.453	4.535	4.615	Continuing	Continuing
64537A: <i>INTELLIGENCE ANALYSIS CAPABILITIES (IAC)</i>	-	1.110	1.041	1.156	0.000	1.156	1.161	1.156	1.177	1.199	Continuing	Continuing

A. Mission Description and Budget Item Justification

Intelligence Advanced Development (IAD) develops and demonstrates technology required to support warfighter needs for timely all source intelligence information. IAD supports global awareness, consistent battlespace knowledge, precision information, and the execution of time critical missions. IAD focuses on enhancing defense intelligence capabilities by exploring new and innovative ways to develop software tools which support the Anti-Access/Area Denial (A2/AD) Contested/Congested Degraded Operations (CDO) problem set. IAD projects provide improved on-time information to the warfighter using new and existing data sources, streamlining data analysis, thus reducing the footprint required, and enhancing performance. The Air Force Research Lab, Rome Research Site, Information Intelligence Systems and Analysis Division (AFRL/RIE), works directly with users, employing evolutionary approaches and integrating finished modules directly into the field. The programs are oriented toward specific shortfalls and deficiencies as documented by the Major Commands (MAJCOMS), unified commands, and Intelligence organizations in their mission and functional area plans. This PE expedites technology transition from the laboratory to operational users via rapid prototyping. It is focused on technology insertion to correct AF intelligence deficiencies at the tactical and operational levels. The PE bridges the transition of new technologies from Advance Technology Demonstrations (ATDs) and Integrated Technology Thrust Programs (ITTPs) into current/new systems, and supports the associated Defense Technology Objectives (DTOs). IAD may also reallocate existing resources to support out-of-cycle new/updated warfighter requirements.

Requirements for this PE are identified and prioritized by the Air Combat Command (ACC). Development of new/improved capabilities to meet the requirements is managed by AFRL/RIE. Prototype products, usually in the form of software, are provided to users in incremental capability spirals for operational environment evaluation.

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	5.408	5.032	5.654	0.000	5.654
Current President's Budget	5.408	5.032	5.598	0.000	5.598
Total Adjustments	0.000	0.000	-0.056	0.000	-0.056
• 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	-0.056	0.000	-0.056

Change Summary Explanation

- FY17: \$56K "Inflation rate reduction for Non-pay/non-fuel".

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>				Project (Number/Name) 64536A / <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
64536A: <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i>	-	4.298	3.991	4.442	0.000	4.442	4.475	4.453	4.535	4.615	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The mission is to develop prototypes which encompass several areas of intelligence exploitation including the advancement of all source correlation and fusion for the intelligence analyst. The intent is to enhance the overall situational awareness for Air Force, DoD, and Coalition groups which have requirements to correlate various sources of intelligence information, including COMINT, ELINT, IMINT, GEOINT, MASINT, SIGINT, OSINT and others, in a timely manner. IET may reallocate existing resources to support out-of-cycle new/ updated warfighter requirements.

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

	FY 2015	FY 2016	FY 2017
Title: Intelligence Exploitation Tools (IET)	4.298	3.991	4.442
<p>Description: IET addresses the accurate and timely interpretation of various Intelligence data sources (such as digital imagery, video, documents, and signals) by developing and evaluating methods to manipulate and overlay the disparate products using various imagery, visualization and timeline techniques. This provides the analyst with the ability to fuse multiple intelligence sources for improved situational awareness and to better detect anomalies. Cross domain tools are explored as a means to view and provide data at multiple classification levels. In addition, methods to improve analysis of current and future foreign weapon systems are developed. IET provides enhanced warning and accuracy to allow national and military authorities a greater range of options to avert, diminish or control a crisis.</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Completed development, conducted user assessment, and released final prototype of software that provides automated screening of technical ELINT data through further development of applications in signals characterization and database matching algorithms - Started development of software focused on improving the way computers and application services supports intelligence analysts through the use of cognitive systems - Continued development of capability to enable the detection, geo-location, and tracking of complex wideband and low probability of intercept emitters; improve reporting timeliness and accuracy of worldwide Electronics Intelligence (ELINT) intercept data 			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 64536A / <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Started development of capability to enable the intelligence analyst to conduct search and discovery either by visual pattern recognition/feature extraction or text-based using queries. -- This effort will create structured content from the recognition of objects, features and patterns contained within images/video - Started expanding software currently deployed on RIVET JOINT processor to enable collecting current and future SIGINT metadata - Continued development of a framework designed to expose media tools, data, products, workflow and analytical services to the DoD and IC - Started development of a capability for quantitative mission assessment and integrating future ISR and combat mission capabilities - Completed development of software to perform high fidelity analysis of threat designs and potential alternatives in the command and control of an Integrated Air Defense Systems (IADS), providing critical insight into the synergistic effects of combined systems and their vulnerabilities - Continued development of automated methods that aid in the systematic, continuous, and comprehensive assessment of technical topic, concepts and emergence using information found in the published scientific, technical, and patent literature, message traffic, gray literature, conference papers, etc. - Started enabling DCGS enterprise support of high-altitude SIGINT missions and execution on NSANet <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Continuing development of software focused on improving the way computers and application services supports intelligence analysts through the use of cognitive systems - Continuing development of capability to enable the detection, geo-location, and tracking of complex wideband and low probability of intercept emitters; improve reporting timeliness and accuracy of worldwide Electronics Intelligence (ELINT) intercept data - Continuing development of capability to enable the intelligence analyst to conduct search and discovery either by visual pattern recognition/feature extraction or text-based using queries. -- This effort will create structured content from the recognition of objects, features and patterns contained within images/video 				

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 64536A / <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Continuing to expand software currently deployed on RIVET JOINT processor to enable collecting current and future SIGINT metadata - Continuing development of a framework designed to expose media tools, data, products, workflow and analytical services to the DoD and IC - Continuing development of a capability for quantitative mission assessment and integrating future ISR and combat mission capabilities - Continuing development of automated methods that aid in the systematic, continuous, and comprehensive assessment of technical topic, concepts and emergence using information found in the published scientific, technical, and patent literature, message traffic, gray literature, conference papers, etc. - Continue enabling DCGS enterprise support of high-altitude SIGINT missions and execution on NSANet <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Will continue development of software focused on improving the way computers and application services supports intelligence analysts through the use of cognitive systems - Will continue development of capability to enable the detection, geo-location, and tracking of complex wideband and low probability of intercept emitters; improve reporting timeliness and accuracy of worldwide Electronics Intelligence (ELINT) intercept data - Will continue development of capability to enable the intelligence analyst to conduct search and discovery either by visual pattern recognition/feature extraction or text-based using queries. <ul style="list-style-type: none"> -- This effort will create structured content from the recognition of objects, features and patterns contained within images/video - Will complete expanding software currently deployed on RIVET JOINT processor to enable collecting current and future SIGINT metadata - Will continue development of a framework designed to expose media tools, data, products, workflow and analytical services to the DoD and IC 			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 64536A / <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
- Will complete development of a capability for qualitative mission assessment and lays a framework for integrating future ISR and combat mission capabilities into the assessment framework			
- Will continue development of automated methods that aid in the systematic, continuous, and comprehensive assessment of technical topic, concepts and emergence using information found in the published scientific, technical, and patent literature, message traffic, gray literature, conference papers, etc.			
- Will continue enabling DCGS enterprise support of high-altitude SIGINT missions and execution on NSANet			
- Will initiate development of a software capability to exploit and fuse open source information with DCGS related sources			
- Will initiate development of a Feature Extractor to assist automation of Tech ELINT screening			
- Will initiate development and integration of space based modeling capabilities into the Integrated Many on Many (IMOM) mission planning tool			
- Will initiate implementation of operational metadata acquisition and aggregation capability for DCGS SIGINT collection systems			
Accomplishments/Planned Programs Subtotals	4.298	3.991	4.442

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

D. Acquisition Strategy

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

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 64536A / <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i>

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 64536A / <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Intelligence Exploitation Tools (IET)	Various	Various : Various	-	3.924	Jan 2015	3.835	Jan 2016	4.180	Jan 2017	0.000		4.180	Continuing	Continuing	TBD
Subtotal			-	3.924		3.835		4.180		0.000		4.180	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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	AFRL - Information Directorate : Rome, NY	-	0.374	Oct 2014	0.156	Oct 2015	0.262	Oct 2016	0.000		0.262	Continuing	Continuing	TBD
Subtotal			-	0.374		0.156		0.262		0.000		0.262	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	4.298	3.991	4.442	0.000	4.442	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 64536A / <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i>
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Will initiate development of Feature Extractor to assist automation of Tech ELINT screening									■																			
Will initiate development and integration of space based systems modeling capabilities into IMOM planning tool									■																			
Will initiate implementation of operational metadata capability for DCGS SIGINT collection systems									■																			
FY17 IET User Evaluations										■																		
FY17 IET Prototype Releases												■																
Will Complete Development of Capability for Quantitative Mission Assessment and Integrating Future ISR and Combat Mission Capabilities												■																
Will Complete Expanding Rivet Joint Processing Software to Enable Collecting Current/Future SIGINT Metadata												■																
FY19 IET Requirements Data Call											■																	
FY18 IET User Evaluations													■															
FY18 IET Prototype Releases															■													
FY19 IET User Evaluations																	■											
FY21 IET Requirements Data Call																			■									
FY19 IET Prototype Releases																				■								
FY20 IET User Evaluations																					■							
FY20 IET Prototype Releases																							■					
FY21 IET User Evaluations																									■			
FY21 IET Prototype Releases																												■

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 64536A / <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
IET Development	1	2015	4	2021
Started Development of Cognitive Systems Software for Intel Analyst	1	2015	1	2015
Started Development of Search and Discovery Capability Using Visual Pattern Recognition/Feature Extraction or Text-Based Queries	1	2015	1	2015
Started Expanding Rivet Joint Processing Software to Enable Collecting Current/Future SIGINT Metadata	1	2015	1	2015
Started Development of Capability for Quantitative Mission Assessment and Integrating Future ISR and Combat Mission Capabilities	1	2015	1	2015
FY15 IET User Evaluations	2	2015	2	2015
FY17 IET Requirements Data Call	2	2015	2	2015
Completed Development of Automated Technical ELINT Screening Software	4	2015	4	2015
Completed Development of Software to Perform High Fidelity Analysis of Threat Designs and Potential Alternatives in the Command and Control of an Integrated Air Defense System (IADS)	4	2015	4	2015
FY16 IET User Evaluations	2	2016	2	2016
FY16 IET Prototype Releases	4	2016	4	2016
Will initiate development of software capability to ingest open source information and fusing with DCGS related sources	1	2017	1	2017
Will initiate development of Feature Extractor to assist automation of Tech ELINT screening	1	2017	1	2017
Will initiate development and integration of space based systems modeling capabilities into IMOM planning tool	1	2017	1	2017
Will initiate implementation of operational metadata capability for DCGS SIGINT collection systems	1	2017	1	2017

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 64536A / <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
FY17 IET User Evaluations	2	2017	2	2017
FY17 IET Prototype Releases	4	2017	4	2017
Will Complete Development of Capability for Quantitative Mission Assessment and Integrating Future ISR and Combat Mission Capabilities	4	2017	4	2017
Will Complete Expanding Rivet Joint Processing Software to Enable Collecting Current/ Future SIGINT Metadata	4	2017	4	2017
FY19 IET Requirements Data Call	2	2017	2	2017
FY18 IET User Evaluations	2	2018	2	2018
FY18 IET Prototype Releases	4	2018	4	2018
FY19 IET User Evaluations	2	2019	2	2019
FY21 IET Requirements Data Call	2	2019	2	2019
FY19 IET Prototype Releases	4	2019	4	2019
FY20 IET User Evaluations	2	2020	2	2020
FY20 IET Prototype Releases	4	2020	4	2020
FY21 IET User Evaluations	2	2021	2	2021
FY21 IET Prototype Releases	4	2021	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>				Project (Number/Name) 64537A / <i>INTELLIGENCE ANALYSIS CAPABILITIES (IAC)</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
64537A: <i>INTELLIGENCE ANALYSIS CAPABILITIES (IAC)</i>	-	1.110	1.041	1.156	0.000	1.156	1.161	1.156	1.177	1.199	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

	FY 2015	FY 2016	FY 2017
Title: Intelligence Analysis Capabilities (IAC)	1.110	1.041	1.156
<p>Description: IAC develops tools and algorithms for Intelligence Analysts with the ability to produce accurate, predictive, relevant, and timely intelligence that supports client processes, operational planning, and mission execution. IAC develops new and upgraded analysis, modeling and simulation tools focused on intelligence production supporting AF operational and developmental all source analysis functions.</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Released first prototype and initiated development of second prototype of capability to add a space communications modeling capability to the previously fielded terrestrial communications focused tool -- This effort will complete modeling of an adversary's total Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) system and assist nomination of terrestrial and space targets - Started development of a robust prototype of an enterprise level solution (tools and procedures) that will allow the intelligence analyst to perform predictive intelligence analysis on new areas of interest <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Releasing second prototype and initiating development of third prototype of capability to add a space communications modeling capability to the previously fielded terrestrial communications focused TEL-SCOPE tool 			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 64537A / <i>INTELLIGENCE ANALYSIS CAPABILITIES (IAC)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
- Releasing first prototype and initiating development of second prototype of an enterprise level solution (tools and procedures) that will allow the intelligence analyst to perform predictive intelligence analysis on new areas of interest			
<i>FY 2017 Plans:</i>			
- Will release third prototype and will initiate development of fourth prototype of capability to add a space communications modeling capability to the previously fielded terrestrial communications focused TEL-SCOPE tool			
- Will release second prototype and will initiate development of third prototype of an enterprise level solution (tools and procedures) that will allow the intelligence analyst to perform predictive intelligence analysis on new areas of interest			
Accomplishments/Planned Programs Subtotals	1.110	1.041	1.156

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

D. Acquisition Strategy

Requirements of new/upgraded intelligence analysis tools are identified and prioritized by the Air Combat Command (ACC). Development of capabilities to meet these requirements is managed by the Air Force Research Laboratory (Rome Research Site). Prototype products (usually software), once evaluated by the users, are fielded in incremental capability spirals. All major contracts within this project are awarded after full and open competition.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 64537A / <i>INTELLIGENCE ANALYSIS CAPABILITIES (IAC)</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
IAC	Various	Various : Various	-	0.975	Nov 2014	1.000	Oct 2015	1.000	Oct 2016	0.000		1.000	Continuing	Continuing	TBD
Subtotal			-	0.975		1.000		1.000		0.000		1.000	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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	AFRL - Information Directorate : Rome, NY	-	0.135	Oct 2014	0.041	Oct 2015	0.156	Oct 2016	0.000		0.156	Continuing	Continuing	TBD
Subtotal			-	0.135		0.041		0.156		0.000		0.156	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	1.110	1.041	1.156	0.000	1.156	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 64537A / <i>INTELLIGENCE ANALYSIS CAPABILITIES (IAC)</i>

FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
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

IAC Development																												
Released First Prototype and Initiated Development of Second Prototype of Capability to Add a Space Communications Modeling Capability to Existing Tool																												
Started Development of Enterprise Level Solution to Perform Predictive Intelligence Analysis																												
FY15 IAC User Evaluations																												
FY17 IAC Requirements Data Call																												
FY15 IAC Prototype Releases																												
FY16 IAC User Evaluations																												
Releasing First Prototype and Initiating Development of Second Prototype of an Enterprise Level Solution to Perform Predictive Intelligence Analysis																												
Released Second Prototype and Initiated Development Third Prototype of Capability to Add a Space Communications Modeling Capability to Existing Tool																												
FY16 IAC Prototype Releases																												
FY17 IAC User Evaluations																												
FY19 IAC Requirements Data Call																												
Releasing Second Prototype and Initiating Development of Third Prototype of an Enterprise Level Solution to Perform Predictive Intelligence Analysis																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 64537A / <i>INTELLIGENCE ANALYSIS CAPABILITIES (IAC)</i>
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Released Third Prototype and Initiated Development of Fourth Prototype of Capability to Add a Space Communications Modeling Capability to Existing Tool											■																	
FY17 IAC Prototype Releases											■																	
FY18 IAC User Evaluations														■														
FY18 IAC Prototype Releases															■													
FY19 IAC User Evaluations																			■									
FY21 IAC Requirements Data Call																			■									
FY19 IAC Prototype Releases																							■					
FY20 IAC User Evaluations																											■	
FY20 IAC Prototype Releases																											■	
FY21 IAC User Evaluations																												■
FY21 IAC Prototype Releases																												■

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 64537A / <i>INTELLIGENCE ANALYSIS CAPABILITIES (IAC)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
IAC Development	1	2015	4	2021
Released First Prototype and Initiated Development of Second Prototype of Capability to Add a Space Communications Modeling Capability to Existing Tool	1	2015	1	2015
Started Development of Enterprise Level Solution to Perform Predictive Intelligence Analysis	1	2015	1	2015
FY15 IAC User Evaluations	2	2015	2	2015
FY17 IAC Requirements Data Call	2	2015	2	2015
FY15 IAC Prototype Releases	4	2015	4	2015
FY16 IAC User Evaluations	2	2016	2	2016
Releasing First Prototype and Initiating Development of Second Prototype of an Enterprise Level Solution to Perform Predictive Intelligence Analysis	2	2016	2	2016
Released Second Prototype and Initiated Development Third Prototype of Capability to Add a Space Communications Modeling Capability to Existing Tool	3	2016	3	2016
FY16 IAC Prototype Releases	4	2016	4	2016
FY17 IAC User Evaluations	2	2017	2	2017
FY19 IAC Requirements Data Call	2	2017	2	2017
Releasing Second Prototype and Initiating Development of Third Prototype of an Enterprise Level Solution to Perform Predictive Intelligence Analysis	2	2017	2	2017
Released Third Prototype and Initiated Development of Fourth Prototype of Capability to Add a Space Communications Modeling Capability to Existing Tool	3	2017	3	2017
FY17 IAC Prototype Releases	4	2017	4	2017
FY18 IAC User Evaluations	2	2018	2	2018
FY18 IAC Prototype Releases	4	2018	4	2018
FY19 IAC User Evaluations	2	2019	2	2019

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 64537A / <i>INTELLIGENCE ANALYSIS CAPABILITIES (IAC)</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
FY21 IAC Requirements Data Call	2	2019	2	2019
FY19 IAC Prototype Releases	4	2019	4	2019
FY20 IAC User Evaluations	2	2020	2	2020
FY20 IAC Prototype Releases	4	2020	4	2020
FY21 IAC User Evaluations	2	2021	2	2021
FY21 IAC Prototype Releases	4	2021	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603438F / <i>Space Control Technology</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	5.799	4.057	7.534	0.000	7.534	7.819	7.986	8.188	8.481	Continuing	Continuing
642611: <i>Technology Insertion Planning and Analysis</i>	-	5.799	4.057	7.534	0.000	7.534	7.819	7.986	8.188	8.481	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program supports a range of activities including technology planning, development, prototyping and developmental test, as well as modeling, simulations and exercises to support development of tactics and procedures in the Space Control mission area. The types of Space Control activities accomplished are Space Situational Awareness (SSA), Defensive Counterspace (DCS), Offensive Counterspace (OCS), and Command and Control (C2) and Battle Management. SSA includes monitoring, detecting, identifying, tracking, assessing, verifying, categorizing, and characterizing objects and events in space and includes terrestrial based space capabilities. DCS includes defensive activities to protect U.S. and friendly space-systems assets, resources, and operations from enemy attempts to negate or interfere and prevention activities that limit or eliminate an adversary's ability to use U.S. space systems and services for purposes hostile to U.S. national security interests. OCS activities disrupt, deny, degrade or destroy space systems, or the information and the technology they provide, which may be used for purposes hostile to U.S. national security interests. Command & Control efforts include identifying technology solutions to enable fusion of data for use in multi-level security environments, and near-real-time data delivery and decision support to warfighter needs. This program supports the development of Rapid Reaction Capabilities in response to immediate warfighter needs, including Urgent Operational Needs (UONs) and Joint Urgent Operational Needs (JUONs), in the Space Control mission area.

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

The FY2017 funding request includes original baseline for development and testing of advanced prototype, Signal Processing Lab and quick reaction capabilities (QRC) on a standardized Government Referenced Architecture, enabling integration and transition of those capabilities to multiple programs of record. Additional funding in FY2017 and beyond enables robust CONUS and OCONUS formal developmental testing of capabilities prior to operational testing and acceptance.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603438F / <i>Space Control Technology</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	6.075	4.070	5.509	0.000	5.509
Current President's Budget	5.799	4.057	7.534	0.000	7.534
Total Adjustments	-0.276	-0.013	2.025	0.000	2.025
• 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	-0.017	0.000			
• SBIR/STTR Transfer	-0.259	0.000			
• Other Adjustments	0.000	0.000	2.025	0.000	2.025

Change Summary Explanation

FY17: Additional funding in FY2017 and beyond enables robust CONUS and OCONUS formal developmental testing of capabilities prior to operational testing and acceptance.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603438F / <i>Space Control Technology</i>				Project (Number/Name) 642611 / <i>Technology Insertion Planning and Analysis</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
642611: <i>Technology Insertion Planning and Analysis</i>	-	5.799	4.057	7.534	0.000	7.534	7.819	7.986	8.188	8.481	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project supports a range of activities including technology planning, development, demonstrations and prototyping, and testing, as well as modeling, simulations and exercises to support development of tactics and procedures for a responsive and resilient Space Control mission area. This includes technology development and prototyping for Defensive Counterspace (DCS) and Offensive Counterspace (OCS). Specifically supported are OCS activities which include disruption, denial, or degradation (and associated Electronic Support) of adversary space systems which may be used to purposes hostile to U.S. national security interests. Rapid Reaction Capabilities in response to immediate warfighter needs in the Space Control mission area are developed within this program.

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

	FY 2015	FY 2016	FY 2017
Title: Rapid Reaction Branch (RRB)	5.799	4.057	7.534
Description: Develops advanced capabilities for rapid prototyping and integration into space control programs of record and, if requested, to warfighter Urgent Operational Needs (UONs) and Joint Urgent Operational Needs (JUONs). Conducts prototyping, demonstration, testing, and rapid transition of technology and techniques to space control systems.			
FY 2015 Accomplishments: Completed development and testing for Multi Mission Platform (MMP) Increment 2 prototype. Integrated Increment 2 architecture into space control programs of record.			
FY 2016 Plans: Continue integration and testing of MMP Increment 2 architecture into programs of record. If requested, field quick reaction capabilities using MMP Increment 2 architecture.			
FY 2017 Plans: Expand development and testing of advanced prototype, Signal Processing Lab and QRC capabilities. Test MMP Increment 2 Government Referenced Architecture across multiple programs of record and their mission-specific capabilities. Execute robust test on program of record, to include CONUS and OCONUS test activities spanning full range of system capabilities and integration of MMP Increment 2. Conduct prototype development and testing of MMP Increment 3, to include integration, testing and transition of advanced Quick Reaction Capabilities (QRC). Accelerate Strategic Portfolio Review initiatives. If requested, develop, test, train, field and sustain quick reaction capabilities.			
Accomplishments/Planned Programs Subtotals	5.799	4.057	7.534

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603438F / <i>Space Control Technology</i>	Project (Number/Name) 642611 / <i>Technology Insertion Planning and Analysis</i>

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• None: <i>None</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Remarks

D. Acquisition Strategy

All contracts funded in this program element will be awarded using competitive procedures to the maximum extent possible. Program consists of numerous small projects.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603438F / <i>Space Control Technology</i>	Project (Number/Name) 642611 / <i>Technology Insertion Planning and Analysis</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Counterspace Technology Prototyping/Rapid Reaction Development	Various	Various : Various	-	5.381	Jan 2015	3.639	Jan 2016	6.399	Jan 2017	0.000		6.399	Continuing	Continuing	TBD
Technical Mission Analysis	RO	Aerospace : El Segundo, CA	-	0.000		0.000		0.712	Oct 2016	0.000		0.712	Continuing	Continuing	-
Subtotal			-	5.381		3.639		7.111		0.000		7.111	-	-	-

Remarks
N/A

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Support	Various	Space and Missile Systems Center : El Segundo, CA	-	0.208	Jan 2015	0.208	Jan 2016	0.000		0.000		0.000	Continuing	Continuing	TBD
Subtotal			-	0.208		0.208		0.000		0.000		0.000	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
A&AS	Various	SMC : El Segundo, CA	-	0.210	Jan 2015	0.210	Jan 2016	0.423	Jan 2017	0.000		0.423	Continuing	Continuing	TBD

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603438F / <i>Space Control Technology</i>	Project (Number/Name) 642611 / <i>Technology Insertion Planning and Analysis</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	0.210		0.210		0.423		0.000		0.423	-	-	-
Project Cost Totals			-	5.799		4.057		7.534		0.000		7.534	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603438F / <i>Space Control Technology</i>	Project (Number/Name) 642611 / <i>Technology Insertion Planning and Analysis</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Rapid Prototyping	[Redacted]																											
Signal Processing Lab MMP(D) Increment 2	[Redacted]																											
Signal Processing Lab MMP(D) Increment 3	[Redacted]																											
Signal Processing Lab MMP(D) Increment 4	[Redacted]																											
CCS DT (plan/execute/report)	[Redacted]																											
Capability Integration (Lab)	[Redacted]																											
Capability tests (execute/report)	[Redacted]																											
Ongoing capability DT planning/execution	[Redacted]																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603438F / <i>Space Control Technology</i>	Project (Number/Name) 642611 / <i>Technology Insertion Planning and Analysis</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Rapid Prototyping	1	2015	4	2021
Signal Processing Lab MMP(D) Increment 2	1	2015	1	2017
Signal Processing Lab MMP(D) Increment 3	4	2016	2	2019
Signal Processing Lab MMP(D) Increment 4	1	2019	4	2021
CCS DT (plan/execute/report)	4	2015	3	2017
Capability Integration (Lab)	1	2015	4	2021
Capability tests (execute/report)	1	2015	4	2021
Ongoing capability DT planning/execution	1	2015	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	10.606	21.790	24.418	0.000	24.418	24.327	23.645	24.084	24.510	Continuing	Continuing
642597: <i>Non-cooperative Identification Subsystems</i>	-	8.730	19.893	22.506	0.000	22.506	22.378	21.660	22.062	22.452	Continuing	Continuing
642599: <i>Cooperative Identification Techniques</i>	-	1.876	1.897	1.912	0.000	1.912	1.949	1.985	2.022	2.058	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Combat Identification (CID) Technology program element analyzes, develops, demonstrates and evaluates promising target identification technologies to facilitate platform transition decisions prior to Engineering and Manufacturing Development (EMD). The Joint Capability Document (JCD) for CID BFT (Blue Force Tracking), operational documents, lessons learned, and NATO requirements state the need for positive CID. High confidence CID increases combat effectiveness, prevents fratricide, and reduces collateral damage. It also enables combatant commanders to effectively command and control their forces in all weather, day or night. This program element focuses on the cooperative and non-cooperative technologies that have the capability to positively identify surface and air targets in both air-to-surface and air-to-air engagements.

In order to rapidly make available promising CID technologies for platform EMD decisions, the program element funds design studies, engineering analysis, and other efforts associated with demonstration of prototype CID related technologies and subsystems on platforms. It also supports the development, testing, and implementation of international standards (to include NATO standardization agreements) to ensure joint, Allied, and coalition interoperability.

Non-cooperative CID employs a number of sensing technologies and signal processing techniques. The observations may be compared to a database of known objects to identify surface or air threats from air platforms. These technologies include: (1) Laser Vision, an Electro-Optical/Infrared (EO/IR) imaging system that significantly increases ID ranges; (2) Passive RF ID Environment (PRIDE), a program to develop passive RF target ID capability for denied access environment utilizing passive RF and EW information with potential non-traditional ISR capabilities; (3) A new program called Radio ID (RID) will develop methods for utilizing advances in radio technologies such as software defined radios, to provide low cost ID solutions for situational awareness and fratricide prevention, potentially fusing non-cooperative techniques and cooperative technologies; (4) Hydra Vision, a balanced (robust) amalgamation of sensor data from multiple sources to provide warfighters with higher confidence CID results on surface or air targets potentially including fusion with intelligence sources, identification of non-traditional targets, fusion to counter camouflage, concealment and deception (CCD), and multi-phenomenology features for sustainable databases; (5) Compact ATR (Aided Target Recognition) and Sustainable Environments (CASE), a CID approach that focuses on tailoring algorithms to utilize smaller, more efficient databases that are faster and less expensive to generate and maintain; and (6) Enhanced Combat ID (ECID), a program to develop a robust ability to quantitatively evaluate promising CID technologies using enhanced modeling and simulation (M&S) capabilities.

Cooperative CID employs technologies required to rapidly identify friendly platforms. The program develops, integrates and evaluates technologies that provide AF platforms with a means of positively identifying an air or ground platform as a friendly, via active or passive cooperative ID capabilities. Development funded by this

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>
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program element ensures availability of Automatic Dependent Surveillance - Broadcast (ADS-B) as well as Mode 5 IFF (Identification Friend or Foe) upgrade path for implementing ground and air platforms across the Air Force fleet. Activities also include studies and analysis to support both current program planning and execution and future program planning.

Fund Air Traffic Control Radar Beacon Systems Identification Friend or Foe Mark XIIA System (AIMS) Program Office test engineers. The DoD International AIMS PO has system level interoperability testing and certification responsibilities for the present Mark XII system, development and integration of Mark XIIA (Mode 5) and transition to Mark XIIA Mode S systems. AIMS PO will continue to test and certify IFF equipment for the services now as long as IFF is used for combat identification.

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

B. Program Change Summary (\$ in Millions)	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	10.980	21.790	24.661	0.000	24.661
Current President's Budget	10.606	21.790	24.418	0.000	24.418
Total Adjustments	-0.374	0.000	-0.243	0.000	-0.243
• 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	-0.374	0.000			
• Other Adjustments	0.000	0.000	-0.243	0.000	-0.243

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>			Project (Number/Name) 642597 / <i>Non-cooperative Identification Subsystems</i>				
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
642597: <i>Non-cooperative Identification Subsystems</i>	-	8.730	19.893	22.506	0.000	22.506	22.378	21.660	22.062	22.452	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Non-cooperative CID employs a number of sensing technologies and signal processing techniques. The observations may be compared to a database of known objects to identify surface or air threats from air platforms. These technologies include: (1) Laser Vision, an EO/IR imaging system that significantly increases ID ranges;(2) PRIDE, a program to develop passive RF target ID capability for denied access environment utilizing passive RF and EW information with potential non-traditional ISR capabilities; (3) A new program called RID will develop methods for utilizing advances in radio technologies such as software defined radios to provide a low cost ID solutions for situational awareness and fratricide prevention potentially fusing non-cooperative techniques and cooperative technologies. (4) Hydra Vision, a balanced (robust) amalgamation of sensor data from multiple sources to provide warfighters with higher confidence CID results on surface or air targets potentially including fusion with intelligence sources, identification of non-traditional targets, fusion to counter camouflage, concealment and deception (CCD), and multi-phenomenology features for sustainable databases; (5) CASE, a CID approach that focuses on tailoring algorithms to utilize smaller, more efficient databases that are faster and less expensive to generate and maintain; and (6) ECID, a program to develop a robust ability to quantitatively evaluate promising CID technologies using enhanced modeling and simulation (M&S) capabilities.

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

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Laser Vision/SIREN	2.664	3.721	1.811	0.000	1.811
Description: Design, fabricate, and evaluate a tactical range laser vibrometry sensor in a targeting pod. Leverage ability of active electro-optic sensors to sense micro-displacements of operating machinery in order to measure the resulting frequency spectrum. Assess utility for air-to-ground combat identification. The Vibrometry Advanced Mode Processor (VAMP) program is research into advanced algorithms for processing data provided by vibrometry sensors in order to develop and demonstrate prototype pilot Aided Target Recognition software.					
FY 2015 Accomplishments: - Conducted subsystem verification experiments. - Conducted laboratory calibration and system tests. - Targeting pod system level tower testing at NG evaluated range requirements					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642597 / <i>Non-cooperative Identification Subsystems</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<ul style="list-style-type: none"> - Test utilized canonical and military targets. - Initiated flight test planning and add work. - Initiated SEEK EAGLE certification. - Continued AiTR development (VAMP). <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Targeting pod testing will be conducted at the Northrup Grumman facility in 3rd quarter of 2016 - Targeting pod system tower testing will be conducted at Wright Patterson AFB in 4th quarter 2016. - SIREN sensor flight test will demonstrate the vibrometry sensing technology in a surrogate targeting Pod in 4th quarter 2016. - Laser vibrometry provides a valuable target recognition capability for determining ground targets engine type, with potential to counter enemy Camouflage, Concealment and Deception (CC&D) techniques as well as a valuable battle damage assessment tool. - SIREN provides the warfighter with a critical complement to image based ID tools and has the potential for air target ID as well as ground target ID. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> - A demonstration will be accomplished on a modified LITENING Pod flying on an test F-16 <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Laser Vision/VAMP</p> <p>Description: Design, fabricate, and evaluate a tactical range laser vibrometry sensor in a targeting pod. Leverage ability of active electro-optic sensors to sense micro-displacements of operating machinery in order to measure the resulting frequency spectrum. Assess utility for air-to-ground combat identification. The VAMP program exploits research into advanced algorithms for processing data provided by vibrometry sensors in order to develop and demonstrate prototype pilot Aided Target Recognition (AiTR) software.</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Kickoff of new VAMP algorithm development contract - Initiate ID algorithm development with relevant data from SIREN sensor 	0.000	0.611	1.211	0.000	1.211

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642597 / <i>Non-cooperative Identification Subsystems</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>- Explore surrogate target measurement capabilities for ground testing and affordable sustainment</p> <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> - ID algorithm development will continue with relevant data from SIREN sensor - Surrogate target measurement capabilities will be developed for ground testing and affordable sustainment - An AiTR will be integrated into the SIREN surrogate targeting pod - An AiTR lab demo will be accomplished with the SIREN sensor <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Laser Vision/3-D Ladar</p> <p>Description: Laser Vision, a family of electro-optical (EO) systems that significantly increase ID ranges. Provide the demonstration and evaluation data necessary to support decisions on future EO technologies supporting CID, including 3-D (3-dimensional) imaging laser radar (Ladar) and exploration of advanced concepts. The 3-D ladar technology provides a display of a 3-D EO image to the pilot for high confidence combat identification and is a potential for the next generation targeting pods for the USAF.</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - The 3D video human perception experiment tool was completed. Trials started late FY15. - Discoveries were used to optimize the display of 3D information on 2D cockpit displays. - A laboratory-class flight experiment (Unpackaged Demonstration Flights) contract add-work was awarded 2QFY15. First flights are expected in 2QFY16. - Collaboration with the CID PE CASE Program was begun to investigate an AiTR capability. - The combination of advanced 3D sensing cockpit display modes with the CASE AiTR was expected to greatly enhance CID. - The 3DTO focal plane array fabrication was completed and performance evaluation started. - Sep 2015 Ground Test at AFRL with Phase II DRS lab dewar receiver enabled enhancement of AFRL signal correction and display mode algorithms. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - The CIDS-3D performance modeling tool is expected to be ready to predict 3DTO flight performance. - The first Unpackaged Demonstration Flights will occur in 2QFY16 and yield the first 3DTO flight data. - This flight data will be analyzed, any necessary changes will be made to the system in preparation for a second flight demonstration. 	0.800	1.711	2.311	0.000	2.311

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force				Date: February 2016	
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>		Project (Number/Name) 642597 / <i>Non-cooperative Identification Subsystems</i>	
B. Accomplishments/Planned Programs (\$ in Millions)					
<ul style="list-style-type: none"> - The results from the Unpackaged Demonstration Flights will yield evidence to support predictions of mission-level (i.e. altitude/range/targets) 3DTO performance in the targeting pod. - Lessons learned from the Unpackaged Demonstration Flights will be used to further improve the signal correction and display mode algorithms for the podded flight demonstrations. - Award of the pod integration contract is expected in early FY16. The effort will add 3D sensing to a LITENING pod and retain the existing capabilities in the latest AF LITENING targeting pod. - The 3DTO flight receiver package will be completed. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> - The integration of the 3DTO receiver into the targeting pod will be completed late in FY17. - Receiver integration will be followed by ground performance and flight checkout. - It is expected the 3DTO demonstration pod will be ready for flight evaluation in early FY18. - Although the primary objective is to demonstrate enhanced CID in the air-to-ground precision strike, demonstration results will be used to look at the application of 3DTO in air-to-air engagements. <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Passive RF ID Environment (PRIDE)</p> <p>Description: Develop passive RF target ID capability for denied access environment utilizing passive RF and EW information with potential non-traditional ISR capabilities. PRIDE is a new start in FY15.</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - New start established. - Explored concepts for RF-based CID to include bistatic / multi-static, passive incorporation of electronic warfare techniques and multi-mode applications. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Explore concepts for RF-based CID to include bi-static/multi-static, passive incorporation of electronic warfare techniques and multi-mode applications. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> - PRIDE will develop the technology to provide a passive radar based ID capability to the warfighter. 					
	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
	0.500	1.330	3.611	0.000	3.611

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force			Date: February 2016		
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642597 / <i>Non-cooperative Identification Subsystems</i>			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- This technology development and demonstration will be critical for strike fighter fleet to operate in the Anti-Access/ Area Denial environment. FY 2017 OCO Plans: N/A					
Title: Radio ID (RID) Description: RID will develop technologies to integrate radio based cooperative technologies with non-cooperative technologies into the cockpit. The benefits will be increased confidence target ID and situational awareness as well as reduced fratricides. RID will be a new start in FY16. FY 2015 Accomplishments: N/A FY 2016 Plans: - New start efforts - RID will develop methods for utilizing advances in radio technologies such as software defined radios to provide a low cost ID solutions for situational awareness and fratricide prevention. FY 2017 Base Plans: - RID will develop methods for utilizing advances in radio technologies such as software defined radios to provide a low cost ID solutions for situational awareness and fratricide prevention potentially fusing non-cooperative techniques and cooperative technologies. - Future funding years will provide a laboratory and real time demonstrations. FY 2017 OCO Plans: N/A	0.000	0.550	2.041	0.000	2.041
Title: Hydra Vision/Air to Air Description: Hydra Vision (Multi-Sensor Enhanced ID) is a balanced (robust) amalgamation of sensor data from multiple sources to provide warfighters with higher confidence CID results on surface or air targets. There are two main thrusts occurring simultaneously, Air-to-Air and Air-to-Ground. FY 2015 Accomplishments: - Continued to refine fusion algorithms to maximize performance.	1.000	4.917	5.567	0.000	5.567

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force			Date: February 2016		
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642597 / <i>Non-cooperative Identification Subsystems</i>			
B. Accomplishments/Planned Programs (\$ in Millions)					
<p>- Demonstrated 2 feature fusion with ground based radar and investigated additional feature fusion for higher confidence ID performance.</p> <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Air-to-Air: Will perform a real time flight demonstration of a two feature air target Identification. - This demonstration will implement next generation air target identification for 5th generation fighter radar and upgraded 4th generation fighter radars. - These demos will be done on fighter aircraft radars on one of the prime radar developers (Raytheon or Northrup Grumman) surrogate platforms (Cost: \$3.1M). <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> - Development of third feature will be continued for fusion with previous two to enhance target identification confidence and accuracy. <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Hydra Vision/Air to Ground</p> <p>Description: Hydra Vision (Multi-Sensor Enhanced ID) is a family of balanced (robust) amalgamation of sensor data from multiple sources to provide warfighters with higher confidence CID results on surface or air targets.</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - A real-time engineering demonstration of full system capability was conducted over a variety of scenarios involving static and moving targets. - Completed verification of new High Range Resolution radar mode performance and its implementation. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Air to Ground: Will participate in a suitable operational demonstration such as Bold Quest to demonstrate AiTR for a MQ-9 (Reaper). - This critical capability will provide an operator the ability to quickly identify multiple targets of interests (automatically) or to focus an analyst to the most important targets. - This will benefit both ACC and AFSOC MQ-9's assuring more effective close in ID capabilities (Cost: \$2.5M). <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> - Performance results and overall system utility will be evaluated from FY16 demonstration. 					
	1.715	3.211	0.667	0.000	0.667

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force			Date: February 2016		
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642597 / <i>Non-cooperative Identification Subsystems</i>			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- System configuration and documentation will be finalized to deliver to transition partners. FY 2017 OCO Plans: N/A					
Title: Compact ATR (Aided Target Recognition) and Sustainable Environment (CASE) Description: CASE is a family of efforts to address efficiency and sustainability issues associated with the development, operation and maintenance of non-cooperative AiTR technology. Develop sustainable multiphenomenology AiTR based on low fidelity, compact, and inexpensive database technology. FY 2015 Accomplishments: - Real time Synthetic Aperture Radar (SAR) AiTR source code delivered - Six target set baseline SAR AiTR comparison studies completed - Saliency assessment versus AiTR performance experiment/study performed - SAR metric specifications/requirements were defined - LiDAR AiTR source code delivered - There was close collaboration with 3DTO LiDAR team for eventual integration into LITENING Pod or surrogate - Formal performance metric tradeoff process definition developed FY 2016 Plans: - Laboratory 12-target SAR and LiDAR AiTR Demonstrations utilizing cost and performance metrics - Finalize master plan for follow-on flight testing demonstrations of CASE technologies - Initiate acquisition process for follow-on flight testing effort FY 2017 Base Plans: - A SAR and LiDAR AiTR 24-target set Lab Demonstration will be completed. (~Jan 2017) - A follow on flight testing effort contract will be awarded FY 2017 OCO Plans: N/A	1.925	3.148	4.511	0.000	4.511
Title: Enhanced Combat Identification (ECID) Description: Develop a robust ability to quantitatively evaluate promising CID technologies using enhanced modeling and simulation (M&S) capabilities.	0.000	0.344	0.500	0.000	0.500

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642597 / <i>Non-cooperative Identification Subsystems</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p><i>FY 2015 Accomplishments:</i> N/A</p> <p><i>FY 2016 Plans:</i> - ECIDs modeling and simulation tools will be provided to larger system of system simulations providing both mission and campaign level campaign level combat ID simulations. - This effort will provide valuable tools to support CID investments.</p> <p><i>FY 2017 Base Plans:</i> - Tool sets will be integrated across CID organizations for effective decision making.</p> <p><i>FY 2017 OCO Plans:</i> N/A</p>					
<p><i>Title:</i> Studies</p> <p><i>Description:</i> Conduct CID-related studies/demos.</p> <p><i>FY 2015 Accomplishments:</i> - Continued study projects leading to new concepts for non-cooperative and cooperative CID efforts.</p> <p><i>FY 2016 Plans:</i> - Continue study projects leading to new concepts for non-cooperative and cooperative CID efforts.</p> <p><i>FY 2017 Base Plans:</i> - Study projects will be continued leading to new concepts for non-cooperative and cooperative CID efforts.</p> <p><i>FY 2017 OCO Plans:</i> N/A</p>	0.126	0.350	0.276	0.000	0.276
Accomplishments/Planned Programs Subtotals	8.730	19.893	22.506	0.000	22.506

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

N/A

Remarks

D. Acquisition Strategy

Combat Identification develops technologies for exploitation by the USAF and other services.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642597 / <i>Non-cooperative Identification Subsystems</i>
<p>Award multiple, competitive contract vehicles emphasizing off-the-shelf technology and maximizing the use of non-developmental items (NDIs). Management develops a technology to a point it can be demonstrated in a relative combat environment.</p> <p>E. Performance Metrics</p> <p>Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.</p>		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642597 / <i>Non-cooperative Identification Subsystems</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Hydra Vision (Air-to-Air) - L	C/CPFF	Leidos : Reston, VA	-	0.525	Mar 2015	0.750	Feb 2016	0.750	Feb 2017	0.000		0.750	Continuing	Continuing	-
Hydra Vision (Air-to-Air) - N	C/CPFF	Northrop Grumman : Linthicum Heights, MD	-	0.375	Apr 2015	2.000	Feb 2016	2.300	Feb 2017	0.000		2.300	Continuing	Continuing	-
Hydra Vision (Air-to-Air) - R	C/CPFF	Raytheon Company : El Segundo, CA	-	0.125	Mar 2015	2.000	Feb 2016	2.350	Feb 2017	0.000		2.350	Continuing	Continuing	-
SIREN	C/CPFF	Northrop Grumman : Rowling Meadows, IL	-	2.175	Feb 2015	3.610	Feb 2016	1.700	Feb 2017	0.000		1.700	0.000	7.485	-
VAMP - EO X DWARVES/ New Contract	C/CPFF	Etegent/TBD : Cincinnati/TBD	-	0.100	Nov 2014	0.500	Feb 2016	1.100	Jan 2017	0.000		1.100	Continuing	Continuing	-
3-D Ladar	C/CPFF	Northrop Grumman : Rolling Meadows, IL	-	0.700	Nov 2014	1.600	Dec 2015	2.200	Mar 2017	0.000		2.200	Continuing	Continuing	-
Hydra Vision, Target Recognition & Tracking Technology/CASE	MIPR	Sandia : Albuquerque, NM	-	0.200	May 2015	0.250	May 2016	0.250	May 2017	0.000		0.250	Continuing	Continuing	-
Studies - ECID	MIPR	Booz Allen Hamilton : McLean, VA	-	0.050	Jun 2015	0.344	May 2016	0.776	Dec 2016	0.000		0.776	Continuing	Continuing	-
Hydra Vision - Air to Ground	C/CPFF	BAE Systems : Burlington, MA	-	0.572	Mar 2015	0.000		0.000		0.000		0.000	0.000	0.572	-
Hydra Vision- Ops Demo	C/CPFF	General Atomics : San Diego, CA	-	0.550	Dec 2014	2.400	Feb 2016	0.000		0.000		0.000	0.000	2.950	-
Hydra Vision - SCEPTIC	C/CPFF	Intelligent Software Solutions : Colorado Springs, CA	-	0.040	Aug 2015	0.000		0.000		0.000		0.000	0.000	0.040	-
Hydra Vision - Compact ATR and Sustainable Environment Agile CEM	C/CPFF	Signal Innovations Group : Durham, NC	-	0.150	May 2015	0.300	Jan 2016	0.250	Mar 2017	0.000		0.250	Continuing	Continuing	-
Hydra Vision - Compact ATR and Sustainable Environment Reliable ATR Features	C/CPFF	Matrix Research & Engineering : Dayton, OH	-	0.327	Nov 2014	0.344	Feb 2016	0.250	Mar 2017	0.000		0.250	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642597 / <i>Non-cooperative Identification Subsystems</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Hydra Vision - Compact ATR and Sustainable Environment Analysis - L	C/CPFF	Leidos : Mclean, VA	-	0.910	Nov 2014	1.338	Feb 2016	1.900	Dec 2016	0.000		1.900	Continuing	Continuing	-
Hydra Vision - Compact ATR and Sustainable Environment Analysis - R	C/CPFF	Raytheon : El Segundo, CA	-	0.760	Nov 2014	1.338	Dec 2015	2.250	Dec 2016	0.000		2.250	Continuing	Continuing	-
Passive Radar Identification Environment (PRIDE)	C/TBD	TBD : TBD	-	0.050	Mar 2016	1.219	Mar 2016	3.500	Dec 2016	0.000		3.500	Continuing	Continuing	-
Radio Identification (RID)	C/TBD	TBD : TBD	-	0.050	Jun 2016	0.550	Jun 2016	1.930	Jan 2017	0.000		1.930	Continuing	Continuing	-
Subtotal			-	7.659		18.543		21.506		0.000		21.506	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering Support	MIPR	MITRE : Rome, NY	-	0.025	Dec 2014	0.000		0.000		0.000		0.000	0.000	0.025	-
Studies & Analysis	MIPR	DTIC : Ft Belvoir, VA	-	0.046	Apr 2015	0.350	Apr 2016	0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	0.071		0.350		0.000		0.000		0.000	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force			Date: February 2016		
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642597 / <i>Non-cooperative Identification Subsystems</i>			

FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
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

LASER VISION - Siren	[REDACTED]																															
LASER VISION - Siren Northrup Grumman Tower Test (June 2016)								■																								
LASER VISION - Siren Wright Patterson AFRL Tower Test (July 2016)												■																				
LASER VISION - Siren F-16 AATC POD Demo (Mar 2016)																■																
LASER VISION - VAMP	[REDACTED]																															
LASER VISION - VAMP Lab Demo								■																								
LASER VISION - VAMP POD Demo																■																
LASER VISION - 3D Ladar (3DTO)	[REDACTED]																															
LASER VISION - 3D Ladar (3DTO) Lab Demo								■																								
LASER VISION - 3D Ladar (3DTO) POD Demo																■																
Passive RF ID (PRIDE)	[REDACTED]																															
Passive RF ID (PRIDE) Lab Demo																■																
Passive RF ID (PRIDE) OPS Demo																																■
RID (Radio ID)																																
RID (Radio ID) Lab Demo																																■
RID (Radio ID) - Flight Demo																																■
Hydra Vision - Air to Air	[REDACTED]																															
Hydra Vision - Air to Air 2 Feature RT Demo								■																								
Hydra Vision - Air to Air 3 Feature RT Demo																																■
Hydra Vision - Increment 1 - Air-to-Ground	[REDACTED]																															
Hydra Vision - Increment 1 - Air-To-Ground OPS Demo								■																								

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642597 / <i>Non-cooperative Identification Subsystems</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
LASER VISION - Siren	1	2015	4	2021
LASER VISION - Siren Northrup Grumman Tower Test (June 2016)	3	2016	3	2016
LASER VISION - Siren Wright Patterson AFRL Tower Test (July 2016)	4	2016	4	2016
LASER VISION - Siren F-16 AATC POD Demo (Mar 2016)	2	2017	2	2017
LASER VISION - VAMP	1	2015	1	2018
LASER VISION - VAMP Lab Demo	3	2016	3	2016
LASER VISION - VAMP POD Demo	1	2018	1	2018
LASER VISION - 3D Ladar (3DTO)	1	2015	2	2018
LASER VISION - 3D Ladar (3DTO) Lab Demo	2	2016	2	2016
LASER VISION - 3D Ladar (3DTO) POD Demo	1	2018	1	2018
Passive RF ID (PRIDE)	3	2016	4	2021
Passive RF ID (PRIDE) Lab Demo	2	2018	2	2018
Passive RF ID (PRIDE) OPS Demo	3	2020	3	2020
RID (Radio ID)	1	2016	3	2021
RID (Radio ID) Lab Demo	1	2019	1	2019
RID (Radio ID) - Flight Demo	3	2020	3	2020
Hydra Vision - Air to Air	1	2015	2	2020
Hydra Vision - Air to Air 2 Feature RT Demo	4	2016	4	2016
Hydra Vision - Air to Air 3 Feature RT Demo	2	2020	2	2020
Hydra Vision - Increment 1 - Air-to-Ground	1	2015	4	2016
Hydra Vision - Increment 1 - Air-To-Ground OPS Demo	3	2016	3	2016
Hydra Vision - Increment 2 - Air-To-Ground	1	2017	2	2021

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642597 / <i>Non-cooperative Identification Subsystems</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
Hydra Vision - Increment 2 - Air-to-Ground Flight Demo	3	2020	3	2020
Compact ATR - Compact Feature ATR	1	2015	4	2020
Compact ATR - Compact Feature ATR Lab Demo	2	2017	2	2017
Compact ATR- Compact Feature ATR - Flight Demo	3	2020	3	2020
Enhanced CID	1	2016	1	2020
Studies	1	2015	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>				Project (Number/Name) 642599 / <i>Cooperative Identification Techniques</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
642599: <i>Cooperative Identification Techniques</i>	-	1.876	1.897	1.912	0.000	1.912	1.949	1.985	2.022	2.058	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Cooperative Combat Identification (CID) employs technologies required to rapidly identify friendly platforms. The program develops, integrates and evaluates technologies that provide AF platforms with a means of positively identifying an air or ground platform as a friendly, via active or passive cooperative identification capabilities. Development funded by this project ensures availability of a Mode 5 upgrade path for implementing ground and air platforms across the Air Force fleet.

Fund AIMS Program Office test engineers. The DoD International AIMS PO has system level interoperability testing and certification responsibilities for the present Mark XII system, development and integration of Mark XIIA (Mode 5) and transition to Mark XIIA Mode S systems. AIMS PO will continue to test and certify IFF equipment for the services now as long as IFF is used for combat identification.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Air Traffic Control and Radar Beacon Systems Identification Friend or Foe Mark XIIA System (AIMS) Program Office	1.876	1.897	1.912	0.000	1.912
Description: Fund AIMS Program Office test engineers. The DoD International AIMS PO has system level interoperability testing and certification responsibilities for the present Mark XII system, development and integration of Mark XIIA (Mode 5) and transition to Mark XIIA Mode S (ADS-B) systems.					
FY 2015 Accomplishments: - Continued to fund AIMS for interoperability testing, Federal Aviation Administration (FAA) liason, and support of Mode 4 / Mode 5 equipment.					
FY 2016 Plans: - Continue to fund AIMS for interoperability testing, FAA liason, and support of Mode 4 / Mode 5 equipment.					
FY 2017 Base Plans: - Will continue to fund AIMS for interoperability IFF testing (civil and military), FAA liaison, to support of Mode 4 / Mode 5 equipment, updating and developing IFF standards.					
FY 2017 OCO Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642599 / <i>Cooperative Identification Techniques</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
Accomplishments/Planned Programs Subtotals	1.876	1.897	1.912	0.000	1.912

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

N/A

Remarks

D. Acquisition Strategy

Combat Identification develops technologies for exploitation by the USAF and the other services. Award multiple, competitive contract vehicles emphasizing off-the-shelf technology and maximizing the use of non-developmental items (NDIs). Management develops a technology to a point it can be demonstrated in a relative combat environment.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642599 / <i>Cooperative Identification Techniques</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-	-	-	-	-	-	-	-	-	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-	-	-	-	-	-	-	-	-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Systems Engineering / Program Management (AIMSPO)	C/Various	WRALC/ENT : Robins AFB, GA	-	1.756	May 2015	1.777	May 2016	1.792	May 2017	0.000		1.792	Continuing	Continuing	-
Subtotal			-	1.756		1.777		1.792		0.000		1.792	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Office Support	Various	Travel : TBD	-	0.120	Oct 2014	0.120	Oct 2015	0.120	Oct 2016	0.000		0.120	Continuing	Continuing	-
Subtotal			-	0.120		0.120		0.120		0.000		0.120	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	1.876	1.897	1.912	0.000	1.912	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642599 / <i>Cooperative Identification Techniques</i>
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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

AIMS Program Office Activities	
AIMS Program Office Annual Conference (May 2016)	■

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603742F / <i>Combat Identification Technology</i>	Project (Number/Name) 642599 / <i>Cooperative Identification Techniques</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AIMS Program Office Activities	1	2015	4	2021
AIMS Program Office Annual Conference (May 2016)	3	2016	3	2016

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603790F / NATO Research and Development
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	2.309	4.736	4.333	0.000	4.333	3.840	3.932	4.023	4.092	Continuing	Continuing
64NATO: <i>Nato Coop R&D</i>	-	2.309	4.736	4.333	0.000	4.333	3.840	3.932	4.023	4.092	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
In FY 2016, PE 0603791F, International Space Cooperative Research & Development, Project 645035, International Space Coop R&D, efforts were transferred to PE 0603790F, NATO Research and Development, Project 64NATO, NATO Coop R&D, in order to consolidate international cooperative research and development activities.

A. Mission Description and Budget Item Justification

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

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603790F / NATO Research and Development
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	2.392	4.736	4.407	0.000	4.407
Current President's Budget	2.309	4.736	4.333	0.000	4.333
Total Adjustments	-0.083	0.000	-0.074	0.000	-0.074
• 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	-0.083	0.000			
• Other Adjustments	0.000	0.000	-0.074	0.000	-0.074

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
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Title: International Cooperative Research and Development

Description: Supports bi- and multi-lateral international agreements that meet USAF RDT&E objectives and goals. Each of the cooperative projects that receive funding must meet one or more of the following requirements: enhance warfighter capabilities and coalition interoperability; accelerate the availability of defense systems; strengthen and reinforce strategic partnerships; gain access to the best defense technologies, capabilities and techniques; build relationships and influence with allies; and/or eliminate duplication of R&D efforts.

FY 2015 Accomplishments:
FY15 cooperative projects include, but are not limited to, RDT&E efforts in human performance, directed energy, information systems, aerospace systems, munitions, materials and manufacturing, sensors, and space vehicles. Representative projects include but are not limited to Unmanned Aerial Systems Crew Training Research, Modeling Fatigue from Prolonged Driving, Quantification Standards to Assess the Loss of Thermal Barrier Coating due to Calcium-Magnesia-Alumina-Silicate Exposure, Advanced Rotary Engine Design for Tactical Unmanned Aerial Vehicles, Time Critical Targeting in Urban Environments, Environmental Health and Safety of Advanced Nanomaterials, Panchromatic Materials for Optical Sensor Protection, Resolving High Temperature/Pressure and Unsteady Flow Measurements for Advanced Cycle Diagnostics, Flight Information Exchange Model for Air Force Mission Planning, Tessellated Nanosatellite-enhanced Communications Feasibility, Coalition Performance Evaluation Tracking System, Real-time Coalition Performance Assessment; and others.

FY 2016 Plans:
FY16 cooperative projects will include, but are not limited to, RDT&E efforts in human performance, directed energy, information systems, aerospace systems, munitions, materials and manufacturing, sensors, and space vehicles. Representative projects

2.309	4.736	4.333
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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603790F / NATO Research and Development
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>include but are not limited to Unmanned Aerial Systems Crew Training Research, Modeling Fatigue from Prolonged Driving, Quantification Standards to Assess the Loss of Thermal Barrier Coating due to Calcium-Magnesia-Alumina-Silicate Exposure, Advanced Rotary Engine Design for Tactical Unmanned Aerial Vehicles, Time Critical Targeting in Urban Environments, Environmental Health and Safety of Advanced Nanomaterials, Panchromatic Materials for Optical Sensor Protection, Resolving High Temperature/Pressure and Unsteady Flow Measurements for Advanced Cycle Diagnostics, Flight Information Exchange Model for Air Force Mission Planning, Tessellated Nanosatellite-enhanced Communications Feasibility, Coalition Performance Evaluation Tracking System, Real-time Coalition Performance Assessment; and others</p> <p>FY 2017 Plans: FY17 cooperative projects involve RDT&E efforts in human performance, information systems, aerospace systems, munitions, materials and manufacturing, sensors, space situational awareness, missile warning, military satellite communications, global positioning systems, responsive space capabilities, cyber network defense and information assurance, and space vehicles. These projects include but are not limited to Pre-cooler Heat Exchanger for High Mach Air-Breathing Propulsion (HEX), Space-Based Surveillance by Hypertemporal Imaging (HTI) Sensors, Small Scalable Kinetic Weapon (SSKW) Phase 2, Life Management of Notch Locations in Aeroengine Components, Additive manufacturing and modeling of thermosetting polymer composites, Selective Amplification of Low Power mmW Signals (SALSA), Sensing and Integrated Navigation with GNSS and Augmentations (SINGA), Aircraft Damage Effects Assessment (ADEA), Protected Tactical Service Field Demo (PTSFD, Advanced Methods for Space Object Understanding, Mid-Latitude Plasma Density Irregularities, Biosignatures for Automated Human Detection and Characterization, Nano-Thermite Reactive Liner Composite, and others.</p>			
Accomplishments/Planned Programs Subtotals	2.309	4.736	4.333

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

Remarks

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

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

associated program elements and equitable allied funding. As appropriate, funding responsibility for out-year requirements and follow-on efforts are transferred to the project office and associated program elements. Any new contracts are awarded after full and open competition.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force												Date: February 2016				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 4				PE 0603790F / NATO Research and Development				64NATO / Nato Coop R&D								
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
Subtotal			-	-	-	-	-	-	-	-	-	-	-	-	-	
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
NATO Coop R&D (International Research Projects)	Various	Various : TBD	-	1.417	Feb 2015	3.468	Feb 2016	3.182	Feb 2017	0.000		3.182	Continuing	Continuing	-	
Subtotal			-	1.417		3.468		3.182		0.000		3.182	-	-	-	
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
NATO Coop R&D (International Research Projects)	Various	Various : TBD	-	0.892	Feb 2015	1.268	Feb 2016	1.151	Feb 2017	0.000		1.151	Continuing	Continuing	-	
Subtotal			-	0.892		1.268		1.151		0.000		1.151	-	-	-	
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
Subtotal			-	-	-	-	-	-	-	-	-	-	-	-	-	
Project Cost Totals			-	2.309		4.736		4.333		0.000		4.333	-	-	-	
Remarks																

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603790F / NATO Research and Development	Project (Number/Name) 64NATO / Nato Coop R&D

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
FY17 ICR&D Projects - Call Letter	██████████																											
FY17 ICR&D Projects - nomination package development	██████████																											
FY17 ICR&D Projects - Review panel	██████████																											
FY17 ICR&D Projects - Coordination of review panel results					██████████																							
FY16 ICR&D Projects - Approved projects letter sent to MAJCOMs					██████████																							
FY17 ICR&D Projects - Agreement development, negotiations, and signature									██████████																			
FY17 ICR&D Projects - RDTE cooperative project work									██████████																			

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603790F / NATO Research and Development	Project (Number/Name) 64NATO / Nato Coop R&D

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
FY17 ICR&D Projects - Call Letter	2	2015	2	2016
FY17 ICR&D Projects - nomination package development	2	2015	3	2016
FY17 ICR&D Projects - Review panel	3	2015	3	2016
FY17 ICR&D Projects - Coordination of review panel results	4	2015	4	2016
FY16 ICR&D Projects - Approved projects letter sent to MAJCOMs	4	2015	4	2016
FY17 ICR&D Projects - Agreement development, negotiations, and signature	1	2017	4	2017
FY17 ICR&D Projects - RDTE cooperative project work	1	2017	4	2017

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603791F / <i>International Space Cooperative R&D</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.806	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.806
645035: <i>Intl Space Coop R&D</i>	-	0.806	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.806
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2016, PE 0603791F, International Space Cooperative Research & Development, Project 645035, International Space Coop R&D, efforts were transferred to PE 0603790F, NATO Research and Development, Project 64NATO, NATO Coop R&D, in order to consolidate international cooperative research and development activities under one Program Element Code.

A. Mission Description and Budget Item Justification

These funds will be used to initiate space-related international cooperative research, and development (ISCR&D) projects with North Atlantic Treaty Organization (NATO) member states, major non-NATO allies and friendly foreign countries. Each of the selected projects are required to have a concluded international agreement (IA), prior to funds being released, that implement the provisions of Title 10 US Code, Section 2350a. This legislation (Title 10 US Code, Section 2350) authorizes funds to significantly improve US and allied conventional defense capabilities by leveraging the best defense technologies, eliminating costly duplication of R&D efforts, accelerating the availability of defense systems, and promoting US and allied interoperability or commonality. These funds will not be used for government civilian salaries, permanent construction, or be spent overseas.

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

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.833	0.000	0.000	0.000	0.000
Current President's Budget	0.806	0.000	0.000	0.000	0.000
Total Adjustments	-0.027	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	-0.027	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603791F / <i>International Space Cooperative R&D</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: International Space Cooperative Research and Development</p> <p>Description: Supports bilateral and multi-lateral space-related international agreements that meet USAF RDT&E objectives and goals. Each of the cooperative projects that receive funding must meet one or more of the following requirements: enhance warfighter capabilities and coalition interoperability; accelerate the availability of defense systems; strengthen and reinforce strategic partnerships; gain access to the best defense technologies, capabilities and techniques; build relationships and influence with allies; and/or eliminate duplication of R&D efforts.</p> <p>FY 2015 Accomplishments: FY15 cooperative projects include but are not limited to: Robust Affordable Networked Global Navigation Satellite System Receiver for Military Applications (RANGR), Tessellated Nanosatellite-enhanced Communications Feasibility; and others.</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans: N/A</p> <p>FY 2017 OCO Plans: N/A</p>	0.806	0.000	0.000	0.000	0.000
Accomplishments/Planned Programs Subtotals	0.806	0.000	0.000	0.000	0.000

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

Remarks

E. Acquisition Strategy
 A principal goal of the International Space Cooperative R&D program is to effectively utilize the aggregate resources invested by the US and our allies in space-related R&D. This program element provides the critical funding incentive needed to pursue space-related International Cooperative Research Development and Acquisition (ICRD&A) agreements and helps to (a) leverage USAF and allied resources through cost sharing and economies of scale; (b) exploit the best US and allied technologies for equipping coalition forces; (c) demonstrate areas of commonality or interoperability with our allies; and (d) accelerate the availability of defense technology and systems. Candidate projects are reviewed against USAF goals, DoD objectives, and warfighter needs prior to being approved. An international agreement defining project objectives, responsibilities and costs is required prior to release of funds. To obtain these funds and ensure service commitment, projects are selected from

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity	R-1 Program Element (Number/Name)
3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	PE 0603791F / <i>International Space Cooperative R&D</i>

existing or new space-related RDT&E programs funded in the Future Years Defense Plan (FYDP). Project offices must show matching funds and contributions from associated program elements and equitable allied funding. As appropriate, funding responsibility for out-year requirements and follow-on efforts are transferred to the project office and associated program elements. Most contracts are awarded after full and open competition.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603791F / <i>International Space Cooperative R&D</i>	Project (Number/Name) 645035 / <i>Intl Space Coop R&D</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-	-	-	-	-	-	-	-	-	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
International Space Cooperative R&D (International Research Projects)	Various	Various : TBD	-	0.806	Feb 2015	0.000		0.000		0.000		0.000	0.000	0.806	-
Subtotal			-	0.806		0.000		0.000		0.000		0.000	0.000	0.806	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-	-	-	-	-	-	-	-	-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-	-	-	-	-	-	-	-	-	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.806	0.000	0.000	0.000	0.000	0.000	0.806	-

Remarks

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603791F / <i>International Space Cooperative R&D</i>	Project (Number/Name) 645035 / <i>Intl Space Coop R&D</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
ISCRD Projects - Project agreement development, negotiations, and signature	1	2015	4	2015
ISCRD Projects - RDTE cooperative project work	1	2016	4	2017

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603830F / <i>Space Security and Defense Program</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	30.592	30.771	32.399	0.000	32.399	31.481	30.952	31.527	32.085	Continuing	Continuing
64A025: <i>Space Protection Program</i>	-	30.592	30.771	32.399	0.000	32.399	31.481	30.952	31.527	32.085	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Program Element funds the DoD/Air Force component of the Space Security and Defense Program (SSDP). The SSDP is a Joint Department of Defense (DoD) and Office of the Director of National Intelligence (ODNI) organization established to function as the center of excellence for options and strategies (materiel, non-materiel, cross-Title, cross-domain) leading to a more resilient and enduring National Security Space (NSS) Enterprise. The SSDP Operates under the authority of the Deputy Secretary of Defense (DEPSECDEF) and Principal Deputy Director of National Intelligence (PDDNI) to lead and collaborate on space protection vulnerability, susceptibility, and mitigation assessments of NSS services for the purpose of identifying and introducing protection recommendations into existing requirements, budgeting, acquisition, and operational development processes. This unique mission provides an ongoing and crucial core protection competency that advances specific projects/activities (including cyber) to deliver comprehensive, economical and actionable solutions for both programmatic and operational domains.

The SSDP scope spans multiple space missions and stakeholders including the DoD, Intelligence Community (IC), civil, commercial, and international space entities that support NSS missions in both peacetime and throughout all phases of conflict. It is focused on being responsive to NSS stakeholders in providing technical and operational assessments of emergent threat concepts, and developing near- and far-term plans to address strategies, threats, and vulnerabilities. Specific SSDP Projects are structured/ designed to have an impact across all time horizons; near-term focused efforts to complicate adversary operations, mid-term focused efforts to improve system and enterprise survivability, and long-term focused efforts to render adversary capabilities ineffective.

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0603830F I Space Security and Defense Program
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	31.613	30.771	32.722	0.000	32.722
Current President's Budget	30.592	30.771	32.399	0.000	32.399
Total Adjustments	-1.021	0.000	-0.323	0.000	-0.323
• 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	-1.021	0.000			
• Other Adjustments	0.000	0.000	-0.323	0.000	-0.323

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
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Title: Threat Mitigation Project and Activities 24.738 25.957 0.000

Description: Entails the prioritized, project-specific technical efforts and activities supporting SSDP mission objectives. Includes associated program support/infrastructure and operating costs to sustain a coherent program effort and adhere to the legal requirements of executing a program-specific baseline.

FY 2015 Accomplishments:
FY15 projects/activities increased emphasis on addressing a wider domain of capabilities and enhanced the focus on offensive and active defense issues. Increased project capacity in FY15 applied existing processes/methodology to address additional priority space protection issues for Advanced Space Combat Tactics, Counter Network Exploitation Analysis, Wideband Global SATCOM (WGS) Defense Exploration, and Geosynchronous Earth Orbit (GEO) Catalog Expansion.

FY 2016 Plans:
FY16 projects/activities will be prioritized to be consistent with the annual work plan that represents the NSS community's interests, priorities, and equities as well as the priorities articulated by the DEPSECDEF and PDDNI. The program will continue to address high-priority space protection issues and apply existing processes/methodology to address protection priorities within specific mission areas including Operations, Satellite Communication (SATCOM), Position-Navigation and Timing (PNT), Missile Warning (MW), Cyber/Non-Kinetic, Space Situational Awareness (SSA), Indications and Warning (I&W), and Intelligence - Surveillance - Reconnaissance (ISR). The entire compliment of planned FY16 projects will be flexible and responsive to the evolving protection needs and priorities throughout the NSS Enterprise; focused on meeting the demands for operational planning, ongoing coordination of Title 10/50 activities, and the advancement of specific efforts to actionable solutions that have operational

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 0603830F / <i>Space Security and Defense Program</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
and/or programmatic impact. Experimentation and CONOPS development feeding JICSpOC activities, Advanced Space Combat Tactics, Counter Network Exploitation Analysis, WGS Defense Exploration will be program priorities in FY16.				
FY 2017 Plans: For FY17 these activities have moved to the "Space Protection & Survivability" line to better reflect program evolution and the emphasis on integrating across enterprise level efforts, experimentation and Prototyping, and mission area specific solution development.				
Title: Strategic Protection Activities and Products		3.959	3.939	0.000
Description: Encompasses the program's strategic efforts to develop and support protection-related policy, influence and advocate for protection requirements, analyze impacts of various policy recommendations on mitigation options, and inform/assist policy-makers on opportunities to leverage policy actions to enhance the space protection posture across the NSS Enterprise.				
FY 2015 Accomplishments: FY15 efforts directly supported the main body of the OSD-CAPE led Space Strategic Portfolio Review (SPR). Informed and assisted policy-makers at every level on opportunities to shape policy to enhance space protection posture. Provided policymakers specialized technical assistance, protection-specific data/findings, and validated recommendations regarding the impacts that policy/strategy changes may have on our protection of NSS capabilities.				
FY 2016 Plans: Support all follow-on assessment required out of the Space Strategic Portfolio Review results. Further impact policy across a broader range of DoD, IC and Civil space operations. Continue strategic protection and policy integration efforts across all facets of the NSS Enterprise. Provide technical assistance, advice and strategic solution support to all enterprise stakeholders. Further investigation of specific tactics, technics and procedures (TTP) as well as specific cyber and materiel solutions to emergent capability needs.				
FY 2017 Plans: For FY17 these activities have moved to the "Space Protection & Survivability" line to better reflect program evolution and the emphasis on integrating across enterprise level efforts, experimentation and Prototyping, and mission area specific solution development.				
Title: SATCOM Resiliency Enhancement		1.895	0.875	0.000
Description: Incremental effort to enhance the ground-based software and associated operating/processing procedures used to plan WGS operations. Will leverage current system capabilities and planned software updates to improve code that will make a manually-intensive build cycle more automated/responsive.				

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 0603830F / <i>Space Security and Defense Program</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Initial software code updated and enhancement (to include revised operational techniques) continued to be evolved toward the target implementation of FY17. Functional Qualification Test (FQT) testing, initial implementation tasks, amending the proposed code, and ongoing efforts to seamlessly integrate the enhancement into the ground-based WGS planning process all executed in FY15. Technique development and operational integration through the wideband architecture was explored by enabling infrastructure such as spectrum monitoring for electromagnetic interference.</p> <p><i>FY 2016 Plans:</i> FY16 activities will continue implementation of the enhancement as well as the development and validation of revised techniques to fully operationalize the enhancement by FY17. In order to ensure operational effectiveness, the enhancement will be tested and injected into a variety of relevant exercises. The program will work to tie-in the functions of the new software more-directly with key decision-makers and consider implementation of added features to further enhance the accuracy and effectiveness of the system; accounting for variables not originally identified/known in the original development efforts.</p> <p><i>FY 2017 Plans:</i> For FY17 these activities have moved to the “Space Protection & Survivability” line to better reflect program evolution and the emphasis on integrating across enterprise level efforts, experimentation and Prototyping, and mission area specific solution development.</p>				
<p><i>Title:</i> Space Protection and Survivability</p> <p><i>Description:</i> SSDP organizes, plans, and executes specific projects in three focus areas: Enterprise Capabilities & Solutions; Mission Area Protection Concepts & Architectures; and Operational Tactics, Experiments & Prototypes. Enterprise Capabilities & Solutions projects focus on identifying and advocating for NSS enterprise-level protection requirements and architecture updates/modifications, informing/assisting policy-makers and analyzing policy to enhance the space protection posture across the NSS Enterprise. Mission Area Protection Concepts & Architectures projects constitute protect and defend (P&D) efforts focused on specific mission areas and/or systems. These projects entail the specific technical efforts, activities and engagements supporting capability and architecture development in mission areas such as Space Control, Battle Management Command and Control (BMC2), Satellite Communication (SATCOM), Position-Navigation and Timing (PNT), Missile Warning (MW), Space Situational Awareness (SSA), Indications and Warning (I&W), and Intelligence – Surveillance - Reconnaissance (ISR). Finally, Operational Tactics, Experiments & Prototypes projects leverage operators, experimentation and prototyping to develop, refine, document and demonstrate Tactics, Techniques and Procedures (TTPs), Concepts of Operation (CONOPS), improved operational capabilities, and associated BMC2 functions. Projects may leave behind a residual operational capability. Additionally, these projects will support development of TTPs and CONOPS for protection solutions developed by SSDP partners across the NSS Enterprise. Projects in all three areas will include cyber and non-kinetic solutions for protecting specific capabilities and the NSS Enterprise.</p>		0.000	0.000	32.399

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603830F / <i>Space Security and Defense Program</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> The other SSDP Major Thrusts transition into this Major Thrust in the FY17 PB documentation.</p> <p><i>FY 2016 Plans:</i> The other SSDP Major Thrusts transition into this Major Thrust in the FY17 PB documentation.</p> <p><i>FY 2017 Plans:</i> FY17 projects will focus on high-priority DoD & IC space protect and defend (P&D) considerations such as the Space Strategic Portfolio Review (SPR) and AFSPC Space Enterprise Vision (SEV) while being flexible and responsive to the evolving protection needs and priorities throughout the NSS Enterprise. Individual projects, both in house and in coordination with our mission partners, will work to validate candidate solutions through various means, such as technical analysis, Modeling & Simulation (M&S), and operator engagement. They will: Pursue new P&D solutions, develop CONOPS for both programmed and proposed systems, use M&S resources to mature and shape CONOPS, document architectures and inform programmatic decisions, and utilize experiment results along with M&S recommendations to influence NSS Enterprise requirement and architecture choices. Projects will include prototyping and experimenting with BMC2, SSA and Space Control concepts, planned capabilities and TTPs. Projects will be executed in SSDP labs, mission partner facilities, and often in coordination with the JSpOC, JICSpOC, and NROC. They will incorporate objectives to demonstrate DoD/IC space protection coordination as well as explore data fusion including the integration of commercial tools & services. SSDP will: Continue independent review and assessment for programmatic planning and architectures covering DoD, IC and Civil space operations; engage on strategic protection and policy integration efforts across all facets of the NSS Enterprise; and work with the NSS community to incorporate P&D requirements into policy and guidance to drive future program development and execution. M&S resources will be used to conduct architecture trades at both the enterprise and system level to identify the right mix of systems to meet NSS requirements and examine how those systems should be integrated.</p>			
Accomplishments/Planned Programs Subtotals	30.592	30.771	32.399

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• NA: NA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Remarks	Note: The AF/DoD portion of the SSDP is funded entirely from this Program Element. Funding to support the complimentary/partnership National Reconnaissance Office (NRO) activities (as part of the joint/integrated program effort between AFSPC and the NRO) are programmed in the NRO classified funding request.										

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603830F / <i>Space Security and Defense Program</i>
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E. Acquisition Strategy
All contracts funded in this program element will be awarded using competitive procedures to the maximum extent possible. The program consists of numerous small projects.

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603830F / Space Security and Defense Program	Project (Number/Name) 64A025 / Space Protection Program
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Threat Mitigation Projects and Activities	Various	Various : Various	-	22.370	Nov 2014	23.401	Nov 2015	0.000		0.000		0.000	Continuing	Continuing	-
Strategic Protection Activities and Products	Various	Various : Various	-	3.587	Nov 2014	3.600	Nov 2015	0.000		0.000		0.000	Continuing	Continuing	-
SATCOM Resiliency Enhancement	Various	Various : Various	-	1.800	Nov 2015	0.875	Nov 2015	0.000		0.000		0.000	Continuing	Continuing	-
Space Protection and Survivability	Various	Various : Various	-	0.000		0.000		29.321	Nov 2016	0.000		29.321	Continuing	Continuing	TBD
Subtotal			-	27.757		27.876		29.321		0.000		29.321	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Support and Infrastructure (Gov't PMA)	Various	Various : Various	-	0.985	Nov 2014	0.999	Nov 2015	1.062	Nov 2016	0.000		1.062	Continuing	Continuing	-
Oversight, Advisory and other Technical Support (Contractor PMA)	Various	Various : Various	-	1.850	Nov 2014	1.896	Nov 2015	2.016	Nov 2016	0.000		2.016	Continuing	Continuing	TBD

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force										Date: February 2016					
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 4				PE 0603830F / Space Security and Defense Program				64A025 / Space Protection Program							
Management Services (\$ in Millions)					FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
Subtotal			-	2.835		2.895		3.078		0.000		3.078	-	-	-
			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract				
Project Cost Totals			-	30.592	30.771	32.399	0.000	32.399	-	-	-				
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603830F / <i>Space Security and Defense Program</i>	Project (Number/Name) 64A025 / <i>Space Protection Program</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Enterprise Capabilities and Solutions	[Redacted]																											
Mission Area Protection Concepts and Architectures	[Redacted]																											
Operational Tactics, Experiments and Prototypes	[Redacted]																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603830F / <i>Space Security and Defense Program</i>	Project (Number/Name) 64A025 / <i>Space Protection Program</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Enterprise Capabilities and Solutions	1	2015	4	2021
Mission Area Protection Concepts and Architectures	1	2015	4	2021
Operational Tactics, Experiments and Prototypes	1	2015	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	30.388	39.765	108.663	0.000	108.663	72.604	67.655	64.922	66.071	Continuing	Continuing
641020: <i>ICBM Guidance Applications</i>	-	2.589	5.251	25.226	0.000	25.226	14.730	12.714	12.756	12.982	Continuing	Continuing
641021: <i>ICBM Propulsion Applications</i>	-	8.868	6.910	15.437	0.000	15.437	10.797	11.771	6.899	7.020	Continuing	Continuing
641022: <i>ICBM Reentry Vehicle Applications</i>	-	6.144	11.367	36.840	0.000	36.840	21.965	18.547	19.576	19.923	Continuing	Continuing
641024: <i>ICBM Command & Control (C2) Applications</i>	-	3.970	14.764	26.362	0.000	26.362	22.664	21.691	21.739	22.124	Continuing	Continuing
641025: <i>Ground Based Strategic Deterrence (GBSD)</i>	-	7.858	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
644209: <i>Long Range Planning (LRP)</i>	-	0.959	1.473	4.798	0.000	4.798	2.448	2.932	3.952	4.022	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program ensures a responsive design and development engineering infrastructure to address emerging issues and technology insertion within the current Intercontinental Ballistic Missile (ICBM), future strategic systems/capability including the Ground Based Strategic Deterrent (GBSD), and other common strategic mission areas, where appropriate, to develop enhanced multi-use capabilities. The ICBM Dem/Val Program will provide technology maturation and risk reduction activities to support the Minuteman (MM) III to GBSD transition and beyond. Efforts identify methods to reduce life cycle costs, improve nuclear safety and surety, and ensure strategic missile viability.

In FY16, GBSD efforts were transferred to PE 0605230F, Ground Based Strategic Deterrent, Project 641025.

BA4 - This program is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P) because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	30.885	39.765	83.660	0.000	83.660
Current President's Budget	30.388	39.765	108.663	0.000	108.663
Total Adjustments	-0.497	0.000	25.003	0.000	25.003
• 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	0.392	0.000			
• SBIR/STTR Transfer	-0.889	0.000			
• Other Adjustments	0.000	0.000	25.003	0.000	25.003

Change Summary Explanation

FY 2015 funding reflects an overall decrease of \$0.497M; \$0.392M added for GBSD Survivability/Vulnerability Information Assessment Center (SURVIAC) Studies and assessments and a \$0.889M reduction for SBIR/STTR

FY 2017 funding reflects a net increase of \$25.003M to mature technologies for future use in ICBM systems.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>				Project (Number/Name) 641020 / <i>ICBM Guidance Applications</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
641020: <i>ICBM Guidance Applications</i>	-	2.589	5.251	25.226	0.000	25.226	14.730	12.714	12.756	12.982	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Guidance Applications Program	2.589	5.251	25.226	0.000	25.226
Description: Develop and mature, in coordination with the Navy, advanced technologies and concepts to support future requirements.					
FY 2015 Accomplishments:					
- Completed the first year for Concept, Design & Architecture - Guidance (CDAG). Critical Technology Elements/sensors were evaluated and a modeling and simulation capability was developed to examine future guidance instrument candidates					
- Began assessing the readiness of Strategic Resonating Beam Accelerometers (SRBAs) for potential use in a GBSD system					
- Completed assessment of strategic radiation hardened parts and the feasibility of a consolidated AF/Navy Parts Library					
FY 2016 Plans:					
- Continue efforts to evaluate guidance technologies and assess technical/manufacturing capabilities for a future ICBM system. This includes progress testing for a non-destructive capability that augments flight test.					
- Continue to assess SRBAs as a potential GBSD system instrument					
- Continue to assess various sensor GBSD candidates, such as, Hemispheric Resonating Gyroscopes, Strategic Fiber-Optic Gyroscopes, and Alternate-Pendulous Integrating Gyroscopic Accelerometer (Alt-PIGA).					
FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641020 / <i>ICBM Guidance Applications</i>
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B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Continue evaluation and testing of strategic guidance commodities for use in a future strategic guidance system, and leveraging from the Navy Trident Life Extension Program - Develop risk reduction initiatives associated with micro-electronic/electronic component technologies and commodities for future ICBM applications and/or obsolescence occurrences. Further progress testing for a non-destructive capability that augments flight test. - Independently validate and verify military parts suppliers (especially those with a single supplier) for their adherence to strategic radiation and other missile environments that are historically challenging. - Assess market for alternate vendors and electronic wafer technologies for fabrication of radiation hardened integrated circuits. Effort will include the military supplier base for products such as Metal-Oxide-semiconductor Field-effect Transistor (MOSFETs), Application Specific Integrated Circuits (ASICs), and memory. - Test analysis effort designed to augment flight test programs for performance assessment and anomaly investigation by conducting non-destructive, operationally dynamic testing, including a full range of critical missile environments FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	2.589	5.251	25.226	0.000	25.226

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE: BA04: PE 0605230F: <i>GBSD</i>	0.000	75.166	113.919	0.000	113.919	293.959	321.054	1,034.249	1,576.429	Continuing	Continuing

Remarks

D. Acquisition Strategy

Accomplish studies, analyses, concept development and engineering; efforts will be conducted using contracting strategies deemed most appropriate, generally using competitive contracts and/or MIPRs.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641020 / <i>ICBM Guidance Applications</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GAP Strategic Instrument Technology Readiness	C/CPFF	Draper Labs : Various*	-	2.534	Apr 2015	4.000	Jan 2016	7.641	Jan 2017	0.000		7.641	Continuing	Continuing	TBD
Subtotal			-	2.534		4.000		7.641		0.000		7.641	-	-	-

Remarks
*Cambridge, MA and Washington D.C.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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-Destructive Test Capability	C/Variou	Various : Various	-	0.000		0.791	Feb 2016	15.481	Jan 2017	0.000		15.481	Continuing	Continuing	-
Subtotal			-	0.000		0.791		15.481		0.000		15.481	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GAP Program Management Administration	C/Variou	Various : Various	-	0.055	Jan 2015	0.460	Jan 2016	2.104	Jan 2017	0.000		2.104	Continuing	Continuing	TBD
Subtotal			-	0.055		0.460		2.104		0.000		2.104	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641020 / <i>ICBM Guidance Applications</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

Remarks
Costs and services in support of program office management and administration processes such as: program oversight, resource justification, budget and programming, milestone and scheduling--PMA costs.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	2.589	5.251	25.226	0.000	25.226	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641020 / <i>ICBM Guidance Applications</i>
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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

Concept Design and Architecture	[Redacted]																											
Strategic Instrument/Component Technology Readiness	[Redacted]																											
Testing Capabilities Non-Destructive	[Redacted]																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641020 / <i>ICBM Guidance Applications</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Concept Design and Architecture	1	2015	2	2016
Strategic Instrument/Component Technology Readiness	1	2015	4	2021
Testing Capabilities Non-Destructive	2	2016	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>			Project (Number/Name) 641021 / <i>ICBM Propulsion Applications</i>				
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
641021: <i>ICBM Propulsion Applications</i>	-	8.868	6.910	15.437	0.000	15.437	10.797	11.771	6.899	7.020	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Propulsion Applications Program (PAP) develops strategic propulsion capability through projects exploring improvements and/or alternatives to current propulsion systems, conducting studies assessing application of new technologies to meet future common propulsion systems requirements, assessing opportunities for applying common materials and technology between the ICBM, submarine-launched ballistic missile (SLBM) propulsion systems, and other rocket motor propulsion capabilities. Efforts are focused on current and future requirements and technologies, reduced life cycle costs, and increased nuclear surety and safety.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Propulsion Applications Program	8.868	6.910	15.437	0.000	15.437
Description: Assess, develop, evaluate, and demonstrate common solid and liquid propulsion technology and manufacturing leading up to a static fire and test of strategic propulsion systems; develop capability and explore improvements to current and future propulsion systems; and support the research and development industrial base and critical infrastructure.					
FY 2015 Accomplishments: - Assessed Advanced Ordnance, Thrust Termination, Stage Separation, Thrust Vector Control and Post Boost technology development to support future strategic system requirements - Integrated, analyzed and demonstrated medium class sized motors with advanced technology as candidates to meet future SRM requirements					
FY 2016 Plans: - Continue assessment and demonstration of Post Boost, Thrust Vector Control and other advanced propulsion technologies - Perform Medium Class Stage III Sea level Static Fire Test to provide valid technological candidates for future SRM requirements					
FY 2017 Base Plans: - Initiate trade studies and risk reduction of components and subsystem propulsion technologies for future ICBM program insertion					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641021 / <i>ICBM Propulsion Applications</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Continue assessment and demonstration of existing Post Boost, Thrust Vector Control, and other advanced propulsion technology programs FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	8.868	6.910	15.437	0.000	15.437

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE: BA04: PE 0605230F: <i>GBSD</i>	0.000	75.166	113.919	0.000	113.919	293.959	321.054	1,034.249	1,576.429	Continuing	Continuing

Remarks

D. Acquisition Strategy
Studies, analyses, limited engineering, hardware development and/or testing will be accomplished; efforts will be conducted using contracting strategies deemed most appropriate, generally using competitive contracts.

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641021 / <i>ICBM Propulsion Applications</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PAP Propulsion and Solid Rocket Motor Studies	MIPR	AFRL : Various	-	0.770	Jun 2015	0.730	Feb 2016	2.830	Jan 2017	0.000		2.830	Continuing	Continuing	TBD
PAP Thrust Vector Control Study	C/CPFF	Moog : East Aurora, NY	-	1.067	Apr 2015	0.305	Apr 2016	1.513	Oct 2016	0.000		1.513	Continuing	Continuing	TBD
PAP Thrust Vector Control Study 2	C/CPFF	Honeywell : Tempe, AZ	-	0.000		0.800	Jan 2016	0.753	Oct 2016	0.000		0.753	Continuing	Continuing	-
PAP Post Boost Study 1	C/CPFF	Moog : East Aurora, NY	-	0.668	Jun 2015	0.644	Apr 2016	0.335	Oct 2016	0.000		0.335	Continuing	Continuing	TBD
PAP Post Boost Study 2	C/CPFF	Orbital ATK : Elkton, MD	-	1.252	Jun 2015	1.100	Mar 2016	0.628	Oct 2016	0.000		0.628	Continuing	Continuing	TBD
PAP Post Boost Study 3	C/CPFF	Aerojet Rocketdyne : Sacramento, CA	-	0.998	Jun 2015	0.742	May 2016	0.774	Oct 2016	0.000		0.774	Continuing	Continuing	TBD
PAP Advanced Ordnance and Stage Separation Studies	C/Variou	Various* : Various*	-	0.782	Jun 2015	0.143	Apr 2016	0.000		0.000		0.000	Continuing	Continuing	TBD
PAP Trade Studies/Risk Reduction	C/TBD	TBD : TBD	-	0.000		0.000		5.817	Mar 2017	0.000		5.817	Continuing	Continuing	TBD
PAP Medium Class Stage III**	C/CPFF	Various*** : Various***	-	0.000		0.000		0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	5.537		4.464		12.650		0.000		12.650	-	-	-

Remarks
 *Advanced Ordnance -- Orbital ATK: Corinne, UT -- CPFF; Ensign-Bickford Aerospace & Defense (EBAD): Simsbury, CT -- FFP
 *Stage Separation -- EBAD: Simsbury, CT -- FFP; Systema: Kirkland, WA -- FFP
 **Medium Class Stage III -- FY14 funded (\$24.122M) activities ongoing through FY16
 ***Medium Class Stage III -- Orbital ATK: Corinne, UT; Aerojet Rocketdyne: Sacramento, CA

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PAP Integration Support	C/Variou	BAE Systems : Clearfield, UT	-	1.359	Jul 2015	2.007	Jul 2016	1.452	Jul 2017	0.000		1.452	Continuing	Continuing	TBD

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641021 / <i>ICBM Propulsion Applications</i>
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal				-	1.359	2.007		1.452		0.000		1.452	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal				-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PAP Program Management Administration	Various	Various : Various	-	1.972	Jan 2015	0.439	Jan 2016	1.335	Jan 2017	0.000		1.335	Continuing	Continuing	TBD
Subtotal				-	1.972	0.439		1.335		0.000		1.335	-	-	-

Remarks
 Costs and services in support of program office management and administration processes such as: program oversight, resource justification, budget and programming, milestone and scheduling--PMA costs.

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	8.868	6.910	15.437	0.000	15.437	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641021 / <i>ICBM Propulsion Applications</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Thrust Vector Control Study																												
Advanced Ordnance and Stage Separation Studies																												
Post Boost Studies																												
Medium Class Stage III																												
Trade Studies/Risk Reduction																												
Propulsion Modularity Updates																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641021 / <i>ICBM Propulsion Applications</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Thrust Vector Control Study	3	2015	3	2017
Advanced Ordnance and Stage Separation Studies	3	2015	3	2016
Post Boost Studies	3	2015	4	2017
Medium Class Stage III	1	2015	1	2017
Trade Studies/Risk Reduction	2	2017	4	2019
Propulsion Modularity Updates	1	2020	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>				Project (Number/Name) 641022 / <i>ICBM Reentry Vehicle Applications</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
641022: <i>ICBM Reentry Vehicle Applications</i>	-	6.144	11.367	36.840	0.000	36.840	21.965	18.547	19.576	19.923	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Reentry Vehicle Applications Program (RVAP) ensures the ICBM force is equipped with the safest, most reliable Reentry Systems, and explores options for common, multi-mission capabilities. The program enables a responsive engineering infrastructure to support Reentry Systems beyond their original design life by addressing system issues and ensuring the availability of long-lead components and materials while identifying life cycle cost reduction methods. In addition, the program develops and tests advanced Reentry System technologies to meet future requirements. The program leverages investments by the Science & Technology community and Navy reentry systems applications program. Testing may occur on a space available basis on Air Force and Navy Force Development Evaluation (FDE) flights.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Reentry Vehicle Applications Program	6.144	11.367	36.840	0.000	36.840
Description: Mature, evaluate, and test reentry system materials and technologies for use in current and future strategic applications.					
FY 2015 Accomplishments: - Assessed, developed, and evaluated Countermeasure Studies, Multiple Independently-Targeted RV (MIRV)/ Shroud and Thermal Protection System (TPS) Material Development.					
FY 2016 Plans: - Continue to mature and evaluate Countermeasure Studies, MIRV/Shroud and TPS Material Development. - Develop TPS material and perform ground testing. - Initiate tradespace studies between all reentry system elements and their effects on a future integrated weapon system.					
FY 2017 Base Plans: - Complete Countermeasure Studies I & II, MIRV/Shroud, and TPS studies. - Initiate studies to mature and evaluate future countermeasures, heatshield development, carbon phenolic replacements, modeling and simulation programs, manufacturing capabilities, reentry system technologies, threat development analysis and countermeasure technology strategies, and inform future weapon development. - Conduct materials development, prototyping, and testing.					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641022 / <i>ICBM Reentry Vehicle Applications</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Continue to determine tradespace between all reentry system elements and their effects on the integrated weapon system. FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	6.144	11.367	36.840	0.000	36.840

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE: BA04: PE 0605230F: <i>GBSD</i>	0.000	75.166	113.919	0.000	113.919	293.959	321.054	1,034.249	1,576.429	Continuing	Continuing

Remarks

D. Acquisition Strategy

Studies, analyses, limited engineering, and pre-prototype hardware development will be accomplished; efforts will be conducted using contracting strategies deemed most appropriate, generally using competitive contracts.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641022 / <i>ICBM Reentry Vehicle Applications</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
RVAP Countermeasure Study I	C/CPFF	Textron Corp : Wilmington, MA	-	1.340	Apr 2015	2.139	Apr 2016	1.434	Dec 2016	0.000		1.434	Continuing	Continuing	TBD
RVAP Countermeasure Study II	C/CPFF	Lockheed Martin : King of Prussia, PA	-	1.381	Apr 2015	1.500	Apr 2016	1.191	Dec 2016	0.000		1.191	Continuing	Continuing	TBD
RVAP TPS Materials	C/CPFF	Intermat : Biddeford, ME	-	0.900	Jun 2015	0.375	Jun 2016	1.084	Jun 2017	0.000		1.084	Continuing	Continuing	TBD
RVAP Mk21 MIRV/Shroud	C/CPFF	Lockheed Martin : King of Prussia, PA	-	1.000	May 2015	2.499	May 2016	1.249	May 2017	0.000		1.249	Continuing	Continuing	TBD
RVAP Modeling and Simulation Programs	C/TBD	TBD : TBD	-	0.000		0.000		2.500	Feb 2017	0.000		2.500	Continuing	Continuing	TBD
RVAP Manufacturing Capabilities Study	C/TBD	TBD : TBD	-	0.000		0.000		7.000	Nov 2016	0.000		7.000	Continuing	Continuing	TBD
RVAP Future Vehicles Studies	C/TBD	TBD : TBD	-	0.000		0.000		5.670	Feb 2017	0.000		5.670	Continuing	Continuing	-
Subtotal			-	4.621		6.513		20.128		0.000		20.128	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
RVAP Support	C/FFP	BAE Systems : Clearfield, UT	-	0.210	Mar 2015	0.210	Mar 2016	0.630	Mar 2017	0.000		0.630	Continuing	Continuing	TBD
RVAP FFRDC Support and Analysis I	MIPR	MIT Lincoln Labs : Hanscom, MA	-	0.603	Sep 2015	1.400	Apr 2016	1.750	Apr 2017	0.000		1.750	Continuing	Continuing	TBD
RVAP FFRDC Support and Analysis II	MIPR	Sandia National Labs : Albuquerque, NM	-	0.600	Sep 2015	1.400	Mar 2016	3.150	Mar 2016	0.000		3.150	Continuing	Continuing	TBD
RVAP FFRDC Support and Analysis III	MIPR	Lawrence Livermore : Livermore, CA	-	0.000		0.501	Jan 2016	1.750	Jan 2017	0.000		1.750	Continuing	Continuing	TBD
Subtotal			-	1.413		3.511		7.280		0.000		7.280	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force											Date: February 2016				
Appropriation/Budget Activity 3600 / 4						R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>					Project (Number/Name) 641022 / <i>ICBM Reentry Vehicle Applications</i>				

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
RVAP TPS Testing and Analysis	Various	TBD : TBD	-	0.000		0.500	Jan 2016	0.779	Jul 2017	0.000		0.779	Continuing	Continuing	TBD
RVAP Flight Testing	Various	TBD : TBD	-	0.000		0.000		5.528	Oct 2016	0.000		5.528	Continuing	Continuing	-
Subtotal			-	0.000		0.500		6.307		0.000		6.307	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
RVAP Program Management Administration	Various	Various : Various	-	0.110	Apr 2015	0.843	Jan 2016	3.125	Jan 2017	0.000		3.125	Continuing	Continuing	TBD
Subtotal			-	0.110		0.843		3.125		0.000		3.125	-	-	-

Remarks
 Costs and services in support of program office management and administration processes such as: program oversight, resource justification, budget and programming, milestone and scheduling--PMA costs.

Project Cost Totals	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
	-	6.144	11.367	36.840	0.000	36.840	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641022 / <i>ICBM Reentry Vehicle Applications</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Countermeasure Studies I & II																												
MIRV/Shroud																												
TPS Materials																												
FFRDC Analysis and Testing																												
TPS Testing and Analysis																												
Manufacturing Capabilities Study																												
Modeling and Simulation Programs																												
Flight Testing																												
Future Vehicles Studies																												
Countermeasure Studies																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641022 / <i>ICBM Reentry Vehicle Applications</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Countermeasure Studies I & II	3	2015	3	2017
MIRV/Shroud	3	2015	3	2017
TPS Materials	3	2015	3	2018
FFRDC Analysis and Testing	4	2015	4	2019
TPS Testing and Analysis	2	2016	2	2019
Manufacturing Capabilities Study	1	2017	3	2018
Modeling and Simulation Programs	2	2017	2	2018
Flight Testing	1	2017	1	2019
Future Vehicles Studies	2	2017	2	2019
Countermeasure Studies	4	2018	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>			Project (Number/Name) 641024 / <i>ICBM Command & Control (C2) Applications</i>				
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
641024: <i>ICBM Command & Control (C2) Applications</i>	-	3.970	14.764	26.362	0.000	26.362	22.664	21.691	21.739	22.124	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Command and Control Applications Program (C2AP) supports ICBM weapon system connectivity to the President and National Command Authorities. C2AP evaluates and develops assured, survivable, and secure communications and battlespace awareness between the missile Launch Control Centers (LCCs) and Launch Facilities (LFs) essential for mission execution. Efforts include identifying and developing current and future technologies, as well as concepts that exploit state-of-the-art communications and information transfer techniques to both current and future ICBM systems. Products include studies, demonstrations and tests such as ICBM weapon system C2 (WSC2) architectures, networks, and systems to meet nuclear command and control requirements.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Command and Control Application Program	3.970	14.764	26.362	0.000	26.362
Description: Examine and develop concepts for transforming ICBM WSC2 to meet current and future requirements.					
FY 2015 Accomplishments: - Initiated studies to identify, assess, and preserve unique strategic C2 skills and technologies to meet current and future requirements. - Began development of a WSC2 laboratory to facilitate development and testing of future WSC2 architectures.					
FY 2016 Plans: - Continue studies to identify, assess, and preserve unique strategic command and control skills and technologies to meet current and future system requirements. - Continue development of WSC2 laboratory to facilitate development and testing of future WSC2 architectures.					
FY 2017 Base Plans: - Support ongoing development efforts for the WSC2 laboratory to facilitate development and testing of potential future WSC2 architectures, to include software development, cyber security testing, and preparation for Nuclear Surety Certification activities.					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641024 / <i>ICBM Command & Control (C2) Applications</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Continue studies to identify, assess, and preserve unique strategic command and control skills and technologies to meet current and future system requirements. FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	3.970	14.764	26.362	0.000	26.362

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE: BA04: PE 0605230F: <i>GBSD</i>	0.000	75.166	113.919	0.000	113.919	293.959	321.054	1,034.249	1,576.429	Continuing	Continuing

Remarks

D. Acquisition Strategy

A technology development strategy will be developed during the MSA phase.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641024 / <i>ICBM Command & Control (C2) Applications</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
C2AP Studies	C/CPPF	Various : Pittsfield, MA	-	1.571	Mar 2015	0.074	Jan 2016	4.681	Mar 2017	0.000		4.681	Continuing	Continuing	TBD
C2AP Weapon System Command & Control Laboratory	SS/FFP	Various : Rockville, MD	-	1.900	Jun 2015	13.178	Feb 2016	14.806	Feb 2017	0.000		14.806	Continuing	Continuing	TBD
Subtotal			-	3.471		13.252		19.487		0.000		19.487	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
C2AP Technical Services	C/FFP	BAE Systems : Clearfield, UT	-	0.210	Jul 2015	0.231	Jul 2016	0.360	Jul 2017	0.000		0.360	Continuing	Continuing	TBD
C2AP FFRDC Support	SS/FFP	Aerospace Corp : Los Angeles, CA	-	0.192	Mar 2015	0.369	Feb 2016	1.475	Feb 2017	0.000		1.475	Continuing	Continuing	TBD
Subtotal			-	0.402		0.600		1.835		0.000		1.835	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
C2AP Lab Testing	C/FFP	Various : TBD	-	0.000		0.000		4.025	Mar 2017	0.000		4.025	Continuing	Continuing	-
Subtotal			-	0.000		0.000		4.025		0.000		4.025	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
C2AP Program Management Administration	C/FFP	Various : Various	-	0.097	Jan 2015	0.912	Jan 2016	1.015	Jan 2017	0.000		1.015	Continuing	Continuing	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641024 / <i>ICBM Command & Control (C2) Applications</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
C2AP Studies	[REDACTED]																											
C2AP Weapon System Command & Control Laboratory	[REDACTED]																											
C2AP Lab Testing	[REDACTED]												[REDACTED]															

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641024 / <i>ICBM Command & Control (C2) Applications</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
C2AP Studies	3	2015	2	2021
C2AP Weapon System Command & Control Laboratory	3	2015	4	2021
C2AP Lab Testing	2	2017	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>			Project (Number/Name) 641025 / <i>Ground Based Strategic Deterrence (GBSD)</i>				
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
641025: <i>Ground Based Strategic Deterrence (GBSD)</i>	-	7.858	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Ground Based Strategic Deterrence (GBSD) identifies viable concepts and materiel solutions in support of the Air Force's strategic deterrence and global strike capabilities. Funding supports pre-Milestone A activities, to include an Analysis of Alternatives (AoA) and associated concept refinement activities of potential materiel solutions. This effort will explore materiel technology alternatives at the system and sub-system levels and during the Materiel Solution Analysis (MSA) Phase leading to a Milestone-A decision.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Ground Based Strategic Deterrent	7.858	0.000	0.000	0.000	0.000
Description: Perform Pre-Milestone A activities to identify potential materiel solutions for a future GBSD.					
FY 2015 Accomplishments: - Continued concept refinement, technology analyses, modeling and simulation support, engineering studies, program cost, schedule estimation, acquisition strategy development, risk reduction efforts, and initial requirements definition. - Completed Milestone A preparation to include development of Milestone A exit strategy and Technology Maturation and Risk Reduction phase entrance documentation.					
FY 2016 Plans: • Reflected in PE 0605230F, Ground Based Strategic Deterrent, Project 641025.					
FY 2017 Base Plans: N/A					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	7.858	0.000	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641025 / <i>Ground Based Strategic Deterrence (GBSD)</i>

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE: BA04: PE 0605230F: GBSD	0.000	75.166	113.919	0.000	113.919	293.959	321.054	1,034.249	1,576.429	Continuing	Continuing

Remarks

D. Acquisition Strategy

Multiple contracts may be awarded to refine materiel solution concepts. A technology development strategy will be developed during the MSA phase.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force												Date: February 2016				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 4				PE 0603851F / Intercontinental Ballistic Missile - Dem/Val				641025 / Ground Based Strategic Deterrence (GBSD)								
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
GBSD SURVIAC Studies	C/FFP	Booz Allen Hamilton : Colorado Springs, CO	-	0.384	Mar 2015	0.000		0.000		0.000		0.000	Continuing	Continuing	TBD	
Subtotal			-	0.384		0.000		0.000		0.000		0.000	-	-	-	
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
GBSD Integration Support	C/FFP	BAE Systems : Clearfield, UT	-	4.305	Mar 2015	0.000		0.000		0.000		0.000	Continuing	Continuing	TBD	
GBSD FFRDC Support	SS/FFP	Aerospace Corp : Los Angeles, CA	-	1.919	Feb 2016	0.000		0.000		0.000		0.000	Continuing	Continuing	TBD	
Subtotal			-	6.224		0.000		0.000		0.000		0.000	-	-	-	
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
GBSD Test and Assessments	Various	Various : Various	-	1.044	Jul 2015	0.000		0.000		0.000		0.000	Continuing	Continuing	TBD	
Subtotal			-	1.044		0.000		0.000		0.000		0.000	-	-	-	
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
GBSD Program Management Administration	C/FFP	Various : Various	-	0.206	Oct 2014	0.000		0.000		0.000		0.000	Continuing	Continuing	TBD	
Subtotal			-	0.206		0.000		0.000		0.000		0.000	-	-	-	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641025 / <i>Ground Based Strategic Deterrence (GBSD)</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

Remarks
 Costs and services in support of program office management and administration processes such as: program oversight, resource justification, budget and programming, milestone and scheduling--PMA costs.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	7.858	0.000	0.000	0.000	0.000	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641025 / <i>Ground Based Strategic Deterrence (GBSD)</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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

GBSD Integration Support	[REDACTED]																											
GBSD SURVIAC Studies	[REDACTED]																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 641025 / <i>Ground Based Strategic Deterrence (GBSD)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
GBSD Integration Support	1	2015	4	2015
GBSD SURVIAC Studies	2	2015	1	2016

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>				Project (Number/Name) 644209 / <i>Long Range Planning (LRP)</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
644209: <i>Long Range Planning (LRP)</i>	-	0.959	1.473	4.798	0.000	4.798	2.448	2.932	3.952	4.022	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Long Range Planning (LRP) effort identifies and analyzes potential modifications to current and future Intercontinental Ballistic Missile (ICBM) Weapon Systems required to meet objectives relative to long-term sustainment, technology insertion, battle space awareness, employment, force structure and future systems. The studies will focus on system supportability, operability, reliability, innovation and maintainability. Options/concepts generated by these studies are evaluated for feasibility, system impacts, and cost. The LRP also lays the groundwork for analysis supporting future weapon systems development and deployment. Pre-milestone activities may be conducted for current or future ICBM weapon systems to include entry criteria for milestone activities.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Long Range Planning	0.959	1.473	4.798	0.000	4.798
Description: Analyze, study and plan current and future ICBM activities to meet requirements for long-term sustainment, technology insertion, employment force structure and future systems.					
FY 2015 Accomplishments: - Initiated Industrial Base Assessment and Launch Facility (LF) assessments. - Initiated LF and Water Intrusion Study Assessments to examine infrastructure conditions, water intrusion, corrosion and explore mitigation opportunities.					
FY 2016 Plans: - Continue LF Assessments/Water Intrusion Study - Initiate a LF deep dive analysis and assessment to inform future Launch -- Control Center (LCC) and Missile Alert Facility (MAF) requirements - Initiate effort to examine and test potential Launch Systems (LS) security enhancements.					
FY 2017 Base Plans: - Continue LF deep dive analysis and assessment to inform future LCC and MAF requirements - Continue examining and testing potential for LS security - Continue Long Range Planning studies to assess current and future ICBM support systems					
FY 2017 OCO Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 644209 / <i>Long Range Planning (LRP)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
Accomplishments/Planned Programs Subtotals	0.959	1.473	4.798	0.000	4.798

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• RDTE: BA04: PE 0605230F: <i>GBSD</i>	0.000	75.166	113.919	0.000	113.919	293.959	321.054	1,034.249	1,576.429	Continuing	Continuing

Remarks

D. Acquisition Strategy

Analysis will be accomplished; efforts will be conducted using contracting strategies deemed most appropriate, generally using competitive contracts.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 644209 / <i>Long Range Planning (LRP)</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LRP Studies	C/FFP	BAE Systems : Clearfield, UT	-	0.415	May 2015	0.290	Mar 2016	3.117	Apr 2017	0.000		3.117	Continuing	Continuing	-
LRP Water Intrusion Study/LF Assessment	C/Various	BAE/ISC : Cheyenne, WY	-	0.257	Aug 2015	0.603	Dec 2015	0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	0.672		0.893		3.117		0.000		3.117	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LRP Integration Support	C/FFP	BAE Systems : Clearfield, UT	-	0.210	Jul 2015	0.210	Jul 2016	0.210	Jul 2017	0.000		0.210	Continuing	Continuing	TBD
Subtotal			-	0.210		0.210		0.210		0.000		0.210	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Launch Systems Tests	C/TBD	AFRL : TBD	-	0.000		0.253	Apr 2016	1.087	Apr 2017	0.000		1.087	Continuing	Continuing	-
Subtotal			-	0.000		0.253		1.087		0.000		1.087	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
LRP Program Management Administration	Various	Various : Various	-	0.077	Jan 2015	0.117	Jan 2016	0.384	Jan 2017	0.000		0.384	Continuing	Continuing	-
Subtotal			-	0.077		0.117		0.384		0.000		0.384	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 644209 / <i>Long Range Planning (LRP)</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

Remarks
Costs and Services in support of program office management and administration processes such as: program oversight, resource justification, budget and programming, milestone and schedule tracking --PMA costs.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	0.959	1.473	4.798	0.000	4.798	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 644209 / <i>Long Range Planning (LRP)</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Industrial Base Assessment																												
Water Intrusion Study/LF Assessment																												
Long Range Planning Studies																												
Launch Systems Tests																												
ICBM Transition Studies																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>	Project (Number/Name) 644209 / <i>Long Range Planning (LRP)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Industrial Base Assessment	3	2015	1	2016
Water Intrusion Study/LF Assessment	4	2015	4	2016
Long Range Planning Studies	2	2015	4	2018
Launch Systems Tests	3	2016	4	2018
ICBM Transition Studies	1	2019	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603859F / <i>Pollution Prevention - Dem/Val</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.965	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.965
644852: <i>Pollution Prevention</i>	-	0.965	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.965
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY2016, Project Number 644852 Pollution Prevention was terminated.

A. Mission Description and Budget Item Justification

This project funds R&D activities that demonstrate and prototype alternative weapon system manufacturing, remanufacturing, and maintenance materials and processes that reduce or eliminate hazardous chemicals, materials and waste streams through cost-effective programs and practices, while improving energy efficiency and reducing greenhouse gas emissions. Upon proof of the new process or materials, the resulting product can be transitioned to depot maintenance processes, which results in reduced maintenance costs, reduced depot flow time, and increases asset availability. Specifically, funds target pollution prevention technologies that reduce or eliminate chromium, cadmium, and nickel, as well as reduce or eliminate Hazardous Air Pollutants (HAPS), Volatile Organic Compounds (VOCs), and Class I and II Ozone Depleting Substances (ODS), global warmers and biochemical oxygen demand (BOD) and to increase the use of renewable and alternative fuels.

This effort is in Budget Activity 04, Advanced Component Development and Prototypes, because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.998	0.000	0.000	0.000	0.000
Current President's Budget	0.965	0.000	0.000	0.000	0.000
Total Adjustments	-0.033	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	-0.033	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Title: Low Observable Laser De-coating System	0.300	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 0603859F / <i>Pollution Prevention - Dem/Val</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Description: Investigations and demonstrations to adapt the ALC-deployed whole aircraft laser depainting system to remove low-observable coatings used on B-2, F-22, F-35 aircraft and other low observable applications.</p> <p>FY 2015 Accomplishments: Demonstrated ability to successfully remove low-observable coatings.</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Plans: N/A</p>				
<p>Title: Hexavalent Chromium Replacement RDT&E</p> <p>Description: Effort to reduce hexavalent chromium in weapon system paints, coatings, sealants, adhesives, and plating. Supports AF Environmental Management System (EMS) #1 ranked AF-wide significant aspect. Critical element of AF response to 2009-2013 OSHA violations at three ALCs.</p> <p>FY 2015 Accomplishments: Demonstrated and validated alternative solutions for specific weapon system processes.</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Plans: N/A</p>		0.300	0.000	0.000
<p>Title: Cadmium Replacement RDT&E</p> <p>Description: Effort to reduce cadmium in weapon system coatings and plating. Supports AF Environmental Management System (EMS) #1 ranked AF-wide significant aspect. Critical element of AF response to 2009-2013 OSHA violations at three ALCs.</p> <p>FY 2015 Accomplishments: Demonstrated and validated alternative solutions for Cadmium plated connectors.</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Plans:</p>		0.300	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0603859F / <i>Pollution Prevention - Dem/Val</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
N/A			
Title: 2015 Emerging Environmental Issues	0.065	0.000	0.000
Description: Investigations and demonstrations to resolve significant environmental aspects; P2 dem/val of technologies to address high-priority weapon system environmental issues and increase aircraft availability.			
FY 2015 Accomplishments: Addressed emerging environmental issues, reduced negative impact on aircraft availability.			
FY 2016 Plans: N/A			
FY 2017 Plans: N/A			
Accomplishments/Planned Programs Subtotals	0.965	0.000	0.000

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

Remarks

E. Acquisition Strategy
Pollution Prevention activities are level of effort and use time and materials support contracts.

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force												Date: February 2016				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 4				PE 0603859F / Pollution Prevention - Dem/Val				644852 / Pollution Prevention								
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Air Force Research Lab	Various	Various : Various	-	0.945	Nov 2014	0.000		0.000		0.000		0.000	0.000	0.945	-	
Subtotal			-	0.945		0.000		0.000		0.000		0.000	0.000	0.945	-	
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
Subtotal			-	-		-		-		-		-	-	-	-	
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
Subtotal			-	-		-		-		-		-	-	-	-	
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Air Force Research Lab	Various	Various : Various	-	0.020		0.000		0.000		0.000		0.000	0.000	0.020	-	
Subtotal			-	0.020		0.000		0.000		0.000		0.000	0.000	0.020	-	
Project Cost Totals			-	0.965		0.000		0.000		0.000		0.000	0.000	0.965	-	
Remarks																

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force

Date: February 2016

Appropriation/Budget Activity
3600 / 4

R-1 Program Element (Number/Name)
PE 0603859F / Pollution Prevention - Dem/
Val

Project (Number/Name)
644852 / Pollution Prevention

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Requirements ID	[REDACTED]																											
Potential Alternatives	[REDACTED]																											
Test Plan	[REDACTED]																											
Test Report	[REDACTED]																											
Demonstration	[REDACTED]																											
Final Report	[REDACTED]																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603859F / <i>Pollution Prevention - Dem/Val</i>	Project (Number/Name) 644852 / <i>Pollution Prevention</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Requirements ID	1	2015	4	2015
Potential Alternatives	1	2015	4	2015
Test Plan	1	2015	4	2015
Test Report	1	2015	4	2015
Demonstration	1	2015	4	2015
Final Report	1	2015	4	2015

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>					PE 0604015F / <i>Long Range Strike - Bomber</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	883.363	736.228	1,358.309	0.000	1,358.309	2,167.522	2,635.965	2,954.154	3,001.610	Continuing	Continuing
643308: <i>Long Range Strike Bomber</i>	-	883.363	736.228	1,358.309	0.000	1,358.309	2,167.522	2,635.965	2,954.154	3,001.610	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

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

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	913.728	1,246.228	2,240.728	0.000	2,240.728
Current President's Budget	883.363	736.228	1,358.309	0.000	1,358.309
Total Adjustments	-30.365	-510.000	-882.419	0.000	-882.419
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-510.000			
• 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	-30.365	0.000	-882.419	0.000	-882.419

Change Summary Explanation

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

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Title: Long Range Strike Bomber	883.363	736.228	1,358.309
Description: Long Range Strike Bomber			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604015F / <i>Long Range Strike - Bomber</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(AT&L)/DSP.</p> <p><i>FY 2016 Plans:</i> This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(AT&L)/DSP.</p> <p><i>FY 2017 Plans:</i> This program is reported in accordance with Title 10, United States Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(AT&L)/DSP.</p>			
Accomplishments/Planned Programs Subtotals	883.363	736.228	1,358.309

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

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
			Base	OCO	Total						
• MILCON: PE 0604015: <i>Long Range Strike Bomber</i>	0.000	77.130	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

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

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604015F / Long Range Strike - Bomber	Project (Number/Name) 643308 / Long Range Strike Bomber
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Actual breakout provided in Special Access Program Annual Report to Congress	Various	N/A : TBD	-	883.363		736.228		1,358.309		0.000		1,358.309	Continuing	Continuing	-
Subtotal			-	883.363		736.228		1,358.309		0.000		1,358.309	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	883.363	736.228	1,358.309	0.000	1,358.309	-	-	-

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

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604015F / <i>Long Range Strike - Bomber</i>	Project (Number/Name) 643308 / <i>Long Range Strike Bomber</i>
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FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
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

Actual schedule provided in Special Access Program Annual Report to Congress	
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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604015F / <i>Long Range Strike - Bomber</i>	Project (Number/Name) 643308 / <i>Long Range Strike Bomber</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Actual schedule provided in Special Access Program Annual Report to Congress	1	2017	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>					PE 0604257F / <i>Advanced Technology and Sensors</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	34.818	0.000	34.818	59.867	54.928	68.703	91.954	Continuing	Continuing
644818 (BA4 0604257F): <i>Imaging and Targeting Support</i>	-	0.000	0.000	18.583	0.000	18.583	17.857	15.656	28.699	51.239	Continuing	Continuing
645148 (BA4 0604257F): <i>Common-Airborne Sense and Avoid (C-ABSAA)</i>	-	0.000	0.000	14.784	0.000	14.784	40.530	37.765	38.465	39.148	Continuing	Continuing
646025 (BA4 0604257F): <i>Data Compression</i>	-	0.000	0.000	1.451	0.000	1.451	1.480	1.507	1.539	1.567	Continuing	Continuing

Note

In FY 2017, PE 0305206F, Airborne Reconnaissance Systems, Project 674818, Imaging and Targeting Support (I&TS), efforts will transfer to PE 0604257F, Advanced Technology and Sensors, Project 644818, Imaging and Targeting Support, in order to increase visibility into this technology maturation effort.

In FY2017, PE 0305206F, Airborne Reconnaissance Systems, Project 675148, Common-Airborne Sense and Avoid (C-ABSAA), efforts will transfer to PE 0604257F, Advanced Technology and Sensors, Project 645148, Common Airborne Sense and Avoid (C-ABSAA), in order to provide greater visibility into this capability.

In FY 2017, PE 0305206F, Airborne Reconnaissance Systems, Project 676025, Data Compression, efforts will transfer to PE 0604257F, Advanced Technology and Sensors, Project 646025, Data Compression, in order to provide greater visibility into this capability.

A. Mission Description and Budget Item Justification

The Advanced Technology and Sensors (ATS) program coordinates the development of advanced technologies (sensors, data links, targeting networks and products, and quick reaction capabilities) in support of multiple airborne reconnaissance platforms, both manned and unmanned. Its objectives are to develop, demonstrate, and rapidly transition advanced, interoperable, multi-platform solutions to reduce the find, fix, target, and track kill chain timeline, and to provide safe separation and collision avoidance for Remotely Piloted Aircraft (RPAs). This program also coordinates the development of common collection, processing, and dissemination solutions for near-real time Intelligence, Surveillance, and Reconnaissance (ISR).

Funds in any project can also cover activities to include studies and analysis to support both current program planning and execution and future program planning.

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	34.818	0.000	34.818
Total Adjustments	0.000	0.000	34.818	0.000	34.818
• 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	34.818	0.000	34.818

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>				Project (Number/Name) 644818 (BA4 0604257F) / <i>Imaging and Targeting Support</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
644818 (BA4 0604257F): <i>Imaging and Targeting Support</i>	-	0.000	0.000	18.583	0.000	18.583	17.857	15.656	28.699	51.239	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2017, PE 0305206F, Airborne Reconnaissance Systems, Project 674818, Imaging and Targeting Support, efforts transferred to PE 0604257F, Advanced Technology and Sensors, Project 644818, Imaging and Targeting Support.

A. Mission Description and Budget Item Justification

The purpose of the Imaging and Targeting Support (I&TS) project is to mature and demonstrate next-generation, persistent, wide area surveillance and common imagery reconnaissance sensor capabilities (active and passive systems), including sensor data processing, for multiple airborne platforms, as well as sensor products to aid in rapid targeting (geolocation models, sensor-based exploitation tools, sensor networking capabilities).

Developmental efforts pursued include: improved sensor capabilities such as hyperspectral imagery (HSI), measurement and signature intelligence (MASINT), polarimetric imaging, ground moving target indication (GMTI), foliage penetration and additional radar, electro-optical, nuclear event detection, and other modalities; increased geolocation accuracy; increased dismount detection capability; advanced sensor data correlation; automated target detection; network centric warfare; and other Intelligence, Surveillance, and Reconnaissance (ISR) and associated Tasking, Processing, Exploitation, and Dissemination (TPED) capabilities. These efforts are intended to reduce both target search and kill chain timelines as well as supporting traditional intelligence activities. This project will also increase interoperability among developed systems by developing common standards and tools.

The funds in this project are distributed in priority order for the goal of building a comprehensive Geospatial Intelligence (GEOINT) capability for the USAF. On an annual basis, developmental technologies are reviewed against warfighter capabilities and requirements based on strategic roadmaps and on the Challenging Targets Initial Capabilities Document. Efforts advancing the technological maturity of promising sensors and processing capabilities are reviewed and prioritized into a recommended list for senior executive direction to implement in the coming year. The program office has the ability to initiate an I&TS project, within GEOINT Capabilities Working Group (GCWG) construct but outside the normal annual GCWG vetting process, to expedite development and acquisition of urgently needed capabilities for the warfighter.

Traditional focus areas include, but are not limited to: development and demonstration of common radar and electro-optical sensors (Synthetic Aperture Radar (SAR), Low Frequency SAR, and antenna, Electro-Optical(EO), Infrared (IR), HSI, Low Light, Laser Radar (LADAR), Light Detection And Ranging (LIDAR) and their operational modes (High Resolution Imagery, Ground and Dismount Moving Target Indication(GMTI/DMTI), Persistent Surveillance, Wide Area Motion Imagery (WAMI), Spectral Identification) for multiple airborne platforms, including medium and high altitude platforms; development and demonstration of advanced tactical sensor and associated TPED processing algorithms and tools (automatic registration, automatic and assisted target detection, network centric warfare). Development of integrated multi-sensor capabilities to detect and identify obscured targets (OT); development and implementation of imagery standards (Common Ground/Dismount Moving Target

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>	Project (Number/Name) 644818 (BA4 0604257F) / <i>Imaging and Targeting Support</i>
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Indicator (GMTI/DMTI), National Imagery Transmission Format (NITF); and monitoring and enhancement of Imagery Intelligence (IMINT) product quality (radar and EO/IR imagery, GMTI data, and spectral information) and timeliness throughout the image chain (from sensor to user). These efforts focus on reducing the find, fix and track elements of the time critical targeting kill-chain timeline while improving operator and decision-maker efficiency and effectiveness.

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

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: Imaging & Targeting Support (I&TS)</p> <p>Description: Develop/demonstrate and advance technical maturity of promising sensors and processing capabilities (ex: radar improvement, next-generation hyperspectral imaging (HSI), laser radar/light detection and ranging (LADAR/LIDAR), and data mitigation technologies).</p> <p>FY 2015 Accomplishments: - FY 2015 efforts were reported under PE 0305206F</p> <p>FY 2016 Plans: - FY 2016 efforts were reported under PE 0305206F</p> <p>FY 2017 Base Plans: - Will continue development, modernization, and demonstration of advanced sensors and detection and processing algorithms, hyperspectral imaging technologies, multiband EO/IR and SAR sensor systems, enhanced lidar capabilities, polarimetric imaging, and other GEOINT sensing modalities for Anti-Access Area Denial, permissive and non-permissive environments, foliage penetration, and littoral environments.</p>	0.000	0.000	4.583	-	4.583
<p>Title: Advanced Synthetic Aperture Radar System (ASARS) 2B</p> <p>Description: Design/fabricate/integrate/demonstrate completion of technical maturation effort for deep look high altitude Synthetic Aperture Radar (SAR). Includes total government and contractor costs for this project.</p> <p>FY 2015 Accomplishments: - FY 2015 efforts were reported under PE 0305206F.</p> <p>FY 2016 Plans: - FY 2016 efforts were reported under PE 0305206F.</p> <p>FY 2017 Base Plans: - Will continue technical maturation effort for deep look high altitude SAR.</p>	0.000	0.000	11.000	-	11.000
<p>Title: Nuclear Forensics - Prompt Diagnostics</p>	0.000	0.000	3.000	-	3.000

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>	Project (Number/Name) 644818 (BA4 0604257F) / <i>Imaging and Targeting Support</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: Development of nuclear event detection and characterization capabilities.</p> <p>FY 2015 Accomplishments: - FY 2015 efforts were funded and reported under OSD program 0603161D8Z, Nuclear and Conventional Physical Security Equipment.</p> <p>FY 2016 Plans: - FY 2016 efforts were funded and reported under OSD program 0603161D8Z, Nuclear and Conventional Physical Security Equipment.</p> <p>FY 2017 Base Plans: Will continue development of Prompt Diagnostics detection system. Focused areas include but are not limited to prompt output signal detection and nuclear debris collection analysis and evaluation to support nuclear event attribution.</p>					
Accomplishments/Planned Programs Subtotals	0.000	0.000	18.583	-	18.583

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• RDTE: BA07: PE 0305202F: <i>Dragon U-2 (JMIP)</i>	5.511	34.471	37.217	0.000	37.217	6.942	1.487	0.000	0.000	-	-

Remarks
A portion of the funding within the U-2 RDTE line will be used to support ASARS design, development, test and demonstration in accordance with SecAF Prudent Actions Memorandum, May 2015.

D. Acquisition Strategy
Imaging and Targeting Support efforts are prioritized on an annual basis by the GEOINT Capabilities Working Group (GCWG), in accordance with the validated gaps in the Challenging Targets Initial Capabilities Document (ICD). Resulting funded efforts are then contracted for and/or executed by either various program offices, laboratories, industry, and/or other government agencies (OGAs).

ASARS technology maturation is conducted by AFLCMC/WIN, in conjunction and cooperation with AFLCMC/Warner Robbins (U-2 system program office).

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force Date: February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>	Project (Number/Name) 644818 (BA4 0604257F) / <i>Imaging and Targeting Support</i>
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Acquisition strategy is to maximize commercial and national development efforts and investment through multiple contracting methods, including the use of Engineering Change Proposals (ECP) to modify existing contracts and new contracts that were awarded both competitively or on a sole source basis.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force												Date: February 2016				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 4				PE 0604257F / Advanced Technology and Sensors				644818 (BA4 0604257F) / Imaging and Targeting Support								
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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 Technology Efforts (Prioritized by GCWG)	Various	Various : Various	-	0.000		0.000		3.126	Dec 2016	0.000		3.126	Continuing	Continuing	-	
ASARS 2B	SS/CPFF	Raytheon : El Segundo, CA	-	0.000		0.000		11.000	Mar 2017	0.000		11.000	Continuing	Continuing	-	
Nuclear Forensics - Prompt Diagnostics	Various	Various : Various	-	0.000		0.000		3.000	Feb 2017	0.000		3.000	Continuing	Continuing	-	
Subtotal			-	0.000		0.000		17.126		0.000		17.126	-	-	-	
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
Subtotal			-	-		-		-		-		-	-	-	-	
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
Subtotal			-	-		-		-		-		-	-	-	-	
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	Various	Various : Dayton, OH	-	0.000		0.000		1.457	Dec 2016	0.000		1.457	Continuing	Continuing	-	
Subtotal			-	0.000		0.000		1.457		0.000		1.457	-	-	-	
Project Cost Totals			-	0.000		0.000		18.583		0.000		18.583	-	-	-	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force							Date: February 2016			
Appropriation/Budget Activity 3600 / 4			R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>			Project (Number/Name) 644818 (BA4 0604257F) / <i>Imaging and Targeting Support</i>				
	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>	Project (Number/Name) 644818 (BA4 0604257F) / <i>Imaging and Targeting Support</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
I_TS - Advanced SAR Development																												
- Key Radar																												
-- Flight Demo (Key Radar)																												
--- SOCOM Demo (Key Radar)																												
- AMMOD																												
-- Data Collect (AMMOD)																												
- SlimSAR Multi-INT																												
-- System Demo (SlimSAR)																												
I_TS - Advanced Hyperspectral Development																												
I_TS - EO/IR																												
I_TS - LIDAR																												
- Lidar/HSI Data Fusion																												
-- Flight Demos (Lidar/HSI Data Fusion)																												
I_TS - Sensor Studies/Analysis																												
I_TS - Other Technology Efforts (Prioritized by GCWG)																												
ASARS 2B Tech Maturation																												
Nuclear Forensics - Prompt Diagnostics																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>	Project (Number/Name) 644818 (BA4 0604257F) / <i>Imaging and Targeting Support</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
I_TS - Advanced SAR Development	1	2017	4	2021
- Key Radar	1	2017	4	2017
-- Flight Demo (Key Radar)	1	2017	3	2017
--- SOCOM Demo (Key Radar)	2	2017	2	2017
- AMMOD	1	2017	4	2017
-- Data Collect (AMMOD)	3	2017	3	2017
- SlimSAR Multi-INT	1	2017	4	2017
-- System Demo (SlimSAR)	3	2017	3	2017
I_TS - Advanced Hyperspectral Development	1	2017	4	2021
I_TS - EO/IR	1	2017	4	2021
I_TS - LIDAR	1	2017	4	2021
- Lidar/HSI Data Fusion	1	2017	3	2017
-- Flight Demos (Lidar/HSI Data Fusion)	1	2017	3	2017
I_TS - Sensor Studies/Analysis	1	2017	4	2021
I_TS - Other Technology Efforts (Prioritized by GCWG)	1	2017	4	2021
ASARS 2B Tech Maturation	1	2017	2	2019
Nuclear Forensics - Prompt Diagnostics	1	2017	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>				Project (Number/Name) 645148 (BA4 0604257F) / <i>Common-Airborne Sense and Avoid (C-ABSAA)</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
645148 (BA4 0604257F): <i>Common-Airborne Sense and Avoid (C-ABSAA)</i>	-	0.000	0.000	14.784	0.000	14.784	40.530	37.765	38.465	39.148	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2017, PE 0305206F, Airborne Reconnaissance Systems, Project 675148, Common Airborne Sense and Avoid (C-ABSAA) transferred to PE 0604257F, Advanced Technology and Sensors, Project 645148, Common Airborne Sense & Avoid (C-ABSAA).

A. Mission Description and Budget Item Justification

Common-Airborne Sense and Avoid (C-ABSAA) is an analysis and developmental effort in the pre-Material Development Decision phase of the acquisition lifecycle which supports emerging warfighter requirements to fully integrate Group 4-5 RPA into the National Airspace System (NAS), international airspace, other nations' sovereign airspace, and operational combat airspace to conduct the entire range of military operations across all mission environments. C-ABSAA also supports the "Worldwide Operations" Key Performance Parameter (KPP) in larger Remotely Piloted Aircraft (RPA) requirement documents, and Public Law 112-239 directing DoD collaboration with the Federal Aviation Administration (FAA) and the National Air and Space Administration (NASA) to safely integrate RPA in the NAS. Funding in this project supports the development of a Sense and Avoid (SAA) capability set for Group 4-5 RPA and covers analysis, research, and developmental activities as well as infrastructure and other government costs.

Ongoing activities include support to the development of warfighter requirements and analysis of possible solution alternatives, collaboration with the FAA, NASA, and the other Services to develop national policy and standards, and SAA related studies, analysis, modeling and simulation, program planning and project execution. RPA platform specific integration and testing is not included.

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

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: SAA-Related Requirements Development and Analysis, National Policy Standards Development, and Technology Development and Demonstration	0.000	0.000	14.784	0.000	14.784
Description: Support development and analysis of warfighter requirements and analysis of possible solution alternatives. Develop Sense and Avoid (SAA) technology and capabilities for Group 4-5 RPA. Collaborate with the FAA, NASA, and other Services to develop national policy and standards. Conduct SAA related studies, analysis, modeling and simulation, demonstrations, program planning and project execution.					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>	Project (Number/Name) 645148 (BA4 0604257F) / <i>Common-Airborne Sense and Avoid (C-ABSAA)</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p><i>FY 2015 Accomplishments:</i> - In FY 2015, C-ABSAA effort was reported in PE 0305220F, RQ-4 UAV, Project 675148, Common Airborne Sense and Avoid (C-ABSAA).</p> <p><i>FY 2016 Plans:</i> - In FY 2016, C-ABSAA effort was reported in PE 0305206F, Airborne Reconnaissance Systems, Project 675148, Common-Airborne Sense and Avoid (C-ABSAA).</p> <p><i>FY 2017 Base Plans:</i> - Will continue Sense and Avoid (SAA) science and technology research and development with AFRL - Will continue to collaborate with FAA, NASA, and other Services and agencies on national policy and standards - Will continue to build and exercise modeling and simulation capabilities to support requirements, policy/standards, and technology development - Will support Air Combat Command as they conduct analysis to identify possible materiel solutions to SAA gaps</p> <p><i>FY 2017 OCO Plans:</i> N/A</p>					
Accomplishments/Planned Programs Subtotals	0.000	0.000	14.784	0.000	14.784

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

D. Acquisition Strategy
C-ABSAA materiel solutions will be developed by the Air Force Life Cycle Management Center's Sensors Division under direction of PEO, ISR/SOF, in response to a deliberate requirements definition process. C-ABSAA will integrate Better Buying Power 3.0 initiatives throughout its acquisition lifecycle and rely upon acquisition of government data rights to maximize contractor competition from Technology Development through Production. The program intends to provide the warfighter with SAA capability for Group 4-5 RPA with increased, time-phased capability improvements as technology and risks achieve satisfactory levels. Group 4-5 RPA platforms will be expected to integrate C-ABSAA provided capability into their unique systems either via retrofit or in design, development, and/or production.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>	Project (Number/Name) 645148 (BA4 0604257F) / <i>Common-Airborne Sense and Avoid (C-ABSAA)</i>

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>	Project (Number/Name) 645148 (BA4 0604257F) / <i>Common-Airborne Sense and Avoid (C-ABSAA)</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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-ABSAA Technology Development	C/Various	Various : Various	-	0.000		0.000		13.946	Oct 2016	0.000		13.946	Continuing	Continuing	-
Subtotal			-	0.000		0.000		13.946		0.000		13.946	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	0.000		0.000		0.838	Oct 2016	0.000		0.838	Continuing	Continuing	TBD
Subtotal			-	0.000		0.000		0.838		0.000		0.838	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000	0.000	14.784	0.000	14.784	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>	Project (Number/Name) 645148 (BA4 0604257F) / <i>Common-Airborne Sense and Avoid (C-ABSAA)</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Analysis of Alternatives																												
Material Solution Analysis																												
Capability Development Document (CDD)																												
Milestone A (MS-A)																												
Technology Development and Risk Reduction																												
Milestone B (MS-B)																												
Engineering and Manufacturing Development																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>	Project (Number/Name) 645148 (BA4 0604257F) / <i>Common-Airborne Sense and Avoid (C-ABSAA)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Analysis of Alternatives	1	2017	2	2018
Material Solution Analysis	1	2017	3	2018
Capability Development Document (CDD)	3	2018	2	2020
Milestone A (MS-A)	3	2018	3	2018
Technology Development and Risk Reduction	4	2018	2	2020
Milestone B (MS-B)	3	2020	3	2020
Engineering and Manufacturing Development	4	2020	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>				Project (Number/Name) 646025 (BA4 0604257F) / <i>Data Compression</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
646025 (BA4 0604257F): <i>Data Compression</i>	-	0.000	0.000	1.451	0.000	1.451	1.480	1.507	1.539	1.567	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2017, PE 0305206F, Airborne Reconnaissance Systems, Project 676025, Data Compression, efforts transferred to PE 0604257F, Advanced Technology and Sensors, Project 646025, Data Compression.

A. Mission Description and Budget Item Justification

The Data Compression effort provides the warfighter with capability to efficiently compress and decompress airborne ISR sensor data and transmit near real time to tactical users through current and future bandwidth limited commercial satellite communications (SATCOM) or military SATCOM. The effort develops, tests, and will implement new sensor data compression and decompression algorithms for current and emerging airborne ISR sensors. Additionally, the program develops compression and decompression capabilities for manned and unmanned airborne platforms, associated ground stations, and DCGS. Outputs will meet standard certification for use within the DoD GEOINT and MASINT architectures.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Data Compression	0.000	0.000	1.451	-	1.451
Description: The Data Compression effort provides the warfighter a capability to efficiently compress and decompress airborne ISR sensor data and transmit near real time to tactical users through current and future bandwidth limited commercial satellite communications (SATCOM) or military SATCOM. The effort will develop, test and implement new sensor data compression and decompression algorithms for current and emerging airborne ISR sensors. Additionally, the program develops compression and decompression capabilities for manned and unmanned airborne platforms, associated ground stations, and DCGS. Outputs will meet standard certification for use within the DoD GEOINT and MASINT architectures.					
FY 2015 Accomplishments: In FY 2015, efforts were reported in PE 0305208F, Distributed Common Ground/Surface Systems, Project 676025, Data Compression.					
FY 2016 Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>	Project (Number/Name) 646025 (BA4 0604257F) / <i>Data Compression</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
In FY 2016, efforts were reported in PE 0305206F, Airborne Reconnaissance Systems, Project 676025, Data Compression.					
<i>FY 2017 Base Plans:</i>					
- Will develop and test Persistent electro-optical and infrared (EO/IR) and Phase History synthetic aperture radar (SAR) data compression capabilities, and other phenomenologies.					
- Will develop and test compression and decompression algorithms for Persistent SAR and Smart Data Discrimination.					
- Will develop documentation for standards acceptance.					
- Will provide engineering services for algorithm familiarization, assessment, and improvement.					
- Will participate in Sensor Open System Architecture (SOSA) planning and integration.					
Accomplishments/Planned Programs Subtotals	0.000	0.000	1.451	-	1.451

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

Remarks

D. Acquisition Strategy
The Data Compression acquisition approach is to design and develop compression and decompression technology hardware and software components, interfaces and standards for various airborne ISR platforms, ground stations, data storage facilities, and exploitation tools utilizing existing contracts with full and open competition where appropriate. Integration will be accomplished by the requisite program offices.

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>	Project (Number/Name) 646025 (BA4 0604257F) / <i>Data Compression</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Technology Development	C/Variou	TBD : TBD	-	0.000		0.000		1.063	Nov 2016	0.000		1.063	Continuing	Continuing	-
Platform Integration	C/Variou	TBD : TBD	-	0.000		0.000		0.136	Nov 2016	0.000		0.136	Continuing	Continuing	-
Subtotal			-	0.000		0.000		1.199		0.000		1.199	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Variou	Govt/Contractors : TBD	-	0.000		0.000		0.252	Oct 2016	0.000		0.252	Continuing	Continuing	-
Subtotal			-	0.000		0.000		0.252		0.000		0.252	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000	0.000	1.451	0.000	1.451	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>	Project (Number/Name) 646025 (BA4 0604257F) / <i>Data Compression</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Persistent E/O IR Data Compression Development																												
Phase History SAR Data Compression Development																												
-- Phase History SAR Data Compression Demonstration																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604257F / <i>Advanced Technology and Sensors</i>	Project (Number/Name) 646025 (BA4 0604257F) / <i>Data Compression</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Persistent E/O IR Data Compression Development	1	2017	4	2021
Phase History SAR Data Compression Development	1	2017	3	2017
-- Phase History SAR Data Compression Demonstration	3	2017	2	2018

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604317F / <i>Technology Transfer</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	4.683	7.612	3.368	0.000	3.368	3.286	3.057	3.117	3.171	Continuing	Continuing
646003: <i>Partnership Intermediary Agreement(s)</i>	-	4.683	7.612	3.368	0.000	3.368	3.286	3.057	3.117	3.171	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Technology Transfer was titled Defense Technology Transfer and Defense Technology Link (TechLink) in previous Office of the Secretary of Defense (OSD) budgets. This program was devolved from OSD in FY 2012 to achieve efficiencies in program management.

The three-fold mission of Technology Transfer is: (1) integrate advanced commercial-sector technologies into Department of Defense (DoD) systems, particularly from non-traditional defense contractors; (2) convey DoD-developed technologies to industry to make these technologies available for military acquisition; and (3) establish collaborative Research and Development (R&D) projects with the private sector for cost-sharing of new dual-use technology development.

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

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	4.769	3.512	3.402	0.000	3.402
Current President's Budget	4.683	7.612	3.368	0.000	3.368
Total Adjustments	-0.086	4.100	-0.034	0.000	-0.034
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	4.100			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.086	0.000			
• Other Adjustments	0.000	0.000	-0.034	0.000	-0.034

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

Project: 646003: *Partnership Intermediary Agreement(s)*

Congressional Add: *Program Increase*

FY 2015	FY 2016
2.100	4.100

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 0604317F / <i>Technology Transfer</i>		
Congressional Add Details (\$ in Millions, and Includes General Reductions)		FY 2015	FY 2016	
Congressional Add Subtotals for Project: 646003		2.100	4.100	
Congressional Add Totals for all Projects		2.100	4.100	
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Title: Technology Transfer		2.583	3.512	3.368
Description: Enhance and expand transfer of technologies between DoD and the commercial sector.				
FY 2015 Accomplishments: Continued to actively promote and broker cooperative research and development agreements (CRADAs) between DoD labs and industry for development of technology with both commercial and military applications. This activity particularly focused on non-traditional defense contractors and had as one of its goals the lowering of costs of new defense-related technology development through cost-sharing with industry as well as helping DoD benefit from private-sector technology investments and innovations. Continued to actively market DoD-developed technologies to U.S. companies and established Patent License Agreements to commercialize these technologies for both civilian and military application.				
FY 2016 Plans: Continue to actively promote and broker CRADAs between DoD labs and industry for development of technology with both commercial and military applications. This activity will particularly focus on non-traditional defense contractors and is intended to help lower the expense of new defense-related technology development through cost-sharing with industry and to help DoD benefit from private-sector technology investments and innovations. Continue to actively market DoD-developed technologies to U.S. companies and establish Patent License Agreements to commercialize these technologies for both civilian and military application.				
FY 2017 Plans: Continue to actively promote and broker CRADAs between DoD labs and industry for development of technology with both commercial and military applications. This activity will particularly focus on non-traditional defense contractors and is intended to help lower the expense of new defense-related technology development through cost-sharing with industry and to help DoD benefit from private-sector technology investments and innovations. Continue to actively market DoD-developed technologies to U.S. companies and establish Patent License Agreements to commercialize these technologies for both civilian and military application.				
Accomplishments/Planned Programs Subtotals		2.583	3.512	3.368

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604317F / <i>Technology Transfer</i>
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	FY 2015	FY 2016
Congressional Add: Program Increase	2.100	4.100
FY 2015 Accomplishments: Conducted congressionally directed effort.		
FY 2016 Plans: Conduct congressionally directed efforts.		
Congressional Adds Subtotals	2.100	4.100

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

N/A

Remarks

N/A

E. Acquisition Strategy

N/A

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force												Date: February 2016			
Appropriation/Budget Activity 3600 / 4				R-1 Program Element (Number/Name) PE 0604317F / <i>Technology Transfer</i>				Project (Number/Name) 646003 / <i>Partnership Intermediary Agreement(s)</i>							
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
Subtotal			-	-	-	-	-	-	-	-	-	-	-	-	-
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
Enhance and expand transfer of technologies between DoD and the commercial sector.	Various	TechLink : Bozeman, MT	-	4.683		7.612		3.368		0.000		3.368	Continuing	Continuing	TBD
Subtotal			-	4.683	7.612	3.368	0.000	3.368	-	-	-	-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
Subtotal			-	-	-	-	-	-	-	-	-	-	-	-	-
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
Subtotal			-	-	-	-	-	-	-	-	-	-	-	-	-
Project Cost Totals			-	4.683	7.612	3.368	0.000	3.368	-	-	-	-	-	-	-
Remarks TBD															

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604317F / <i>Technology Transfer</i>	Project (Number/Name) 646003 / <i>Partnership Intermediary Agreement(s)</i>

FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
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

Tech Transfer Partnership Intermediary																												
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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604317F / <i>Technology Transfer</i>	Project (Number/Name) 646003 / <i>Partnership Intermediary Agreement(s)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Tech Transfer Partnership Intermediary	1	2015	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604327F I <i>Hard and Deeply Buried Target Defeat System (HDBTDS) Program</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	442.900	0.000	54.637	74.308	0.000	74.308	32.287	36.349	2.180	0.000	0.000	642.661
645341: <i>Direct Strike Penetrator Systems</i>	442.900	0.000	54.637	74.308	0.000	74.308	32.287	36.349	2.180	0.000	0.000	642.661
Quantity of RDT&E Articles	28	-	-	-	-	-	-	-	-	-	-	-

Program MDAP/MAIS Code: 475

Note

This program, BA 04 PE 0604327F, project 645341, Massive Ordnance Penetrator (MOP) M-Code Development, is a new start.

A. Mission Description and Budget Item Justification

The Direct Strike Penetrator Systems project includes development of a Quick Reaction Capability (QRC) known as Massive Ordnance Penetrator (MOP) and analysis efforts for the follow-on Hard Target Munitions (HTM) program. Hard and Deeply Buried Target Defeat System (HDBTDS) development activity stems from the Initial Capabilities Document (ICD) for HDBTDS, 1 Aug 2005, and MOP development flowed from the 2007 Urgent Operational Need (UON) document (revalidated Oct 2014).

The Direct Strike Penetrator System project develops advanced precision guided penetrator munitions that will provide the Air Force with improved ability to attack Hard & Deeply Buried Targets (HDBT), such as bunker and tunnel facilities, using air-to-surface conventional munitions. Systems developed in this project will hold HDBTs at risk using fewer weapons, reducing the number of missions necessary to defeat targets, and resulting in an increase to mission survivability. The Direct Strike Penetrator provides critical global strike capability not met by inventory conventional weapons. It will hold at risk the best defended and protected high priority assets essential to an enemy's warfighting ability. Additionally, the program will develop and implement an acquisition strategy to integrate M-code for improved anti-jamming and secure access to military GPS signals.

This project also conducted an HTM analysis-of-alternatives (AoA) to determine the best weapons and/or development efforts for addressing the Hard and Deeply Buried Targets (HDBT) mission area. The Air Force will use the AoA to start development, production, and modification activities for HDBT attack weapons identified in it as most effective and affordable. HTM is a pre-MDAP program.

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0604327F I Hard and Deeply Buried Target Defeat System (HDBTDS) Program
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.000	54.637	0.000	0.000	0.000
Current President's Budget	0.000	54.637	74.308	0.000	74.308
Total Adjustments	0.000	0.000	74.308	0.000	74.308
• 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	74.308	0.000	74.308

Change Summary Explanation

FY17 - funding increased for GPS M-Code Inc 1 and additional MOP requirements.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Massive Ordnance Penetrator (MOP) Weapon Development	0.000	7.567	7.400	0.000	7.400
Description: MOP Weapon development/redesign and test and integration on the B-2. Develop the Enhanced Threat Response (ETR III & IV) capability for the current MOP weapon.					
FY 2015 Accomplishments: N/A					
FY 2016 Plans: Continue development of the the third and fourth phase of Enhanced Threat Response (ETR III & IV) capability for the current MOP weapon, including development of an acquisition strategy for incorporation of M-code.					
FY 2017 Base Plans: Complete development of the third and fourth phase of Enhanced Threat Response (ETR III & IV) capability for the current MOP weapon, including development of an acquisition strategy for incorporation of M-code.					
FY 2017 OCO Plans: N/A					
Title: Massive Ordnance Penetrator (MOP) Target Construction	0.000	38.270	0.965	0.000	0.965

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0604327F I Hard and Deeply Buried Target Defeat System (HDBTDS) Program
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
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<p>Description: Construct several hard and deeply buried targets for MOP testing.</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: Construct several Hard and deeply buried targets for live weapon testing for the fourth phase of the MOP Enhanced Threat Response (ETR-IV) weapon modification.</p> <p>FY 2017 Base Plans: Instrumentation of test targets.</p> <p>FY 2017 OCO Plans: N/A</p>					
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<p>Title: Massive Ordnance Penetrator (MOP) Testing</p> <p>Description: Conduct MOP ground, subscale and live testing in support of the Enhanced Threat Response III-IV development efforts.</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: Conduct several live weapon tests to validate the MOP ETR-III and IV modifications.</p> <p>FY 2017 Base Plans: Conduct live weapon tests to validate the MOP ETR-III and IV modifications.</p> <p>FY 2017 OCO Plans: N/A</p>	0.000	6.300	5.215	0.000	5.215
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<p>Title: Massive Ordnance Penetrator (MOP) Analysis</p> <p>Description: Analyze MOP weapon effectiveness</p> <p>FY 2015 Accomplishments:</p>	0.000	2.500	1.320	0.000	1.320
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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0604327F I Hard and Deeply Buried Target Defeat System (HDBTDS) Program
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
FY 2016 Plans: Analyze weapons effects and develop methods to optimize the MOP weapon's effectiveness.					
FY 2017 Base Plans: Analyze weapons effects and develop methods to optimize the MOP weapon's effectiveness.					
FY 2017 OCO Plans: N/A					
Title: Massive Ordnance Penetrator (MOP) M-Code Development	0.000	0.000	59.408	0.000	59.408
Description: N/A					
FY 2015 Accomplishments: N/A					
FY 2016 Plans: N/A					
FY 2017 Base Plans: Development/integration of M-Code Receiver for MOP.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.000	54.637	74.308	0.000	74.308

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• PAAF: BA01: Line Item #353190: WRM-Ammunition (MOP)	0.000	39.690	3.600	0.000	3.600	0.000	0.000	0.000	0.000	0.000	39.690
Remarks	MOP sustainment funding is under the Armament Sustainment portfolio PEC 28030. Current sustainment funding is ~\$4.7M per year starting FY16.										

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604327F / <i>Hard and Deeply Buried Target Defeat System (HDBTDS) Program</i>
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E. Acquisition Strategy

MOP is a Quick Reaction Capability (QRC) with a sole source cost plus incentive fee contract to a single contractor.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604327F / <i>Hard and Deeply Buried Target Defeat System (HDBTDS) Program</i>	Project (Number/Name) 645341 / <i>Direct Strike Penetrator Systems</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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/C Integration	Various	AFLCMC/WW : Wright Pat, OH	0.000	0.000		2.000	Jan 2016	0.000		0.000		0.000	0.000	2.000	0.000
MOP Weapon Development	SS/CPIF	Boeing : St Louis, MO	246.772	0.000		7.567	Feb 2016	7.400	Mar 2017	0.000		7.400	0.000	261.739	195.772
M-Code Receiver Development/Integration	SS/TBD	Boeing : St Louis, MO	0.000	0.000		0.000		53.467	Feb 2017	0.000		53.467	62.319	115.786	115.758
Hard Target Munitions (HTM) Capabilities Analysis	Various	Whitney, Bradley & Brown; ARA; Booz Allen : Eglin, FL	3.614	0.000		0.000		0.000		0.000		0.000	0.000	3.614	3.614
HTM Concept/Technology Study	Various	Several Local Companies : Eglin, FL	2.779	0.000		0.000		0.000		0.000		0.000	0.000	2.779	2.779
HTM Weapons Effects/Target Analysis	RO	Defense Threat Reduction Agency : Albuquerque, NM	1.087	0.000		0.000		1.320	Jun 2017	0.000		1.320	0.000	2.407	1.087
HTM Concept Tech Data	Various	Several Local Companies : Eglin AFB, FL	1.811	0.000		0.000		0.000		0.000		0.000	0.000	1.811	1.811
HTM Technical Support	Various	Jacobs Engr. : Eglin, FL	1.751	0.000		0.000		0.000		0.000		0.000	0.000	1.751	1.751
Subtotal			257.814	0.000		9.567		62.187		0.000		62.187	62.319	391.887	322.572

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Govt Support	Various	Several Govt Labs and test Centers : Eglin AFB, FL	15.199	0.000		0.967	Jan 2016	3.106	Oct 2016	0.000		3.106	1.593	20.865	13.199
Subtotal			15.199	0.000		0.967		3.106		0.000		3.106	1.593	20.865	13.199

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604327F / <i>Hard and Deeply Buried Target Defeat System (HDBTDS) Program</i>	Project (Number/Name) 645341 / <i>Direct Strike Penetrator Systems</i>
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MOP System Test & Evaluation	Various	AFLCMC : Eglin , Holloman, Edwards, FL	10.369	0.000		2.625	Jan 2016	1.256	Jun 2017	0.000		1.256	0.000	14.250	6.369
MOP Flight Test Range Support	Various	White Sands Missile Range : White Sands Missile Range, NM	14.004	0.000		1.675	Jan 2016	1.459	Jun 2017	0.000		1.459	0.000	17.138	13.644
Target Construction and Instrumentation (MOP)	Various	Defense Threat Reduction Agency : Albuquerque, NM	101.527	0.000		38.270	Jan 2016	0.965	Jun 2017	0.000		0.965	0.000	140.762	81.527
MOP Test and Evaluation Activities	Various	AF Flight Test Center : Albuquerque, NM	31.123	0.000		0.000		1.000	Jun 2017	0.000		1.000	0.000	32.123	13.123
M-Code Test and Evaluation Activities	Various	AFLCMC : Eglin, Holloman, Edwards, FL	0.000	0.000		0.000		1.035	Jun 2017	0.000		1.035	4.780	5.815	5.815
Subtotal			157.023	0.000		42.570		5.715		0.000		5.715	4.780	210.088	120.478

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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) for MOP	Various	AFLCMC/EBD : Eglin AFB, FL	12.252	0.000		1.533	Jan 2016	1.500	Oct 2016	0.000		1.500	0.000	15.285	0.000
Program Management Administration (PMA) for M-Code	Various	AFLCMC/EBD : Eglin AFB, FL	0.000	0.000		0.000		1.800	Oct 2016	0.000		1.800	2.124	3.924	0.000
Program Management Administration (PMA) for Hard Target Munitions	Various	AFLCMC/XR : Eglin AFB, FL	0.612	0.000		0.000		0.000		0.000		0.000	0.000	0.612	0.000
Subtotal			12.864	0.000		1.533		3.300		0.000		3.300	2.124	19.821	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force							Date: February 2016				
Appropriation/Budget Activity 3600 / 4			R-1 Program Element (Number/Name) PE 0604327F / <i>Hard and Deeply Buried Target Defeat System (HDBTDS) Program</i>				Project (Number/Name) 645341 / <i>Direct Strike Penetrator Systems</i>				
	Prior Years	FY 2015	FY 2016		FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals	442.900	0.000	54.637		74.308	0.000	74.308	70.816	642.661	456.249	

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604327F / <i>Hard and Deeply Buried Target Defeat System (HDBTDS) Program</i>	Project (Number/Name) 645341 / <i>Direct Strike Penetrator Systems</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
MOP ETR-II Modification Design and Qualification Testing	█																											
MOP ETR-II Flight Testing	█	█																										
MOP ETR-III Modification Design and Qualification Testing	█	█	█	█																								
MOP ETR-IV Modification Design and Qualification Testing	█	█	█	█	█	█	█	█																				
MOP ETR-III Test Construction and Flight Testing						█	█																					
MOP ETR-IV Test Construction and Flight Testing										█	█																	
MOP Analysis	█	█	█	█	█	█	█	█																				
M-Code Development/Integration										█	█	█	█	█	█	█												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604327F / <i>Hard and Deeply Buried Target Defeat System (HDBTDS) Program</i>	Project (Number/Name) 645341 / <i>Direct Strike Penetrator Systems</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MOP ETR-II Modification Design and Qualification Testing	1	2015	1	2015
MOP ETR-II Flight Testing	1	2015	2	2015
MOP ETR-III Modification Design and Qualification Testing	1	2015	1	2016
MOP ETR-IV Modification Design and Qualification Testing	1	2015	2	2017
MOP ETR-III Test Construction and Flight Testing	2	2016	3	2016
MOP ETR-IV Test Construction and Flight Testing	1	2017	2	2017
MOP Analysis	1	2015	2	2017
M-Code Development/Integration	1	2017	4	2020

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604422F / <i>Weather System Follow-on</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	123.681	30.890	56.044	118.953	0.000	118.953	151.650	153.330	61.893	36.903	89.000	822.344
644289: <i>Weather Satellite Follow-On</i>	123.681	30.890	56.044	118.953	0.000	118.953	151.650	153.330	61.893	36.903	89.000	822.344
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Program MDAP/MAIS Code: 488

A. Mission Description and Budget Item Justification

Weather System Follow-on (WSF) is the Department of Defense's (DoD) future weather system. The program will leverage a group of systems to provide timely, reliable, and high quality remote sensing capabilities that will make global environmental observations of atmospheric, terrestrial, oceanographic, solar-geophysical conditions and meet other requirements validated by the Joint Requirements Oversight Council.

Based on completion of the Space-Based Environmental Monitoring (SBEM) Analysis of Alternatives (AoA), capabilities will be developed to satisfy weather gaps for which no known mitigation exists to include Ocean Surface Vector Winds, Tropical Cyclone Intensity, and Low Earth Orbit Energetic Charged Particles. The earliest possible launch options are being integrated in the design for critical gaps.

DoD established WSF as a Pre-Major Defense Acquisition Program (MDAP) with the Air force as the lead component. Based on the SBEM AoA results, the WSF initial thrusts will be to enable:

- 1) DoD use of data collected by civil, international and other DoD space systems;
- 2) Timely weather collection over broad oceans in support of maneuvering forces;
- 3) Space weather capabilities to characterize operational orbits, space situational awareness, and the ionosphere.

Secondary investments may be supported to address weather gaps identified in the Meteorological and Oceanographic (METOC) Initial Capability Document (ICD).

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604422F / <i>Weather System Follow-on</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	39.901	76.108	109.623	0.000	109.623
Current President's Budget	30.890	56.044	118.953	0.000	118.953
Total Adjustments	-9.011	-20.064	9.330	0.000	9.330
• Congressional General Reductions	0.000	-0.064			
• Congressional Directed Reductions	0.000	-20.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-7.666	0.000			
• SBIR/STTR Transfer	-1.345	0.000			
• Other Adjustments	0.000	0.000	9.330	0.000	9.330

Change Summary Explanation

FY15: -\$1.345 SBIR and -\$7.666M reprogramming for higher Air Force priorities (including Wideband Global Satellite Communications, Advanced Extremely High Frequency, and Space Test and Training Range)

FY16: -\$20.000M Congressional mark and -\$0.064M FFRDC mark

FY17: +\$9.330M net change (+\$19.300M for revised acquisition strategy; -\$9.970M adjusted for slow execution of prior year funding)

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Title: WSF	30.890	56.044	118.953
<p>Description: In Phase I, the Air Force priority is to deliver the technology demonstration solution to mitigate projected WindSat mission End of Life (EOL). In order to achieve this goal, Space and Missile Systems Center/Remote Sensing (SMC/RS) is working with the Operationally Responsive Space (ORS) office to launch Compact Ocean Wind Vector Radiometer (COWVR) technology demonstration.</p> <p>Phase II of the WSF program will more closely resemble the standard satellite acquisition. The Air Force intends to pursue a full and open competition with industry aimed at procuring the most affordable and capable Weather System Follow-on (WSF) Objective System to meet all three capability gaps. The WSF Objective System will be informed by COWVR performance on-orbit to determine whether the COWVR's new design on microwave sensor has the potential to significantly reduce the size, weight and power (SWaP) of the payload, thereby reducing the per mission cost of the system. Furthermore, the COWVR will include a technology transition strategy to strengthen industry competition for the WSF Objective System procurement. The WSF Objective System projected Initial Launch Capability (ILC) is FY22.</p>			
FY 2015 Accomplishments:			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604422F / <i>Weather System Follow-on</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Conducted WSF pre-acquisition activities to include requirements decomposition and market research. Approved to utilize ORS authorities to execute initial system procurement for ORS Compact Ocean Wind Vector Radiometer (COWVR) technology demonstration. Approved initial system acquisition strategy. Delivered the COWVR sensor. Funded program support activities. Completed Energetic Charged Particles (ECP) Market Research.</p> <p>FY 2016 Plans: Secure Air Force Requirements Oversight Council validation of WSF Capabilities Development Document (CDD). Release Request For Proposal (RFP) and conduct source selection for WSF Objective System (Payload, Bus, Integration and Ground segment). Approval of acquisition strategy from OSD AT&L. Support ORS in awarding launch service contract for ORS COWVR technology demonstration. Release ECP System RFP. Fund program support activities. Continue Program Office and related support activities, technical analysis and independent verification and validation of contractor. Continue enterprise SE&I.</p> <p>FY 2017 Plans: Launch ORS COWVR technology demonstration satellite. Award WSF Objective System contract. Modify existing ground segment and begin planning and transition to Enterprise Ground Services (EGS). Develop payload algorithms and purchase long-lead items for WSF Objective System. Compete launch service contract. Forecasted to complete ECP System CDR, award ECP System Risk Reduction Contract, and initiate ECP System PDR. Fund program support activities. Continue Program Office and related support activities, technical analysis and independent verification and validation of contractor. Continue enterprise Systems Engineering & Integration (SE&I).</p>			
Accomplishments/Planned Programs Subtotals	30.890	56.044	118.953

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

N/A

Remarks

E. Acquisition Strategy

DoD established Weather System Follow-on (WSF) as a pre-Major Defense Acquisition Program (MDAP). The acquisition strategy for WSF was informed by review and validation of the Space Based Environmental Monitoring Analysis of Alternatives results and the acquisition strategy development activities that were conducted in FY15. The WSF acquisition strategy focuses on streamlined acquisition process for providing materiel solutions to Ocean Surface Vector Winds (OSVW), Tropical Cyclone Intensity (TCI) & Low Earth Orbit (LEO) Energetic Charged Particles (ECP), as validated by the Joint Requirements Oversight Council; deliver microwave sensing solution to address DoD needs for OSVW and TCI capabilities and deliver space environment sensing solution to address LEO ECP capabilities for on-orbit attributions and anomaly resolutions. Impending WindSat mission End of Life (EOL) required WSF to approach the program acquisition in two phases; phase I to address imminent OSVW/TCI needs via the ORS COWVR technology demonstration option, while phase II involves a more robust set of capabilities for the WSF Objective System.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force Date: February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)
3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	PE 0604422F / <i>Weather System Follow-on</i>

In Phase I, the Air Force intends to deliver a technology demonstration solution to address the immediate OSVW and TCI needs to mitigate WindSat EOL. In order to achieve this goal in a timely manner, WSF program funded Jet Propulsion Lab (JPL) to complete development of the COWVR sensor, and the payload is now ship-ready for integration with the spacecraft. The WSF program office is working in conjunction with ORS office to procure the space vehicle, launch vehicle and the launch service required for projected FY17 Initial Launch Capability (ILC). If successful, the COWVR microwave technology will inform later increments of the WSF Objective System and has the potential to significantly reduce the size, weight and power of the payload, thereby reducing the per mission cost of the system.

In Phase II, the program intends to procure the WSF Objective System, capable of meeting all three weather capability gaps, in a full and open competition environment, in order to foster industry competition for reduced overall program cost. Overall, there will be two WSF Objective System satellites to be procured, with first system ILC by FY22 to mitigate any potential weather coverage gaps. The second WSF Objective System launch ILC is currently projected for FY26.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604422F / <i>Weather System Follow-on</i>	Project (Number/Name) 644289 / <i>Weather Satellite Follow-On</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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 & Integration	TBD	Various : TBD	0.000	0.000		4.059	Oct 2016	6.095	Oct 2017	0.000		6.095	0.000	10.154	-
Technical Mission Analysis	RO	Aerospace : El Segundo, CA	0.000	2.200	Mar 2015	4.951	Oct 2016	7.733	Oct 2017	0.000		7.733	0.000	14.884	-
ORS COWVR Technology Demonstration	C/CPAF	MEI : TBD	0.000	19.558	Aug 2015	28.513	Jan 2016	23.269	Jan 2017	0.000		23.269	0.000	71.340	-
WSF Objective System	TBD	TBD : TBD	0.000	0.000	Aug 2015	0.000	Apr 2016	59.681	Apr 2017	0.000		59.681	438.028	497.709	-
LEO ECP (Gap 11)	TBD	TBD : TBD	0.000	0.300	Jan 2015	4.919	Jan 2016	5.419	Apr 2017	0.000		5.419	0.000	10.638	-
Pre-Acquisition Activities	Various	Various : Various	103.432	0.000		0.000		0.000		0.000		0.000	0.000	103.432	-
Subtotal			103.432	22.058		42.442		102.197		0.000		102.197	438.028	708.157	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Requirements/Engineering Analysis Support	RO	Defense Information Technical Center (DTIC)/Surviac Contract : El Segundo, CA	1.500	0.000		0.000		0.000		0.000		0.000	0.000	1.500	-
Engineering Risk Reduction Studies	Various	Various : TBD	1.171	0.000		0.000		0.000		0.000		0.000	0.000	1.171	-
Subtotal			2.671	0.000		0.000		0.000		0.000		0.000	0.000	2.671	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Not specified.	TBD	Not specified. : TBD	0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000	-
Subtotal			0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4 **R-1 Program Element (Number/Name)** PE 0604422F / *Weather System Follow-on* **Project (Number/Name)** 644289 / *Weather Satellite Follow-On*

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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 : Los Angeles, CA	11.863	6.000	Oct 2014	3.855	Oct 2015	3.971		0.000		3.971	24.700	50.389	-
Other Support	Various	Various : TBD	5.378	2.500	Nov 2014	1.621	Nov 2015	2.879		0.000		2.879	11.300	23.678	-
A&AS	Various	Various : TBD	0.337	0.332	Nov 2014	8.126	Nov 2015	9.906		0.000		9.906	40.500	59.201	-
Subtotal			17.578	8.832		13.602		16.756		0.000		16.756	76.500	133.268	-
			Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			123.681	30.890		56.044		118.953		0.000		118.953	514.528	844.096	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604422F / <i>Weather System Follow-on</i>	Project (Number/Name) 644289 / <i>Weather Satellite Follow-On</i>
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Capabilities Development Document (CDD) Validated by AFROC						■																						
ORS COWVR Technology Demonstration Integration						■																						
WSF Objective System Development RFP Release							■																					
WSF Objective System Contract Award											■																	
ORS COWVR Technology Demonstration Launch												■																
ORS COWVR Technology Demonstration Operations																												
Energetic Charged Particles (ECP) Critical Design Review (CDR)												■																
WSF Objective System Preliminary Design Review																■												
WSF Objective System Milestone B																■												
WSF Objective System CDR																				■								
WSF Objective System Integration and Test																												■

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604422F / <i>Weather System Follow-on</i>	Project (Number/Name) 644289 / <i>Weather Satellite Follow-On</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Capabilities Development Document (CDD) Validated by AFROC	2	2016	2	2016
ORS COWVR Technology Demonstration Integration	2	2016	2	2016
WSF Objective System Development RFP Release	3	2016	3	2016
WSF Objective System Contract Award	3	2017	3	2017
ORS COWVR Technology Demonstration Launch	4	2017	4	2017
ORS COWVR Technology Demonstration Operations	4	2017	4	2019
Energetic Charged Particles (ECP) Critical Design Review (CDR)	4	2017	4	2017
WSF Objective System Preliminary Design Review	2	2018	2	2018
WSF Objective System Milestone B	3	2018	3	2018
WSF Objective System CDR	2	2019	2	2019
WSF Objective System Integration and Test	2	2021	2	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	9.901	0.000	9.901	34.664	39.618	0.000	0.000	Continuing	Continuing
640290: <i>Deep Space Advanced Radar Concept</i>	-	0.000	0.000	9.901	0.000	9.901	34.664	39.618	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 04 PE 0604425F, project 640290, DARC Technology maturation and prototype development, is a new start.

A. Mission Description and Budget Item Justification

Deep Space Advanced Radar Concept (DARC) will leverage ongoing defense science and technology efforts to mature radar concepts and technologies to develop and evaluate prototypes that demonstrate increased sensitivity, capacity, search rates, and scalability to detect, track and maintain custody of objects in deep space orbit. This effort will analyze and select the most promising technologies to move forward into system development and/or operations. The Deep Space Advanced Radar Concept will augment the Space Surveillance Network (SSN) as an additional sensor with increased capacity and capability for deep space object custody at GEO. The Deep Space Advanced Radar Concept effort will coordinate with the JSpOC Mission System (JMS) program to ensure integration with enterprise data fusion and dissemination to support space battle management and command, control and communications (BMC3).

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

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	9.901	0.000	9.901
Total Adjustments	0.000	0.000	9.901	0.000	9.901
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	9.901	0.000	9.901

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Title: DARC Technology maturation and prototype development</p> <p>Description: Leverage ongoing defense science and technology efforts to mature radar concepts and technologies to develop and evaluate prototypes that demonstrate increased sensitivity, capacity, search rates, and scalability to detect, track and maintain custody of objects in deep space orbit.</p> <p>FY 2017 Plans: Identify and evaluate potential candidate radar concepts and technologies. Develop relevant technologies and conduct initial proof of concept demonstrations to inform future radar prototyping efforts.</p>	-	-	9.901
Accomplishments/Planned Programs Subtotals	-	-	9.901

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

E. Acquisition Strategy
Project utilizes existing DoD engineering and study contracts and activities to conduct science and technology development and data analysis activities.

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)					Project (Number/Name)						
3600 / 4				PE 0604425F / Space Situation Awareness Systems					640290 / Deep Space Advanced Radar Concept						
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
Concept Definition, Prototype Development and Analysis	Various	Various : Various	-	0.000		0.000		7.913	Oct 2016	0.000		7.913	Continuing	Continuing	-
Subtotal			-	0.000		0.000		7.913		0.000		7.913	-	-	-
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
Prototype System and Sustainment Analyses	MIPR	AFRL : Albuquerque, NM	-	0.000		0.000		1.150	Oct 2016	0.000		1.150	Continuing	Continuing	-
Subtotal			-	0.000		0.000		1.150		0.000		1.150	-	-	-
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
A&AS	Various	Various : Various	-	0.000		0.000		0.484	Oct 2016	0.000		0.484	Continuing	Continuing	-
FFRDC	SS/FP	MITRE Corp : Colorado Springs, CO	-	0.000		0.000		0.329	Oct 2016	0.000		0.329	Continuing	Continuing	-
Other Support	Various	SMC/SYG : Colorado Springs, CO	-	0.000		0.000		0.025	Oct 2016	0.000		0.025	Continuing	Continuing	-
Subtotal			-	0.000		0.000		0.838		0.000		0.838	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force								Date: February 2016			
Appropriation/Budget Activity 3600 / 4			R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>				Project (Number/Name) 640290 / <i>Deep Space Advanced Radar Concept</i>				
	Prior Years	FY 2015	FY 2016		FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals	-	0.000	0.000		9.901	0.000	9.901	-	-	-	

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 640290 / <i>Deep Space Advanced Radar Concept</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Concept Validation																												
Prototype Development																												
Operational Demonstrations																												
Final Report																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 640290 / <i>Deep Space Advanced Radar Concept</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Concept Validation	1	2017	4	2017
Prototype Development	1	2017	2	2018
Operational Demonstrations	2	2018	2	2020
Final Report	3	2020	3	2020

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0604776F I Deployment & Distribution Enterprise R&D
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	25.890	0.000	25.890	26.147	28.552	29.142	29.657	Continuing	Continuing
640210: AT21 THEATER CAPABILITY	-	0.000	0.000	0.491	0.000	0.491	0.491	0.491	0.000	0.000	0.000	1.473
640211: GLOBAL ACCESS	-	0.000	0.000	6.143	0.000	6.143	6.206	6.787	7.050	7.206	Continuing	Continuing
640212: C2/OPTIMIZATION/MODELING AND SIMULATION	-	0.000	0.000	13.931	0.000	13.931	14.086	15.546	16.200	16.477	Continuing	Continuing
640213: CYBER	-	0.000	0.000	4.830	0.000	4.830	4.869	5.233	5.396	5.479	Continuing	Continuing
640214: END-TO-END VISIBILITY	-	0.000	0.000	0.495	0.000	0.495	0.495	0.495	0.496	0.495	0.000	2.476

Note

This program, BA 04 PE 0604776F, project 640212, Analytics Driven Command Decision Support, is a new start.
 This program, BA 04 PE 0604776F, project 640212, Transformation to Enterprise-wide Metadata Management System, is a new start.
 This program, BA 04 PE 0604776F, project 640212, Data Lake, is a new start.

Project numbers (640210 through 0604214) in this Program Element will be realigned within the PE in execution year for FY17 and out-years (i.e., FY18-21) in the next budget cycle. Revised BPAC numbers follow:

BPAC Funding
 640210 FY17:\$0.000M, FY18:\$0.000M, FY19:\$0.000M
 640211 FY17:\$8.920M, FY18:\$8.266M, FY19:\$8.873M, FY20:\$9.113M, FY21:\$9.521M
 640212 FY17:\$14.601M, FY18:\$14.465M, FY19:\$15.896M, FY20:\$16.084M, FY21:\$16.016M
 640213 FY17:\$2.369M, FY18:\$3.416M, FY19:\$3.783M, FY20:\$3.945M, FY21:\$4.120M
 640214 FY17:\$0.000M, FY18:\$0.000M, FY19:\$0.000M, FY20:\$0.000M, FY21:\$0.000M

In FY 2017, PE 0603713S (BA3) Deployment and Distribution Enterprise Technology (DDET) and PE 0603264S (BA3) Agile Transportation for the 21st Century Theater were transferred to a single PE in the Air Force budget (PE0604776F, (BA4) Deployment and Distribution Enterprise(DDE))in order to support auditability, increase management efficiency, and reduce administrative actions.

A. Mission Description and Budget Item Justification

This program provides for the development, integration and demonstration of capabilities which improve deployment, distribution and supply chain decision-making/ collaboration (e.g., planning stage to real-time execution/retrograde operations) without need for highly specialized operators. Projects address the following: decision support tools, distribution process simulations/analytics, distribution demand forecasting/execution monitoring, automated decision-maker support (e.g., queuing,

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)
3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>

alerting, courses of action), automated status monitoring with information fusion to include drilldown capability, and resilient Command and Control (C2) infrastructure capabilities. Current planning/forecasting/collaboration capabilities do not permit full synchronization of people, processes and assets to execute planned operations. Automated tools must be able to dynamically analyze/predict demand and provide input to advanced distribution planning systems to include the capability for Combatant Commanders to manage theater transportation operations from the port of debarkation to the point of need. Transportation information exchange across the DOD is inhibited by disparate systems, multiple data standards and insufficient interfaces. The ability to rapidly determine the impact of any delays/changes and conduct "what -if" impact assessments on the closure of force packages is required. This program addresses the required mission support to combatant commanders and other customers in the area of C2, Optimization, and Modeling and Simulations.

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

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	25.890	0.000	25.890
Total Adjustments	0.000	0.000	25.890	0.000	25.890
• 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	25.890	0.000	25.890

Change Summary Explanation

In FY 2017, PE 0603713S (BA3) Deployment and Distribution Enterprise Technology (DDET) and PE 0603264S (BA3) Agile Transportation for the 21st Century Theater were transferred to a single PE in the Air Force budget (PE0604776F, (BA4) Deployment and Distribution Enterprise (DDE)) in order to support auditability, increase management efficiency, and reduce administrative actions.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>				Project (Number/Name) 640210 / <i>AT21 THEATER CAPABILITY</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
640210: <i>AT21 THEATER CAPABILITY</i>	-	0.000	0.000	0.491	0.000	0.491	0.491	0.491	0.000	0.000	0.000	1.473
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2017, PE 0603713S (BA3) Deployment and Distribution Enterprise Technology (DDET) and PE 0603264S (BA3) Agile Transportation for the 21st Century Theater were transferred to a single PE in the Air Force budget (PE0604776F, (BA4) Deployment and Distribution Enterprise (DDE)) in order to support auditability, increase management efficiency, and reduce administrative actions.

Project numbers in 640210 will be realigned within the PE in execution year for FY17 and via the FY18 BES budget cycle for FY18/19 as follows: FY17: \$0.000, FY18: \$0.000, FY19: \$0.000.

A. Mission Description and Budget Item Justification

This program provides for the development, integration, demonstration and detailed assessment of Geographic Combatant Commanders (GCC) identified gaps between United States Transportation Command's strategic lift processes and GCCs' distribution processes. Highlighted is a lack of capability to (1) manage transportation planning and execution processes for cargo/passenger movement within their respective theaters of operation or (2) match global movement requirements against available lift assets to produce an optimized transportation schedule that meets delivery requirements. AT21 Theater Capability, through the implementation of process improvements, integration of commercial transportation management/optimization tools, and the development of deployment/distribution supporting technologies, will provide the capability for Combatant Commanders to manage theater transportation operations from the port of debarkation to the point of need.

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

	FY 2015	FY 2016	FY 2017
Title: AT21 Theater	-	-	0.491
Description: AT21 Theater Capability, through the implementation of process improvements, integration of commercial transportation management/optimization tools, and the development of deployment/distribution supporting technologies, will provide the capability for Combatant Commanders to manage theater transportation operations from port of debarkation to the point of need.			
FY 2017 Plans: AT21 Theater Capability, through the implementation of process improvements, integration of commercial transportation management/optimization tools, and the development of deployment/distribution supporting technologies, will provide the capability for Combatant Commanders to manage theater transportation operations from port of debarkation to the point of need.			
Accomplishments/Planned Programs Subtotals	-	-	0.491

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640210 / <i>AT21 THEATER CAPABILITY</i>

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

There is no work nor funding associated with AT 21 Theater as development efforts end with FY 2016 funding.

D. Acquisition Strategy

FY 2017, not applicable. For FY2015 and FY 2016 see PE 0603264S.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640210 / <i>AT21 THEATER CAPABILITY</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Integrated Logistics Support	Various	Various : Belleville, IL	-	0.000		0.000		0.491		0.000		0.491	Continuing	Continuing	-
Subtotal			-	0.000		0.000		0.491		0.000		0.491	-	-	-

Remarks
Funds will be realigned within the PE.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000	0.000	0.491	0.000	0.491	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640210 / <i>AT21 THEATER CAPABILITY</i>

FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
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

Integrated Logistic Support	[REDACTED]																											
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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640210 / <i>AT21 THEATER CAPABILITY</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Integrated Logistic Support	1	2017	4	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640211 / <i>GLOBAL ACCESS</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
640211: <i>GLOBAL ACCESS</i>	-	0.000	0.000	6.143	0.000	6.143	6.206	6.787	7.050	7.206	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2017, PE 0603713S (BA3) Deployment and Distribution Enterprise Technology (DDET) and PE 0603264S (BA3) Agile Transportation for the 21st Century Theater were transferred to a single PE in the Air Force budget (PE0604776F, (BA4) Deployment and Distribution Enterprise (DDE)) in order to support auditability, increase management efficiency, and reduce administrative actions.

Project numbers in 640211 will be realigned within the PE in execution year for FY17 and via the FY18 BES budget cycle for FY18 through FY21 as follows: FY17: \$8.920M, FY18:\$8.266M, FY19:\$8.873M, FY20:\$9.113M, FY21:\$9.521M.

A. Mission Description and Budget Item Justification

This program provides for the development, integration, demonstration and detailed assessment of DOD procedures/technologies targeted at optimizing throughput at the nodes as well as across the conduits of the deployment and distribution supply chains, from origin to point of use as well as return. Needed capabilities include inventory/cargo management, materiel handling innovations, improved physical node access, port throughput improvements, innovative delivery methods (e.g., precision airlift, autonomous re-supply), and cargo/container security. This project addresses required mission support to combatant commanders and other customers of DOD's distribution and transportation systems in the area of deployment/distribution velocity management, manned/unmanned systems to the point of effect, and increased global reach in austere/anti-access environments.

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

	FY 2015	FY 2016	FY 2017
<p>Title: Preamble Initial Look Leading to Accelerated Results</p> <p>Description: Develop capability to support a deployed engineering assessment team in the expedient recon and load-capacity determination of offload structures and plan/design required repairs.</p> <p>FY 2017 Plans: TRL 5: Prototype a remotely operated vehicle capability that provide rapid/accurate assessment of pier conditions both above and below the waterline to expedite repairs.</p>	-	-	1.000
<p>Title: Port Improvement via Exigent Repair (PIER) JCTD</p> <p>Description: Develop robust capability to rapidly restore damaged pier to a minimal militarily-capable to support reception, power projection & sustainment operations.</p> <p>FY 2017 Plans:</p>	-	-	2.043

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640211 / <i>GLOBAL ACCESS</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
TRL 5/6: AT&L endorsed, Congressionally approved BA3 Joint Capability Technology Demonstration (JCTD) to rapidly restore damaged pier to a minimal militarily-capable to support reception, power projection & sustainment operations.				
Title: Enhanced Vision Navigation for Joint Precision Airdrop System		-	-	1.000
Description: Enhance capability of a guided airdrop system to navigate in contested/denied environments where Global Positioning System data is either suspect or unavailable.				
FY 2017 Plans: TRL 5: U.S. Army (Natick) led effort to prototype technologies to enable accurate delivery of airdropped supplies in a Global positioning System (GPS) denied environment.				
Title: Expeditionary End-to-End Fueling Concept		-	-	0.250
Description: Addressing gap in theater fuel delivery/distribution capabilities to inform the development of the Army Early Entry Fluid Distribution System as well as provide a development path for Navy/USMC ship-to-shore capabilities.				
FY 2017 Plans: TRL 4/5: Prototyping modular pumping system to enhance over-the-shore and inland petroleum discharge capability.				
Title: Large Aircraft Infrared Countermeasures Enhanced Situational Awareness		-	-	1.000
Description: Mobility assets lack drop zone situational awareness, pre-drop confirmation of clear/safe drop zone, capability of post-drop assessment, and autonomous/passive bundle geo-location.				
FY 2017 Plans: TRL 4/5: Develop a high-resolution, real-time infrared imagery to aircrew to enable single pass airdrop operations				
Title: Precision On-Demand Aerial Resupply		-	-	0.650
Description: Develop a precision on-demand Aerial Resupply capability to provide small units in remote/austere locations the ability to request and track aerial resupply missions in real-time.				
FY 2017 Plans: TRL 5: Combines android smartphones, tactical radios, bundle tracking system, beacon technologies, Air National Guard LITENING Pod, DOD Iridium Gateway & Joint Precision Air Drop System Mission Planner into a prototype to facilitate on-demand resupply.				
Title: Hybrid Airship		-	-	0.200

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640211 / <i>GLOBAL ACCESS</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: Study serves as a risk reducing, stepping stone to a class of air vehicles with energy use per ton-mile approximating the efficiency achieved by overland commercial trucking on improved highway systems.</p> <p>FY 2017 Plans: TRL 4: Explore future Airship development and mitigate long-term technical risk for future heavy lift airships.</p>			
Accomplishments/Planned Programs Subtotals	-	-	6.143

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

D. Acquisition Strategy
Requirements for joint deployment and distribution enterprise technology enhancements are annually identified, validated and prioritized by the Joint Deployment & Distribution Enterprise (JDDE) community. Pursuit of the development of new capabilities to meet these requirements is managed by the United States Transportation Command (USTRANSCOM). Prototype products, once evaluated by the users, are spirally transitioned by the operational community.

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640211 / <i>GLOBAL ACCESS</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-	-	-	-	-	-	-	-	-	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Integrated Logistics Support	Various	Various : Belleville, IL	-	0.000		0.000		6.143	Oct 2016	0.000		6.143	Continuing	Continuing	-
Subtotal			-	0.000		0.000		6.143		0.000		6.143	-	-	-

Remarks
Funds will be realigned within the PE.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-	-	-	-	-	-	-	-	-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-	-	-	-	-	-	-	-	-	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000	0.000	6.143	0.000	6.143	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640211 / <i>GLOBAL ACCESS</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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

Integrated Logistics Support																												
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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640211 / <i>GLOBAL ACCESS</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Integrated Logistics Support	1	2017	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>				Project (Number/Name) 640212 / <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
640212: <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i>	-	0.000	0.000	13.931	0.000	13.931	14.086	15.546	16.200	16.477	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 04 PE 0604776F, project 640212, Analytics Driven Command Decision Support, is a new start.
 This program, BA 04 PE 0604776F, project 640212, Transformation to Enterprise-wide Metadata Management System, is a new start.
 This program, BA 04 PE 0604776F, project 640212, Data Lake, is a new start.

In FY 2017, PE 0603713S (BA3) Deployment and Distribution Enterprise Technology (DDET) and PE 0603264S (BA3) Agile Transportation for the 21st Century Theater were transferred to a single PE in the Air Force budget (PE0604776F, (BA4) Deployment and Distribution Enterprise (DDE)) in order to support auditability, increase management efficiency, and reduce administrative actions.

Project numbers in 640212 will be realigned within the PE in execution year for FY17 and via the FY18 BES budget cycle for FY18 through FY21 as follows: FY17: \$14.601M, FY18:\$14.465M, FY19:\$15.896M, FY20:\$16.084M, FY21:\$16.016M.

A. Mission Description and Budget Item Justification

This program provides for the development, integration, demonstration and detailed assessment of capabilities which improve deployment, distribution and supply chain decision-making/collaboration (e.g., planning stage to real-time execution/retrograde operations) without need for highly specialized operators. Projects in this area address the following: decision support tools, distribution process simulations/analytics, distribution demand forecasting/execution monitoring, automated decision-maker support (e.g., queuing, alerting, courses of action), automated status monitoring with information fusion to include drilldown capability, and resilient Command & Control (C2) infrastructure capabilities. Current planning, forecasting, and collaboration capabilities do not permit full synchronization of people, processes and assets to execute planned operations. Automated tools must be able to dynamically analyze/predict demand and provide input to advanced distribution planning systems to include the capability for Combatant Commanders to manage theater transportation operations from the port of debarkation to the point of need. Transportation information exchange across the DOD is inhibited by disparate systems, multiple data standards and insufficient interfaces. The ability to rapidly determine the impact of any delays/changes and conduct "what-if" impact assessments on the closure of force packages is required. This project addresses the required mission support to combatant commanders and other customers in the area of C2, Optimization, and Modeling and Simulations.

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

	FY 2015	FY 2016	FY 2017
Title: Analytics Driven Command Decision Support	-	-	0.960
Description: Improve organizational decision making by providing a holistic methodology that capitalizes on relevant information, captures accurate data, and leverages best practice tools and decision-making processes.			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016	
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640212 / <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016
FY 2017 Plans: TRL 5: Operational prototype of analytic tool & user manual to enable analytics drive command decision support			
Title: Transformation to Enterprise-wide Metadata Management System Description: Reduce the current difficulties in providing consistent/accurate reporting and 'accurate' regulatory data to mission partners (e.g. Federal Aviation Administration, State Department) FY 2017 Plans: TRL 5: Develop master data requirements in a Service-Oriented Architecture and move information to the enterprise level, is a key enabler to support multi-mode operations.		-	-
Title: Data Lake Description: Development of data lakes to support Fusion Net. FY 2017 Plans: TRL 4-6: Researching application and prototyping this technology as it relates to the Joint Deployment and Distribution enterprise.		-	-
Title: End-to-End Deployment and Distribution Modeling Description: Provide an integrated deployment/distribution environment to provide continuous and optimal balancing of total demand verse capacity from planning through mission execution. FY 2017 Plans: TRL 4-6: Assessment of various algorithmic optimization approaches.		-	-
Title: Global Mission Scheduling Description: Development effort to optimize air movement requirements against resources and movement requirements. FY 2017 Plans: TRL 4-6: Cognitively engineered prototype to facilitate detailed Tactical Air Control Center (Air Mobility Command) mission planning, scheduling and execution		-	-
Title: Map Based Planning Services Description: Enable planners, via a collaborative geospatially enabled environment, to conduct deliberate course of action planning to include force flow feasibility concurrent with plan development.		-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016	
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640212 / <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i>	
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016
FY 2017 Plans: TRL 4-6: Prototype globally accessible enclave and explore how data with a geospatial element can be visualized in a geo-temporal context to enhance Combatant Command planning.			
Title: Massachusetts Institute of Technology Lincoln Labs Description: Partnership with MIT-LL to research efforts to improve enterprise operational architecture supporting high-end analytics, integrated information technology/data structures, understanding of cloud capabilities and multi-level cyber security defense.		-	-
FY 2017 Plans: TRL 4-6: Multi-faceted effort prototyping, via Lincoln Secure Enclave Lab, numerous technologies to enhance operational analytics; data integration, mining, & forensic analytics, etc.			2.021
Title: Modeling & Simulation Innovation Description: Select student research/faculty-assisted projects (e.g., Joint Transportation Asset Scheduling Kit, Next Generation Cargo Capability, Applying Post Modern Portfolio Theory to Mitigate Risk in International Shipping, Optimal CH-47/C-130 Workload Balance, Remotely Piloted Aircraft Performing Airdrop Mission).		-	-
FY 2017 Plans: TRL 4-6: Collaborative partnership with Air Force Institute of Technology for graduate research addressing Joint Deployment and Distribution Enterprise challenges.			0.125
Title: Support Planning for Air Refueling Tasking and Allocation Description: Provide collaborative decision aid to enable planners to the optimize use of the worldwide Active Duty, Air National Guard and Air Force Reserve Air Refueling fleets while maintaining or increasing operational effectiveness, agility and capacity.		-	-
FY 2017 Plans: TRL 4/5: Prototype the capability for air refueling planners an integrated human-in-the-loop and machine based cooperative system to optimizing global air refueling operations.			0.990
Title: Strategies for Enterprise Metadata Management Description: Comprehensive account of strategies, optional implementations and recommendations for enterprise-wide management of metadata.		-	-
FY 2017 Plans:			0.500

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640212 / <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
TRL 4-6: Collect, populate and prototype metadata tools and applications.				
Title: Technology Transfer		-	-	0.285
Description: U. S. Transportation Command uses Technology Transfer mechanisms of the Federal Laboratories to facilitate voluntary collaboration by experts from government, industry, and academia, revealing the costs and benefits of innovations, to understand the feasibility of future capabilities.				
FY 2017 Plans: TRL 4 - 6: Continue to actively promote and broker Cooperative Research and Development Agreements (CRADAs) between DOD labs and industry for development of technology with both commercial and military applications. This activity will particularly focus on non-traditional defense contractors and is intended to help lower the expense of new defense-related technology development through cost-sharing with industry and to help DOD benefit from private-sector technology investments and innovations. Continue to actively market DOD-developed technologies to U.S. companies and establish Patent License Agreements to commercialize these technologies for both civilian and military.				
Title: Program Execution		-	-	0.670
Description: Provide technical assistance and program management support to the USTRANSCOM RDT&E Program.				
FY 2017 Plans: TRL 4-6: Program support to explore technology solutions to capability gaps identified through Joint Concept Development documents, the Joint Capabilities Integration and Development System process, Joint Experimentation, etc. to increase the responsiveness, efficiency and effectiveness of the Joint Deployment & Distribution Enterprise.				
Accomplishments/Planned Programs Subtotals		-	-	13.931
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
Requirements for joint deployment and distribution enterprise technology enhancements are annually identified, validated and prioritized by the Joint Deployment & Distribution Enterprise (JDDE) community. Pursuit of the development of new/improved capabilities to meet these requirements is managed by the United States Transportation Command (USTRANSCOM). Prototype products, once evaluated by the users, are spirally transitioned by the operational community.				

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640212 / <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i>

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640212 / <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Integrated Logistics Support	Various	Various : Belleville, IL	-	0.000		0.000		13.261	Oct 2016	0.000		13.261	Continuing	Continuing	-
Subtotal			-	0.000		0.000		13.261		0.000		13.261	-	-	-

Remarks
Funds will be realigned within PE.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Contractor Support PMO	Various	Various : Belleville, IL	-	0.000		0.000		0.670	Apr 2016	0.000		0.670	Continuing	Continuing	-
Subtotal			-	0.000		0.000		0.670		0.000		0.670	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000	0.000	13.931	0.000	13.931	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) <i>PE 0604776F / Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) <i>640212 / C2/OPTIMIZATION/MODELING AND SIMULATION</i>
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	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640212 / <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i>

FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
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

Integrated Logistics Support																												
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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640212 / <i>C2/OPTIMIZATION/MODELING AND SIMULATION</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Integrated Logistics Support	1	2017	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640213 / <i>CYBER</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
640213: <i>CYBER</i>	-	0.000	0.000	4.830	0.000	4.830	4.869	5.233	5.396	5.479	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2017, PE 0603713S (BA3) Deployment and Distribution Enterprise Technology (DDET) and PE 0603264S (BA3) Agile Transportation for the 21st Century Theater were transferred to a single PE in the Air Force budget (PE0604776F, (BA4) Deployment and Distribution Enterprise (DDE)) in order to support auditability, increase management efficiency, and reduce administrative actions.

Project numbers in 640213 will be realigned within the PE in execution year for FY17 and via the FY18 BES budget cycle for FY18 through FY21 as follows: FY17: \$2.369M, FY18:\$3.416M, FY19:\$3.783M, FY20:\$3.945M, FY21:\$4.120M.

A. Mission Description and Budget Item Justification

This program provides for the development, integration, demonstration and detailed assessment of capabilities to ensure USTRANSCOM mission assurance is in a persuasive/dynamic cyber environment. USTRANSCOM requires the procedures/technologies to improve cyber surveillance and control of networks across multiple domains and the ability to continue critical network operations in contested unclassified and classified network environments. The Command also needs the ability to differentiate between valid/unauthorized users and determine/quantify the trustworthiness of hardware/software systems. Additionally USTRANSCOM must have the ability to rapidly analyze & correlate data regarding malicious activities, select/evoke real-time defense actuators, perform automated reasoning capabilities that address data quality issues, and the ability to rapidly return to a known/safe operating state.

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

	FY 2015	FY 2016	FY 2017
<p>Title: Identity and Access Management</p> <p>Description: Need secure means to credential user access to proper applications & data via single sign approach.</p> <p>FY 2017 Plans: TRL 4/5: Researching to deliver to the enterprise a set of prototype custom attribute solutions.</p>	-	-	0.500
<p>Title: Operationalizing Cyber Security</p> <p>Description: Provide USTRANSCOM Joint Cyber Center (JCC) organizational effectiveness tools to enhance cyber-security operations, plans & processes.</p> <p>FY 2017 Plans:</p>	-	-	0.969

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640213 / <i>CYBER</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
TRL 4-6: Prototype an advanced cyber-security Command and Control model as well as extend research on non-intrusive data gathering to enhance Joint Cyber Center operations.			
Title: Lincoln Labs	-	-	3.361
Description: Partnership with MIT-LL to research efforts to improve enterprise operational architecture supporting high-end analytics, integrated information technology/data structures, understanding of cloud capabilities and multi-level cyber security defense.			
FY 2017 Plans: TRL 4-6: Multi-faceted effort prototyping, via Lincoln Secure Enclave Lab, numerous technologies to enhance cyber analytics, forensics, etc.			
Accomplishments/Planned Programs Subtotals	-	-	4.830

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

D. Acquisition Strategy
Requirements for joint deployment and distribution enterprise technology enhancements are annually identified, validated and prioritized by the Joint Deployment & Distribution Enterprise (JDDE) community. Pursuit of the development of new/improved capabilities to meet these requirements is managed by the United States Transportation Command (USTRANSCOM). Prototype products, once evaluated by the users, are spirally transitioned by the operational community.

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640213 / <i>CYBER</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-	-	-	-	-	-	-	-	-	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Integrated Logistics Support	Various	Various : Belleville, IL	-	0.000		0.000		4.830	Oct 2016	0.000		4.830	Continuing	Continuing	-
Subtotal			-	0.000	0.000	0.000		4.830		0.000		4.830	-	-	-

Remarks
Funds will be realigned within the PE.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-	-	-	-	-	-	-	-	-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-	-	-	-	-	-	-	-	-	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000	0.000	4.830	0.000	4.830	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640213 / <i>CYBER</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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

Integrated Logistics Support																												
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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640213 / <i>CYBER</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Integrated Logistics Support	1	2017	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>				Project (Number/Name) 640214 / <i>END-TO-END VISIBILITY</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
640214: <i>END-TO-END VISIBILITY</i>	-	0.000	0.000	0.495	0.000	0.495	0.495	0.495	0.496	0.495	0.000	2.476
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2017, PE 0603713S (BA3) Deployment and Distribution Enterprise Technology (DDET) and PE 0603264S (BA3) Agile Transportation for the 21st Century Theater were transferred to a single PE in the Air Force budget (PE0604776F, (BA4) Deployment and Distribution Enterprise (DDE)) in order to support auditability, increase management efficiency, and reduce administrative actions.

Project numbers in 640214 will be realigned within the PE in execution year for FY17 and via the FY18 BES budget cycle for FY18 through FY21 as follows: FY17: \$0.000M, FY18:\$0.000M, FY19:\$0.000M, FY20:\$0.000M, FY21:\$0.000M.

A. Mission Description and Budget Item Justification

This program provides for the development, integration, demonstration and detailed assessment to ensure end-to-end visibility of all aspects of power projection/ sustainment spectrum to improve the effectiveness and efficiency of deployment/distribution/redeployment operations to ensure warfighter support and confidence. This requires investigation into next generation Automated Information Technology (AIT)/ Total Asset Visibility (TAV) technologies and/or container security to improve end-to-end distribution visibility as well as planning/execution, and transform sustainment operations. Includes the ability to determine immediate, reliable, and accurate shipment status through system access or event management. Develop an over-arching process/system architecture which will integrate existing and innovative new programs across the supply chain to provide complete In Transit Visibility (ITV) data, to include visibility of non-DOD cargo during humanitarian/disaster relief operations. The ability of USTRANSCOM to supply transportation support for homeland defense and/or disaster relief depends on effective ways to link with other governmental and civilian agencies. Additionally need to explore the many barriers across the Joint Deployment and Distribution Enterprise (JDDE), to include non-DoD government entities, coalition partners, non-government organizations, and commercial industry, which can create confusion/conflict or detract from the optimization of the JDDE.

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

	FY 2015	FY 2016	FY 2017
Title: Asset Visibility	-	-	0.495
Description: Ensure asset visibility through the projection, sustainment and redeployment processes.			
FY 2017 Plans: See PE 0603713S			
Accomplishments/Planned Programs Subtotals	-	-	0.495

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640214 / <i>END-TO-END VISIBILITY</i>

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

D. Acquisition Strategy

Not applicable (see PE 0603713S).

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640214 / <i>END-TO-END VISIBILITY</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Integrated Logistics Support	Various	Various : Belleville, IL	-	0.000		0.000		0.495	Oct 2016	0.000		0.495	Continuing	Continuing	-
Subtotal			-	0.000		0.000		0.495		0.000		0.495	-	-	-

Remarks
Funds will be realigned within the PE.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000	0.000	0.495	0.000	0.495	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640214 / <i>END-TO-END VISIBILITY</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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

Integrated Logistics Support																												
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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604776F / <i>Deployment & Distribution Enterprise R&D</i>	Project (Number/Name) 640214 / <i>END-TO-END VISIBILITY</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Integrated Logistics Support	1	2017	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604857F / <i>Operationally Responsive Space</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	20.000	18.437	7.921	0.000	7.921	8.253	8.402	8.559	8.711	Continuing	Continuing
64A020: <i>AF Funded ORSSats</i>	-	20.000	18.437	7.921	0.000	7.921	8.253	8.402	8.559	8.711	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The successful integration of space-based capabilities into the core of U.S. national security operations has resulted in dramatically increased demand for and dependence upon space capabilities. As a result, U.S. Strategic Command (USSTRATCOM) identified three needs: 1) to rapidly augment existing space capabilities when needed to expand operational capability; 2) to rapidly reconstitute/replenish critical space capabilities to preserve "continuity of operations" capability; 3) to rapidly exploit and infuse space technological or operational innovations to increase U.S. advantage. Operationally Responsive Space projects were optimized for prioritized theater use and/or surge, augmentation and replenishment of traditional space capabilities. The ORS Concept of Operations (CONOPS) drives the need for satellites featuring high degrees of modularity, standard interface vehicles, and the use of plug and play payloads and buses.

The Air Force will continue to maintain ORS-1, launched 29 Jun 2011 to respond to U.S. Central Command's (USCENTCOM's) urgent need, validated by USSTRATCOM, to provide intelligence, surveillance, and reconnaissance (ISR) for theater warfighters. The additional ORS Office efforts of maturing enabling elements will be transitioned as appropriate to other space programs including Global Positioning System, Advanced EHF Milsatcom, Space Based Infrared System, Space Control Technology, and the rest of the space architecture.

ORS projects provide a broad range of capabilities directly supporting warfighter needs. Potential missions include communications; data exfiltration; blue/friendly force situational awareness; maritime domain awareness; positioning, navigation, and timing; weather; missile warning; and battlefield ISR. The highest priorities of the ORS Office are development and launch of the ORS-5 space situational awareness mission, development and launch of the Compact Ocean Wind Vector Radiometer (COWVR) technology demonstration, the low cost automated manufacturing initiative, and concluding the ORS-4 Super Strypi launch campaign. The remaining priorities for the ORS office are to satisfy the high priority needs for augmentation and reconstitution, such as Missile Warning, Wideband Protected Communication, Narrowband Communication, Space Situational Awareness, and Electro-Optical/Infrared (EO/IR) imagery.

Capabilities are being developed to systematically mature the ORS enabling elements to meet the USSTRATCOM specified responsiveness timelines and the 2007 NDAA cost target (\$40M satellites/\$20M launches). This includes authenticating commercial space parts, confirming automated assembly lines, validating digital mission assurance processes, developing a modular open system architecture employing plug and play standards, and providing assembly, integration & test in the Rapid Response Space Works. It also includes integrating with the Multi-Mission Satellite Operations Center (MMSOC) to proliferate common satellite command and control.

ORS is working with the University of Hawaii's (U of H) Hawaii Space Flight Laboratory and Sandia National Laboratory to complete the Super Strypi mission, documenting the results and the mishap investigation.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604857F / <i>Operationally Responsive Space</i>
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This program is in Budget Activity 04, Advanced Component Development and Prototypes, because the efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	20.000	6.457	0.000	0.000	0.000
Current President's Budget	20.000	18.437	7.921	0.000	7.921
Total Adjustments	0.000	11.980	7.921	0.000	7.921
• Congressional General Reductions	0.000	-0.020			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	12.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	7.921	0.000	7.921

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

Project: 64A020: *AF Funded ORSSats*

- Congressional Add: *Operational Capabilities, Development, and Integration*
- Congressional Add: *Rapid Assembly, Integration, & Test (Tier-2)*
- Congressional Add: *ORS Development (1)*
- Congressional Add: *ORS: Cross Cutting*

Congressional Add Subtotals for Project: 64A020

Congressional Add Totals for all Projects

	FY 2015	FY 2016
	0.700	0.274
	0.200	0.909
	12.900	8.735
	6.200	2.082
Congressional Add Subtotals for Project: 64A020	20.000	12.000
Congressional Add Totals for all Projects	20.000	12.000

Change Summary Explanation

FY2016: +\$12.0M Program increase; -\$0.02M for FFRDC
 FY2017: +\$7.9M to continue the ORS program.

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

Title:	FY 2015	FY 2016	FY 2017
ORS Development	-	-	2.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 0604857F / <i>Operationally Responsive Space</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Description: Rapidly exploit and infuse space technological or operational innovations to increase U.S. advantage.				
FY 2017 Plans: Prepare ORS-5 ground support in readiness for FY17 launch.				
Title: ORS: Cross Cutting		-	6.437	5.921
Description: Provide systems engineering and program management support across all the ORS activities. Perform modeling, simulation, analysis, and assess alternative concepts and requirements.				
FY 2016 Plans: Continue ORS-1 Mission Operations and Lessons Learned studies. Continue ongoing systems engineering support of future mission development. Refine ORS CONOPS, Enterprise and Architecture, and Systems Engineering Processes. Lead, participate in, and support, as appropriate, the solidification of space doctrine.				
FY 2017 Plans: Continue ongoing systems engineering support of future mission development. Refine ORS CONOPS, Enterprise and Architecture, and Systems Engineering Processes. Lead, participate in, and support, as appropriate, the solidification of space doctrine.				
Accomplishments/Planned Programs Subtotals		-	6.437	7.921
		FY 2015	FY 2016	
Congressional Add: Operational Capabilities, Development, and Integration		0.700	0.274	
FY 2015 Accomplishments: Incorporated ORS Resilient Space Layer (RSL) in three wargames: Advanced Concept Event-15 (ACE-15), Futures Wargame-15, and the Space Futures Wargame-15. Demonstrated the Commercial Integration of Global Android-based Relay System for Force Tracking (CIGARS-FT) project during the Army's Technical Support and Operational Analysis (TSOA).				
FY 2016 Plans: Execute urgent needs as identified by USSTRATCOM. Continue to support Service war games; re-start support to CCMD exercises. Support the integration of MMSOC compatibility with the Naval Research Lab's Neptune Common Ground Architecture, and demonstrate using the Army's Kestrel Eye Satellite program. Integrate ORS capabilities and concepts, including resiliency, into operations plans of the combatant commands, TTP of the military departments, and exercises, demonstrations, and war games. Support the				

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016	
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604857F / <i>Operationally Responsive Space</i>		
	FY 2015	FY 2016	
Space and Naval Warfare Systems Command (SPAWAR) program with small satellite capabilities to satisfy naval weather requirements.			
Congressional Add: Rapid Assembly, Integration, & Test (Tier-2) FY 2015 Accomplishments: Continued developing the Rapid Response Space Works and its capability for rapid assembly integration and test, using the modular space vehicle bus. FY 2016 Plans: Reconfigure the delivered Modular Space Vehicle (MSV) bus to accommodate the Compact Ocean Surface Wind Vector Radiometer (COWVR) technology demonstration. Execute the Open Manufacturing program to develop four 6U sized cubesats--Responsive Space Satellites (RSPSats), and the Space Effect Deployable Responsive Space Testbed (RSTB) program to conduct three stratospheric flight missions.	0.200	0.909	
Congressional Add: ORS Development (1) FY 2015 Accomplishments: Performed ORS-5 System Capability Demonstrations 1 and 2, and Preliminary Design Review (PDR) and Critical Design Review (CDR) milestones. Awarded the ORS-5 Minotaur IV launch vehicle contract. ORS-4 launch date was originally scheduled for Jan 2015, but first stage motor complications caused a delay to Nov 2015. Defined open manufacturing requirements, factory environment, integration with Digital Assurance architecture, transportation and factory flow requirements, standard, high-definition, and machine readable camera requirements. Responsive Space Parts/Spacecraft Design to include Next Generation Space Hot Shot Design. Digital Assurance integration to Spacecraft object build and flight software iteration. FY 2016 Plans: Continue ORS-5 space vehicle system integration and testing. Continue open manufacturing development including factory environment, integration with Digital Assurance architecture, transportation and factory flow requirements, standard, high-definition, and machine readable camera requirements. Continue responsive Space Parts/Spacecraft Design to include Next Generation Space Hot Shot Design. Continue Digital Assurance integration to Spacecraft object build and flight software iteration. Close out the demonstration of the ORS-4/Super Strypi mission. ORS-4 was the first flight demonstration launch of the Super Strypi launch system and demonstrated the rail launcher and horizontal launch processing.	12.900	8.735	
Congressional Add: ORS: Cross Cutting FY 2015 Accomplishments: Continued systems engineering and program management Independent Verification & Validation (IV&V) for ORS rapid Assembly, Integration and Test (AI&T) capability and the MSV. Continued ongoing systems engineering support of future mission development. Continued ORS-1 Mission Operations and Lessons Learned studies. Conducted Modeling and Simulations for Mission Evaluations. Refine	6.200	2.082	

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604857F / <i>Operationally Responsive Space</i>
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	FY 2015	FY 2016
ORS CONOPS, Enterprise and Architecture, and Systems Engineering Processes. Supported the solidification of space doctrine.		
FY 2016 Plans: Continue ORS-1 Mission Operations and Lessons Learned studies. Continue ongoing systems engineering support of future mission development. Refine ORS CONOPS, Enterprise and Architecture, and Systems Engineering Processes. Lead, participate in, and support, as appropriate, the solidification of space doctrine.		
Congressional Adds Subtotals	20.000	12.000

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE: BA04: 0604422F: <i>Weather System Follow-On</i>	30.890	56.044	118.953	0.000	118.953	151.650	153.330	61.893	36.903	Continuing	Continuing

Remarks

E. Acquisition Strategy

Expediently award contracts through ORS Office or partner organizations.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604857F / <i>Operationally Responsive Space</i>	Project (Number/Name) 64A020 / <i>AF Funded ORSSats</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Operational Capabilities, Development, and Integration	Various	Various : Various	-	0.700	Mar 2015	0.275	Dec 2015	0.000		0.000		0.000	Continuing	Continuing	TBD
Rapid AI&T (Tier-2, RRSW)	C/CPFF	Millennium Engineering : Albuquerque, NM	-	0.200	Mar 2015	0.910	Dec 2015	0.000		0.000		0.000	Continuing	Continuing	TBD
ORS-5 (Tier 3)	SS/CPFF	MIT/LL : Boston, MA	-	4.800	Mar 2015	2.080	Feb 2016	2.000	Oct 2016	0.000		2.000	Continuing	Continuing	TBD
ORS-5 Launch	C/FPIF	Orbital : Chandler, AZ	-	0.500	Jul 2015	3.000	Dec 2015	0.000		0.000		0.000	Continuing	Continuing	TBD
MSV Modular Bus/Open Manufacturing (Tier 3)	C/CPFF	Raytheon : Tucson, AZ	-	1.900	Dec 2014	3.409	Mar 2016	0.000		0.000		0.000	Continuing	Continuing	500.000
Responsive Launch Capability (ORS-4)(Tier-3)	SS/CPFF	U. of HI : Honolulu, HI	-	5.700	Mar 2015	0.250	Oct 2015	0.000		0.000		0.000	Continuing	Continuing	47.000
Enterprise System Engineering and Integration	C/T&M	GSA : San Antonio, TX	-	0.000	Oct 2015	0.000	Jun 2016	0.000	Dec 2016	0.000		0.000	Continuing	Continuing	TBD
Technical Mission Analysis	PO	Aerospace : Albuquerque, NM	-	0.500	Jan 2015	0.000	Oct 2015	0.000	Oct 2016	0.000		0.000	Continuing	Continuing	TBD
Subtotal			-	14.300		9.924		2.000		0.000		2.000	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604857F / <i>Operationally Responsive Space</i>	Project (Number/Name) 64A020 / <i>AF Funded ORSSats</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Operational Capabilities Development and Integration	[Redacted]																											
ORS-1 (CENTCOM Urgent Need)	[Redacted]																											
Rapid AI&T (Tier-2, RRSW)	[Redacted]																											
ORS-5 Space Situational Awareness	[Redacted]																											
ORS-5 Launch					[Redacted]																							
MSV Modular Bus/Open Manufacturing	[Redacted]																											
ORS-4 Super Strypi	[Redacted]																											
Cross-Cutting Activities: Modeling, Sim, Analysis; JFC Needs	[Redacted]																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604857F / <i>Operationally Responsive Space</i>	Project (Number/Name) 64A020 / <i>AF Funded ORSSats</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Operational Capabilities Development and Integration	1	2015	4	2016
ORS-1 (CENTCOM Urgent Need)	1	2015	2	2016
Rapid AI&T (Tier-2, RRSW)	1	2015	4	2016
ORS-5 Space Situational Awareness	1	2015	3	2020
ORS-5 Launch	4	2015	3	2017
MSV Modular Bus/Open Manufacturing	1	2015	4	2016
ORS-4 Super Strypi	1	2015	2	2016
Cross-Cutting Activities: Modeling, Sim, Analysis; JFC Needs	1	2015	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	79.887	266.514	347.304	0.000	347.304	497.741	606.643	679.961	690.590	Continuing	Continuing
645350: <i>Transition Prioritization</i>	-	79.887	266.514	62.247	0.000	62.247	87.361	87.827	87.376	87.366	Continuing	Continuing
645351: <i>Advanced Engine Development</i>	-	0.000	0.000	285.057	0.000	285.057	410.380	518.816	592.585	603.224	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Technology Transition Program (TTP) provides funding to demonstrate and/or experiment with technologies and concepts to enable or accelerate their transition to acquisition programs of record and operational use. It addresses the gap that exists between when a technology or concept is first developed and demonstrated to when it can be successfully acquired and implemented as an operational capability. TTP bridges that gap by providing funding and enabling integration and demonstration to continue beyond the laboratory. It allows acquisition program managers (the capability developers and providers) and warfighters (the capability recipients and end users) to prototype, integrate, demonstrate, and experiment with candidate technologies and assess them in an operational environment in partnership with PEOs, schoolhouses, simulation facilities, and development planning organizations. TTP includes research and development funds for the following transition activities: (1) experimentation campaigns to support Air Superiority 2030+ promising, high-priority concepts and technologies in an operational environment, (2) prototyping to lower acquisition risk by raising the technology readiness level and assessing implications to CONOPS, tactics, techniques, and procedures; (3) performing pre-acquisition systems engineering to facilitate transition of concepts and technologies from a demonstration program (e.g., Advanced Technology Demonstrations (ATDs), Joint Capability Technology Demonstrations (JCTDs)) into acquisition programs of record; (4) assessing external interface requirements of candidate concepts, technologies, and demonstration projects to better understand true engineering costs resulting from insertion of new technologies into the AF enterprise architecture; and (5) capturing data through information technology tools and databases to help formulate technology transition acquisition strategies and gather proposals for technology and prototype development that have the potential for application to the performance of Department of Defense missions. TTP is specifically designed to deal with technology transition opportunities throughout the fiscal year as they arise, resulting in a prioritized distribution of TTP funding over the course of the entire execution year.

The program provides funding to mature adaptive turbine engine technologies for next generation propulsion systems. The program will leverage adaptive turbine engine science and technology demonstrations to develop a multi-platform common adaptive engine built around a commercially derived core.

Starting in FY 2017 to improve reporting to Congress, Project 645351, Advanced Engine Development was created to capture all engine development activity that was previously performed under Project 645350, Transition Prioritization in this program.

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	79.004	246.514	288.148	0.000	288.148
Current President's Budget	79.887	266.514	347.304	0.000	347.304
Total Adjustments	0.883	20.000	59.156	0.000	59.156
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	20.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	2.400	0.000			
• SBIR/STTR Transfer	-1.517	0.000			
• Other Adjustments	0.000	0.000	59.156	0.000	59.156

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

Project: 645350: *Transition Prioritization*

Congressional Add: *Alternative Energy Research*

Congressional Add Subtotals for Project: 645350

Congressional Add Totals for all Projects

	FY 2015	FY 2016
	20.000	20.000
	20.000	20.000
	20.000	20.000

Change Summary Explanation

Increase in FY 2015 reflects reprogramming to support Multi-Releasable Intelligence Product (MRIP) Generation.

Increase in FY 2017 due to emphasis on Air Force Experimentation and Prototyping capabilities.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0604858F / Tech Transition Program				Project (Number/Name) 645350 / Transition Prioritization			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
645350: Transition Prioritization	-	79.887	266.514	62.247	0.000	62.247	87.361	87.827	87.376	87.366	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Under Transition Prioritization, funding is provided to demonstrate and/or experiment with technologies and concepts to enable or accelerate their transition to acquisition programs of record and operational use. It addresses the gap that exists between when a technology or concept is first developed and demonstrated to when it can be successfully acquired and implemented as an operational capability. Transition Prioritization includes research and development funds for the following transition activities: (1) experimentation campaigns to support Air Superiority 2030+ promising, high-priority concepts and technologies in an operational environment, (2) prototyping to lower acquisition risk by raising the technology readiness level and assessing implications to CONOPS, tactics, techniques, and procedures; (3) performing pre-acquisition systems engineering to facilitate transition of concepts and technologies from a demonstration program (e.g., Advanced Technology Demonstrations (ATDs), Joint Capability Technology Demonstrations (JCTDs)) into acquisition programs of record; (4) assessing external interface requirements of candidate concepts, technologies, and demonstration projects to better understand true engineering costs resulting from insertion of new technologies into the AF enterprise architecture; and (5) capturing data through information technology tools and databases to help formulate technology transition acquisition strategies and gather proposals for technology and prototype development that have the potential for application to the performance of Department of Defense missions.

Starting in FY 2017 all activities previously performed under this Project in the Propulsion Technology Transition effort will be reported under Project 645351, Advanced Engine Development within 0604858F, Tech Transition Program.

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

	FY 2015	FY 2016	FY 2017
Title: Propulsion Technology Transition	56.737	234.714	0.000
Description: Next generation jet engine technology.			
FY 2015 Accomplishments: Completed preliminary design reviews of engine concepts to mature adaptive engine technologies and manufacturing readiness. Purchase materials and hardware to support adaptive engine component rig tests and future adaptive engine core tests.			
FY 2016 Plans: Complete adaptive engine component rig tests. Begin and complete adaptive engine core tests. Initiate detailed design activities and continue to mature adaptive engine technologies and manufacturing readiness. Complete preliminary design update and requirements compatibility review.			
FY 2017 Plans: For FY 2017 and beyond, the work for this effort will be performed under Project 645351, Advanced Engine Development.			
Title: Sustainment Technology Transition	0.750	1.800	0.368

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>	Project (Number/Name) 645350 / <i>Transition Prioritization</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
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Description: Product support and sustainment technologies.			
FY 2015 Accomplishments: Continued prototype of high-priority concepts and technologies in an operational or operational-like environment.			
FY 2016 Plans: Prototype high-priority concepts and technologies in an operational or operational-like environment.			
FY 2017 Plans: Prototype high-priority concepts and technologies in an operational or operational-like environment.			

Title: Experimentation and Prototyping	2.400	10.000	61.879
Description: Execution of experimentation campaigns to support Air Superiority 2030+, CAS, Directed Energy, and other emerging capabilities, high-priority concepts, and technologies in an operational environment.			
FY 2015 Accomplishments: Stood up Close Air Support experimentation campaign to reduce the kill chain time and increase the effectiveness of CAS missions across a range of military operations. Began development of Data to Decisions, Directed Energy, and Defeat of Agile Intelligent Targets experimentation campaigns.			
FY 2016 Plans: Continue with experimentation campaigns and prototyping in support of AS 2030+ initiatives, CAS, Directed Energy, and other emerging capabilities.			
FY 2017 Plans: Continue with experimentation campaigns and prototyping in support of AS 2030+ initiatives, CAS, Directed Energy, and other emerging capabilities.			

Accomplishments/Planned Programs Subtotals	59.887	246.514	62.247
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	FY 2015	FY 2016
Congressional Add: Alternative Energy Research	20.000	20.000
FY 2015 Accomplishments: Conducted congressionally directed effort.		
FY 2016 Plans: Conduct congressionally directed efforts.		
Congressional Adds Subtotals	20.000	20.000

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force Date: February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
3600 / 4	PE 0604858F / <i>Tech Transition Program</i>	645350 / <i>Transition Prioritization</i>

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

N/A

Remarks

D. Acquisition Strategy

Technology Transition Program (TTP) enables a more effective and prioritized transition of technologies to the warfighter. It allows more accurate cost estimating and more comprehensive systems integration to occur through the use of prototypes, experimentation campaigns, and user assessments until the sponsoring major command can incorporate the technology into their subsequent budget submission. The Air Force, through appropriate program offices, will manage the acquisition and development process for the integration and fielding of TTP projects.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / Tech Transition Program	Project (Number/Name) 645350 / Transition Prioritization
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Sustainment Technology Transition	C/Various	Various : Various	-	0.750	Jul 2015	1.800	Jul 2016	0.368	Aug 2016	0.000		0.368	Continuing	Continuing	-
Propulsion Technologies	C/CPIF	GE and P&W : Various	-	56.737	Oct 2014	234.714	Jun 2016	0.000		0.000		0.000	Continuing	Continuing	-
Experimentation and Prototyping	C/CPAF	Various : Various	-	2.400	Sep 2015	10.000	Aug 2016	61.879	Aug 2017	0.000		61.879	Continuing	Continuing	-
Congressional Add	C/CPAF	Various : Various	-	20.000	Aug 2016	20.000	Jun 2017	0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	79.887		266.514		62.247		0.000		62.247	-	-	-

Remarks

For FY 2017 and beyond, the work under Propulsion Technologies will be reported under Project 645351, Advanced Engine Development.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>	Project (Number/Name) 645350 / <i>Transition Prioritization</i>
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	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	79.887	266.514	62.247	0.000	62.247	-	-	-

Remarks
N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>	Project (Number/Name) 645350 / <i>Transition Prioritization</i>
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Sustainment Technology Transition																												
Propulsion Technology Transition																												
Experimentation and Prototyping																												
Congressional Add																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>	Project (Number/Name) 645350 / <i>Transition Prioritization</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Sustainment Technology Transition	1	2015	4	2021
Propulsion Technology Transition	1	2015	4	2016
Experimentation and Prototyping	1	2015	4	2021
Congressional Add	1	2015	4	2017

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / Tech Transition Program	Project (Number/Name) 645351 / Advanced Engine Development
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
645351: <i>Advanced Engine Development</i>	-	0.000	0.000	285.057	0.000	285.057	410.380	518.816	592.585	603.224	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

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

Project 645351, Advanced Engine Development is new for FY 2017. Work from this effort was previously performed under Project 645350, Transition Prioritization within the same Program 0604858F, Tech Transition Program.

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

	FY 2015	FY 2016	FY 2017
Title: Advanced Engine Development	-	-	285.057
Description: Adaptive Engine Transition Program (AETP).			
FY 2017 Plans: In FY 2015 and FY 2016, the work for this effort originally was performed under Project 645350, Transition Prioritization in the effort, Propulsion Technology Transition. Conduct detailed design activities and next-generation propulsion studies. Complete multiple adaptive engine component rig tests and purchase long-lead hardware for future engine tests.			
Accomplishments/Planned Programs Subtotals	-	-	285.057

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Line Item • N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>	Project (Number/Name) 645351 / <i>Advanced Engine Development</i>
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D. Acquisition Strategy

The Air Force will award two limited source contracts to P&W and GE due to their unique qualifications to design an adaptive high performance turbine engine in the thrust class for the Adaptive Engine Turbine Program (AETP). The primary purpose for AETP is to mature fuel efficient adaptive engine component technologies and reduce associated risk in preparation for next-generation propulsion system development for multiple combat aircraft applications.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / Tech Transition Program	Project (Number/Name) 645351 / Advanced Engine Development
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Advanced Engine Development	C/CPIF	PW and GE : Various	-	0.000		0.000		285.057	Oct 2017	0.000		285.057	Continuing	Continuing	-
Subtotal			-	0.000		0.000		285.057		0.000		285.057	-	-	-

Remarks
In FY 2015 and FY 2016, the work for Advanced Engine Development originally was performed under Project 645350, Transition Prioritization in the cost category, Propulsion Technology Transition.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000	0.000	285.057	0.000	285.057	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>	Project (Number/Name) 645351 / <i>Advanced Engine Development</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Advanced Engine Development																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604858F / <i>Tech Transition Program</i>	Project (Number/Name) 645351 / <i>Advanced Engine Development</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Advanced Engine Development	1	2017	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0605230F / <i>Ground Based Strategic Deterrent</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.000	75.166	113.919	0.000	113.919	293.959	321.054	1,034.249	1,576.429	Continuing	Continuing
641025: <i>GROUND BASED STRATEGIC DETERRENT (GBSD)</i>	-	0.000	75.166	113.919	0.000	113.919	293.959	321.054	1,034.249	1,576.429	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Program MDAP/MAIS Code: 493

Note

In FY 2016, PE 0101213F, (Minuteman Squadrons), Project 672987, (MM Ops Equipment) efforts were transferred to PE 0605230F, (Ground Based Strategic Deterrent), Project 641025, (Ground Based Strategic Deterrent), in order to provide budget transparency for this ACAT ID effort.

A. Mission Description and Budget Item Justification

The Ground Based Strategic Deterrent (GBSD) will design, develop, produce and deploy a replacement for the current Intercontinental Ballistic Missile (ICBM) Minuteman III (MM III) weapon system. The GBSD program is scoped to deliver a fully integrated weapon system beginning in FY28 timeframe to close key capability gaps and vulnerabilities identified in the GBSD Capabilities Based Assessment, GBSD Initial Capabilities Document, and the GBSD Analysis of Alternatives and to mitigate ground-based deterrent degradation due to MM III component attrition and age-out.

The major activities in the GBSD program include 1) Flight System (FS); 2) Weapon System Command and Control (WSC2); 3) Launch Systems (LS); 4) Weapon System Integration. FS is an integrated missile stack which includes the propulsion, post-boost, guidance, and re-entry systems (RS) sub-components. WSC2 encompasses all command and control components and interfaces, associated ground hardware, ground control equipment and associated software directly related to the survivability, monitoring and launch of the replacement flight system. LS include Launch Control Center (LCC) and Launch Facility (LF) restoration and modernization of real property and structures and associated ground mechanical systems. The GBSD program will include development of applicable support equipment, data, flight test hardware and infrastructure, and training material while examining and mitigating risk during the MM III to GBSD transition.

BA4 - This program is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P) because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0605230F I Ground Based Strategic Deterrent
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.000	75.166	120.735	0.000	120.735
Current President's Budget	0.000	75.166	113.919	0.000	113.919
Total Adjustments	0.000	0.000	-6.816	0.000	-6.816
• 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	-6.816	0.000	-6.816

Change Summary Explanation

FY 2017 funding reflects an increase of \$10.000M to address refurbishment of Launch Facility 26 at Vandenberg Air Force Base, CA for future testing and a decrease of \$16.816M to reflect revised program planning.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Flight System	0.000	37.644	42.115	0.000	42.115
Description: Matures and supports ICBM reentry system, guidance, and propulsion technologies; refines requirements; develops modular subsystem architectures to support development of the weapon system preliminary design.					
FY 2015 Accomplishments: N/A					
FY 2016 Plans:					
- Combined previous year's Propulsion and Guidance Major Thrusts					
- Mature guidance technologies, define requirements and modular architectures					
- Further develop enhanced ground test capability and flight system integration requirements					
- Evaluate ICBM propulsion propellants, advanced flight controls and case material for medium class stage motors					
- Develop motor and integrated post boost vehicle concept designs through prototyping, demonstration and analysis					

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0605230F / <i>Ground Based Strategic Deterrent</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>- Initiate studies and analysis of Flight System subcomponents</p> <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> - Continue efforts to mature guidance technologies, define requirements and modular architectures - Continue development of enhanced ground test capability and develop flight system integration requirements - Continue to evaluate and refine ICBM propulsion propellants, advanced flight controls and case material for medium class stage motors - Continue to develop motor and integrated post boost vehicle concept designs through prototyping, demonstration and analysis - Examine and mature Reentry System concept designs through prototyping, demonstration and analysis <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Weapon System Command and Control</p> <p>Description: Identify and assess integration of GBSD's WSC2 systems and associated ground systems to execute, operate, sustain, and secure the GBSD weapon system; refine requirements, develop modular subsystem architectures, and support development of the weapon system preliminary design.</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Effort previously encompassed in Weapon System Integration Major Thrust - Develop GBSD WSC2 systems architecture and components - Support the Enterprise Capability Collaboration Team (ECCT) to identify and examine the GBSD WSC2 concepts and technologies <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> - Continue efforts to mature WSC2 system concepts and identified technologies - Continue to refine software integration requirements - Continue to mature modular systems architectures - Evaluate command and control systems, associated ground system technologies, and cybersecurity technologies through prototyping, demonstration and analysis <p>FY 2017 OCO Plans:</p>	0.000	1.245	2.075	0.000	2.075

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force				Date: February 2016	
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 0605230F / <i>Ground Based Strategic Deterrent</i>			
C. Accomplishments/Planned Programs (\$ in Millions)					
	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
Title: Launch Systems					
Description: Identify, assess and evaluate GBSD LS and associated systems to support development of the weapon system preliminary design.					
FY 2015 Accomplishments: N/A					
FY 2016 Plans: - Effort previously encompassed in Weapon System Integration Major Thrust - Perform assessment of current MM III LCCs and LFs - Support the ECCT to assess potential GBSD LS concepts					
FY 2017 Base Plans: - Continue to assess the current MM III LS to determine the extent of degradation and evaluate for future upgrade or replacement - Continue efforts to mature LS refurbishment and modernization concepts and define requirements through on-site assessments and analyses for operational and test facilities - Begin refurbishment of Vandenberg Air Force Base Launch Facility 26 for future GBSD testing					
FY 2017 OCO Plans: N/A					
Title: Weapon System Integration					
Description: Advance GBSD test activities, systems engineering activities, trade-studies, information technology, data management, systems modeling and simulation, analytical capabilities, and support development of the weapon system preliminary design.					
FY 2015 Accomplishments: N/A					
FY 2016 Plans: - Advance GBSD data management, systems modeling and simulation, and analytical capabilities - Identify and assess an integrated GBSD weapon system to include areas where component consolidation may provide maintenance, security and performance advantages					
	0.000	1.255	6.184	0.000	6.184
	0.000	35.022	63.545	0.000	63.545

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0605230F / <i>Ground Based Strategic Deterrent</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Assess areas where flight systems, communications, and infrastructure may support fielding and transitioning the MM III to GBSD to meet capabilities requirements <i>FY 2017 Base Plans:</i> - Mature the weapon system preliminary design and reduce integration risk by conducting trade studies, system engineering, test activities, and systems modeling and simulation - Further develop analytical, information technology, and data management capabilities to ensure weapon system design information is properly secured and information dissemination between contractors is protected - Continue to assess fielding requirements for FS, WSC2 and LS and appropriate timelines to transition from MM III to GBSD solution <i>FY 2017 OCO Plans:</i> N/A					
Accomplishments/Planned Programs Subtotals	0.000	75.166	113.919	0.000	113.919

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE:BA04:PE 0603851F: <i>Intercontinental Ballistic Missile - Dem/Val</i>	30.388	39.765	108.663	0.000	108.663	72.604	67.655	64.922	66.071	Continuing	Continuing
• RDTE:BA07:PE 0101213F: <i>Minuteman III Ops Equipment</i>	18.205	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Remarks

E. Acquisition Strategy
 The objective of the GBSD program strategy is to deliver a full, integrated weapon system capability that meets Air Force Global Strike Command's requirements beginning in FY28. For the TMRR phase of this strategy, the Program Office will competitively award contracts in FY17. The objectives of TMRR for GBSD are: 1) to deliver a modular, integrated weapon system preliminary design and 2) mature technology and demonstrate performance of subsystem capabilities through prototyping, modeling, and simulation. The TMRR phase will include a System Requirements Review (SRR), a System Functional Review (SFR) and will culminate in a system Preliminary Design Review (PDR). The contract may also include risk reduction prototyping on key technologies and the requirement to bring forward multiple vendor designs for key government designated components/sub-components to PDR or beyond. The anticipated period of performance for the TMRR contracts will be from 2QFY17 to 2QFY20. After MS B approval, an Engineering and Manufacturing Development (EMD) contract will be competitively awarded in FY20.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)
3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	PE 0605230F / <i>Ground Based Strategic Deterrent</i>

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0605230F / <i>Ground Based Strategic Deterrent</i>	Project (Number/Name) 641025 / <i>GROUND BASED STRATEGIC DETERRENT (GBSD)</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Technology Maturation and Risk Reduction (TMRR) Contractor #1	C/TBD	TBD : TBD	-	0.000		0.000		27.523	May 2017	0.000		27.523	Continuing	Continuing	TBD
TMRR Contractor #2	C/TBD	TBD : TBD	-	0.000		0.000		27.523	May 2017	0.000		27.523	Continuing	Continuing	TBD
GBSD System Engineering and Integration	C/TBD	TBD : TBD	-	0.000		16.004	Jan 2016	27.715	Jan 2017	0.000		27.715	Continuing	Continuing	-
Subtotal			-	0.000		16.004		82.761		0.000		82.761	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Integration Support Contract	C/FFP	BAE : Hill AFB, UT	-	0.000		47.832	Oct 2015	17.863	Mar 2017	0.000		17.863	Continuing	Continuing	-
Federally Funded Research and Development Center/ University Affiliated Research Center Support	MIPR	Various* : Various*	-	0.000		6.494	Dec 2015	4.006	Jan 2017	0.000		4.006	Continuing	Continuing	-
Subtotal			-	0.000		54.326		21.869		0.000		21.869	-	-	-

Remarks
* Aerospace Corp, El Segundo, CA; Carnegie Mellon, Pittsburgh, PA; MITRE, Bedford, MA; Johns Hopkins Applied Physics Laboratory, Laurel, MD

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
GBSD Test and Assessments	Various	TBD : TBD	-	0.000		3.293	Feb 2016	5.493	Jan 2017	0.000		5.493	Continuing	Continuing	TBD
Subtotal			-	0.000		3.293		5.493		0.000		5.493	-	-	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0605230F / <i>Ground Based Strategic Deterrent</i>	Project (Number/Name) 641025 / <i>GROUND BASED STRATEGIC DETERRENT (GBSD)</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Materiel Solution Analysis Phase	██████████																											
Milestone A (Mar 2016)					████																							
TMRR Phase									██																			
PDR (May 2019)													████															
Milestone B (June 2020)																					████							
EMD Phase																					██							

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0605230F / <i>Ground Based Strategic Deterrent</i>	Project (Number/Name) 641025 / <i>GROUND BASED STRATEGIC DETERRENT (GBSD)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Material Solution Analysis Phase	1	2015	2	2016
Milestone A (Mar 2016)	2	2016	2	2016
TMRR Phase	3	2016	2	2020
PDR (May 2019)	3	2019	3	2019
Milestone B (June 2020)	3	2020	3	2020
EMD Phase	3	2020	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0201184F / <i>Counter Narco-Terrorism Program Office</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.650	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
649492: <i>STRATEGIC ISR</i>	-	0.650	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

This project provides for Counter-Drug activities.

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

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.650	0.000	0.000	0.000	0.000
Total Adjustments	0.650	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	0.650	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

Change Summary Explanation

FY15 transfer from Drug Interaction and Counter-Drug Activities, Defense consistent with provisions in Public Law 113-76.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0201184F / Counter Narco-Terrorism Program Office	Project (Number/Name) 649492 / STRATEGIC ISR
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
649492: STRATEGIC ISR	-	0.650	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Counter-drug activities.

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

	FY 2015	FY 2016	FY 2017
Title: Counter-drug Activities	0.650	0.000	0.000
Description: Counter-drug activities			
FY 2015 Accomplishments: Counter-drug activities			
FY 2016 Plans: N/A			
FY 2017 Plans: N/A			
Accomplishments/Planned Programs Subtotals	0.650	0.000	0.000

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

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0201184F / Counter Narco-Terrorism Program Office	Project (Number/Name) 649492 / STRATEGIC ISR
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Counter-Drug Activities	Various	Various : Various	-	0.650	Feb 2015	0.000		0.000		0.000		0.000	0.000	0.650	-
Subtotal			-	0.650		0.000		0.000		0.000		0.000	0.000	0.650	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.650	0.000	0.000	0.000	0.000	0.000	0.650	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0201184F / <i>Counter Narco-Terrorism Program Office</i>	Project (Number/Name) 649492 / <i>STRATEGIC ISR</i>

FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
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

Counter-Drug Activities	[REDACTED]																											
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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0201184F / <i>Counter Narco-Terrorism Program Office</i>	Project (Number/Name) 649492 / <i>STRATEGIC ISR</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Counter-Drug Activities	1	2015	4	2015

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0207110F / <i>Next Generation Air Dominance</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	18.224	8.830	20.595	0.000	20.595	12.875	12.875	0.000	0.000	0.000	73.399
646007: 2030+ AIR DOMINANCE AOS	-	18.224	8.830	20.595	0.000	20.595	12.875	12.875	0.000	0.000	0.000	73.399
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Next Generation Air Dominance enables future execution of Air Force air superiority doctrine within the Air Superiority core mission area, as directed in Joint Requirements Oversight Council Memorandum (JROCM) 043-13. Program efforts mitigate critical capability gaps identified in the March 2011 Air Force Next Generation Tactical Air (TACAIR) Capabilities Based Assessment. This program will provide air superiority capability improvements in the areas of persistence, survivability, lethality, connectivity, interoperability, and affordability. Funding provides program management support, operational concept exploration, technology assessments and development, operational and system architecture development, maturation and risk reduction of air superiority related technologies, and integrated system concept development and demonstration.

BA-04 - This program is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P) because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

B. Program Change Summary (\$ in Millions)	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	15.722	8.830	0.000	0.000	0.000
Current President's Budget	18.224	8.830	20.595	0.000	20.595
Total Adjustments	2.502	0.000	20.595	0.000	20.595
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	3.037	0.000			
• SBIR/STTR Transfer	-0.535	0.000			
• Other Adjustments	0.000	0.000	20.595	0.000	20.595

Change Summary Explanation

FY15 - \$3.037 reprogramming for NGAD concept development, integration studies & risk reduction activities and -\$535K for Small Business Innovative Research
 FY17 - \$20.595M added to expand scope of concept development & integration assessments and technology risk reduction activities addressing family of systems concepts

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 0207110F / <i>Next Generation Air Dominance</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Title: 2030+ Air Dominance Concept Development</p> <p>Description: 2030+ Air Dominance Concept Development consists of operational analyses, threat studies and technology candidate assessments to identify operational concepts and technologies that improve persistence, survivability, lethality, connectivity, interoperability and affordability in 2030 and beyond. This effort will provide for prime contractor support manpower to conduct analyses, identify technology candidates and concept studies.</p> <p>Includes A&AS, travel, supplies, and other program costs and program costs to support the Air Superiority 2030 Enterprise Capability Collaboration Team (AS2030 ECCT).</p> <p>FY 2015 Accomplishments: The 2030+ Air Dominance Concept Development working groups methodically assessed the candidate concepts using USAF directives and guidance.</p> <p>Includes A&AS, travel, supplies, and other program costs and program costs to support the Air Superiority 2030 Enterprise Capability Collaboration Team (AS2030 ECCT).</p> <p>FY 2016 Plans: The 2030+ Air Dominance Concept Development working groups will continue to methodically assess the candidate concepts using USAF directives and guidance.</p> <p>Includes A&AS, travel, supplies, and other program costs and program costs to support the Air Superiority 2030 Enterprise Capability Collaboration Team (AS2030 ECCT).</p> <p>FY 2017 Plans: The 2030+ Air Dominance candidate concepts will integrate technologies into evolving threat environments and scenarios. Studies that refine system concepts and operational/system architectures to include family of systems and system of systems are required in support of the strategic choices.</p> <p>Includes A&AS, travel, supplies, and other program costs and program costs to support the Air Superiority 2030 Enterprise Capability Collaboration Team (AS2030 ECCT).</p>		10.908	5.403	6.582
<p>Title: Air Dominance Studies</p> <p>Description: Studies that support the 2030+AD program by refining system concepts and operational/system architectures to include family of systems and system of systems.</p>		1.463	0.857	3.160

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 0207110F / <i>Next Generation Air Dominance</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Includes A&AS, travel, supplies, and other program costs and program costs to support the Air Superiority 2030 Enterprise Capability Collaboration Team (AS2030 ECCT).				
<p>FY 2015 Accomplishments: The 2030+AD candidate concepts integrated technologies into evolving threat environments and scenarios. Studies that refine system concepts and operational/system architectures to include family of systems and system of systems are required in support of strategic choices.</p> <p>Includes A&AS, travel, supplies, and other program costs and program costs to support the Air Superiority 2030 Enterprise Capability Collaboration Team (AS2030 ECCT).</p> <p>FY 2016 Plans: The 2030+AD candidate concepts will continue integrating technologies into evolving threat environments and scenarios. Studies that refine system concepts and operational/system architectures to include family of systems and system of systems are required in support of the strategic choices.</p> <p>Includes A&AS, travel, supplies, and other program costs and program costs to support the Air Superiority 2030 Enterprise Capability Collaboration Team (AS2030 ECCT).</p> <p>FY 2017 Plans: The 2030+AD candidate concepts will integrate technologies into evolving threat environments and scenarios. Studies that refine system concepts and operational/system architectures to include family of systems and system of systems are required in support of strategic choices.</p> <p>Includes A&AS, travel, supplies, and other program costs and program costs to support the Air Superiority 2030 Enterprise Capability Collaboration Team (AS2030 ECCT).</p>				
<p>Title: Air Dominance Technical Risk Reduction</p> <p>Description: Industry informed government concepts are developed through technical risk reduction work with prime contractors to refine technology integration and system design trade space in conjunction with operational analysis to inform system performance trades.</p> <p>Includes A&AS, travel, supplies, and other program costs and program costs to support the Air Superiority 2030 Enterprise Capability Collaboration Team (AS2030 ECCT).</p>		5.853	2.570	10.853

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0207110F / <i>Next Generation Air Dominance</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> 2030+ Air Dominance technology integration, operational and system trade space analysis required to support Concept Development.</p> <p>Includes A&AS, travel, supplies, and other program costs and program costs to support the Air Superiority 2030 Enterprise Capability Collaboration Team (AS2030 ECCT).</p> <p><i>FY 2016 Plans:</i> 2030+ Air Dominance technology integration, operational and system trade space analysis required to support Concept Development.</p> <p>Includes A&AS, travel, supplies, and other program costs and program costs to support the Air Superiority 2030 Enterprise Capability Collaboration Team (AS2030 ECCT).</p> <p><i>FY 2017 Plans:</i> The 2030+AD candidate concepts are integrating technologies into evolving threat environments and scenarios. Studies that refine system concepts and operational/system architectures to include family of systems and system of systems are required in support of strategic choices.</p> <p>Includes A&AS, travel, supplies, and other program costs and program costs to support the Air Superiority 2030 Enterprise Capability Collaboration Team (AS2030 ECCT).</p>			
Accomplishments/Planned Programs Subtotals	18.224	8.830	20.595

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• N/A: None	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks
N/A

E. Acquisition Strategy
The Next Generation Air Dominance acquisition strategy is based on top-down, multi-domain capabilities development planning and oversight framework. Cross-functional teams will conduct war-games and experiments to quantify the operational value of alternative concepts and technologies to provide solutions to current and future air superiority capability gaps.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)
3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	PE 0207110F / <i>Next Generation Air Dominance</i>

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0207110F / Next Generation Air Dominance	Project (Number/Name) 646007 / 2030+ AIR DOMINANCE AOS
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Research/Development Efforts	Various	Not specified. : TBD	-	16.607		7.730		19.295		0.000		19.295	Continuing	Continuing	-
Subtotal			-	16.607		7.730		19.295		0.000		19.295	-	-	-

Remarks
Contractual specifics are not available at this level of security classification.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Various	Not specified. : TBD	-	1.617		1.100		1.300		0.000		1.300	Continuing	Continuing	-
Subtotal			-	1.617		1.100		1.300		0.000		1.300	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	18.224	8.830	20.595	0.000	20.595	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force							Date: February 2016			
Appropriation/Budget Activity 3600 / 4			R-1 Program Element (Number/Name) PE 0207110F / <i>Next Generation Air Dominance</i>			Project (Number/Name) 646007 / 2030+ AIR DOMINANCE AOS				
	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	

Remarks
 Details of contract data are not shown because of the level of security classification.

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0207110F / <i>Next Generation Air Dominance</i>	Project (Number/Name) 646007 / 2030+ <i>AIR DOMINANCE AOS</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Concept Exploration	1	2015	4	2021
Integration Studies	3	2015	4	2021
Technology Risk Reduction	3	2015	4	2021
Analysis of Alternatives	2	2017	3	2018
FY17 Strategic Planning Choices Presented	1	2016	1	2016
FY18 Strategic Planning Choices Presented	1	2017	1	2017
FY19 Strategic Planning Choices Presented	1	2018	1	2018
FY20 Strategic Planning Choices Presented	1	2019	1	2019
FY21 Strategic Planning Choices Presented	1	2020	1	2020
FY22 Strategic Planning Choices Presented	1	2021	1	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0207455F / <i>Three Dimensional Long-Range Radar (3DELRR)</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	52.891	85.832	8.139	49.491	0.000	49.491	50.614	33.724	24.816	0.259	0.000	305.766
646002: <i>Three Dimensional Expeditionary Long-Range Radar (3DELRR)</i>	52.891	85.832	8.139	49.491	0.000	49.491	50.614	33.724	24.816	0.259	0.000	305.766
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Program MDAP/MAIS Code: 393

A. Mission Description and Budget Item Justification

Three Dimensional Expeditionary Long-Range Radar (3DELRR) will be the principal United States Air Force (USAF) long-range, ground-based sensor for detecting, identifying, tracking, and reporting aerial tracks for the Joint Force Air Component Commander (JFACC) through the Theater Air Control System (TACS). Additionally, 3DELRR will respond to the operational need to detect and report highly maneuverable, small radar cross section targets to enable battlefield awareness while mitigating the reliability, maintainability, and sustainability issues plaguing the AN/TPS-75 radar system. Moreover, it will provide air controllers with a precise, real-time air picture of sufficient quality to conduct control of individual aircraft under a wide range of environmental and operational conditions. Finally, 3DELRR will replace an aging USAF AN/TPS-75 radar system. The AN/TPS-75 radar system is incapable of detecting some current and emerging threats as it is reaching the end of its service life making this system more difficult and costly to maintain.

3DELRR addresses system sustainability, transportability and operational availability shortfalls while providing detection and tracking of Air Breathing Threats (ABTs). Long-range surveillance is key to performing Airspace Control Authority (ACA) and Area Air Defense Commander (AADC) roles while improving USAF contributions to the Integrated Air and Missile Defense (IAMD) mission area. 3DELRR continues to be a Department of Defense pilot program for Defense Exportability Features (DEF) which incorporates export features early in the design phase to maximize export potential while reducing 3DELRR life cycle costs through increased production. In addition to the real-time picture for the USAF Control and Reporting Center (CRC), 3DELRR will provide tracks to the United States Marine Corps (USMC)/United States Navy (USN) via Composite Tracking Network (CTN) interface, and the United States Army (USA) via Integrated Fire Control Network (IFCN) interface.

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0207455F I Three Dimensional Long-Range Radar (3DELRR)
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	88.825	14.939	69.985	0.000	69.985
Current President's Budget	85.832	8.139	49.491	0.000	49.491
Total Adjustments	-2.993	-6.800	-20.494	0.000	-20.494
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-6.800			
• 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	-2.993	0.000			
• Other Adjustments	0.000	0.000	-20.494	0.000	-20.494

Change Summary Explanation

- FY15 \$2.993M due to SBIR/STTR Transfer
- FY16 \$6.8M Test & Evaluation support ahead of need
- FY17 \$20.494M re-phased to FY19 due to Engineering and Manufacturing Development contract delays as a result of protests

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
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Title: Technology Development (TD)/Engineering and Manufacturing Development (EMD) Phases	80.453	2.609	39.418
Description: TD/EMD efforts associated with delivering a new long-range ground-based sensor.			
FY 2015 Accomplishments: - Activities included studies, analyses, and risk mitigation to support program planning and execution			
FY 2016 Plans: Acquisition activities for the EMD Phase include, but are not limited to: - Delta Preliminary Design Review (PDR), Engineering Design Readiness Review (EDRR), Critical Design Review (CDR) to mature the system design to posture for the successful development of 3 Production Representative Units (PRUs), and an Integrated Baseline Review (IBR) - Test planning and preparation as well as fabrication and testing of system components and subsystems			
FY 2017 Plans: - Will continue test planning and preparation as well as fabrication and testing of system components and subsystems as well as system integration/test activities - Will conduct initial physical configuration audit (PCA)			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 0207455F / <i>Three Dimensional Long-Range Radar (3DELRR)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Will continue efforts to ensure the program properly matures the system design and posture for successful completion of 3 PRUs - Activities will also include studies and analyses to support both current program planning and execution as well as future program planning 				
<p>Title: Test and Evaluation (T&E) Support</p> <p>Description: T&E Support</p> <p>FY 2015 Accomplishments: T&E activities included, but were not limited to:</p> <ul style="list-style-type: none"> - Developed the test strategy and test related documentation - Planned developmental test and evaluation events as well as cyber-security planning - Participated in technical and test related working groups <p>FY 2016 Plans: Activities include, but are not limited to:</p> <ul style="list-style-type: none"> - Participating in delta PDR, IBR and CDR - Participating in technical and test related working groups - Test Plan development <p>FY 2017 Plans: Specific T&E activities will include, but are not limited to:</p> <ul style="list-style-type: none"> - Continue developing the test strategy as well as test and system engineering related documentation - Conducting site surveys, and continue cyber-security planning - Supporting contractor testing, planning Government developmental test and evaluation events - Participating in design reviews as well as technical and test related working groups - Training and travel will significantly increase for T&E personnel to accommodate Contractor developmental test monitoring and execution of Government developmental testing 		0.590	0.480	5.183
<p>Title: Systems Engineering/Technical Support</p> <p>Description: Systems Engineering/Technical Support</p> <p>FY 2015 Accomplishments: - Activities included analyses and planning for future execution to include, but were not limited to, modeling and simulation, information assurance, program protection, and cyber-security</p> <p>FY 2016 Plans:</p>		4.789	5.050	4.890

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0207455F / <i>Three Dimensional Long-Range Radar (3DELRR)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Continue engineering and manufacturing efforts to further mature technologies and manufacturing capabilities - Lead the Delta-PDR, EDRR, and CDR technical reviews - Participate in the IBR and monitor/document changes to the program that could affect the system baseline - Support reliability growth efforts during contractor test and continue to identify, monitor, and mitigate technical program risks <p><i>FY 2017 Plans:</i> Engineering support activities will include, but are not limited to, the following:</p> <ul style="list-style-type: none"> - Preparation and planning for EMD efforts to further mature technologies and manufacturing capabilities - Document and monitor changes that could affect the system baseline - Support reliability growth efforts during contractor test, witness contractor testing at the system, subsystem, and component levels - Continue to identify, monitor and mitigate technical risks 			
Accomplishments/Planned Programs Subtotals	85.832	8.139	49.491

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• OPAF: BA04: Line Item # 833060: <i>3D Expeditionary Long Range Radar</i>	0.000	0.000	0.000	0.000	0.000	44.379	153.048	162.167	165.084	587.425	1,116.177

Remarks

E. Acquisition Strategy

The 3DELRR strategy is a single step acquisition approach for full capability to develop, produce, and field a highly capable and sustainable, expeditionary long-range radar. A limited competition was conducted among the three contractors that participated in the Pre-Engineering and Manufacturing Development (EMD) phase. The EMD contract will be awarded to a single developer to complete the final design, build, integration, and test of the 3DELRR system with options to produce Low Rate Initial Production (LRIP) units, and conduct Interim Contractor Support (ICS). A follow on sole source contract will be awarded to the EMD and LRIP contractor for Full Rate Production (FRP) following the FRP Decision Review.

Air Force Program Executive Officer (PEO) for Battle Management (AFPEO BM) is the PEO for 3DELRR. Air Force Life Cycle Management Center (AFLCMC) is the Contracting Authority for the 3DELRR program and provides contracts, legal, and comptroller support. The Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics [OUSD(AT&L)] is the program's Milestone Decision Authority (MDA).

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force Date: February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)
3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)	PE 0207455F I Three Dimensional Long-Range Radar (3DELRR)

The primary contract type for EMD is a Fixed Price Incentive Fee (FPIF) contract which includes an FPIF option to execute LRIP as well as a Cost Plus Fixed Fee (CPFF) option for Interim Contract Support (ICS). Upon MDA approval at MS C, the Procuring Contracting Officer (PCO) will exercise the LRIP option. A CPFF option is planned for ICS due to the uncertainty of the quantity and the exact nature of the work. The primary contract type for FRP is Firm Fixed Price (FFP) due to stable requirements and low risk of changes in scope.

The contract will deliver 3 Production Representative Units (PRUs) during EMD and 3 refurbished PRUs during LRIP for a total of 6 systems at Initial Operational Capability (IOC). The follow-on FRP contract will deliver 29 total systems.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0207455F / Three Dimensional Long-Range Radar (3DELRR)	Project (Number/Name) 646002 / Three Dimensional Expeditionary Long-Range Radar (3DELRR)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
EMD Phase	C/FPIF	TBD : TBD	43.396	76.263	Mar 2016	0.001	Dec 2016	36.585	Dec 2016	0.000		36.585	94.813	251.058	265.000
Subtotal			43.396	76.263		0.001		36.585		0.000		36.585	94.813	251.058	265.000

Remarks
 - Program delayed due to protest activities; projected contract award 31 Mar 2016
 - The target value of the contract is the program manager's estimate

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
System Engineering - A	SS/CPFF	MIT/Lincoln Laboratory : Lexington, MA	1.770	1.610	Nov 2014	1.750	Nov 2015	1.900	Nov 2016	0.000		1.900	1.396	8.426	TBD
System Engineering - B	SS/CPFF	Carnegie Mellon University : Pittsburgh, PA	0.119	0.150	Oct 2014	0.150	Oct 2015	0.150	Oct 2016	0.000		0.150	0.000	0.569	TBD
Subtotal			1.889	1.760		1.900		2.050		0.000		2.050	1.396	8.995	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
96th Test Wing/Other Test Agencies	Various	46 TS : Eglin AFB, FL	0.672	0.590	Oct 2014	0.000		5.183	Oct 2016	0.000		5.183	6.550	12.995	TBD
Subtotal			0.672	0.590		0.000		5.183		0.000		5.183	6.550	12.995	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0207455F / <i>Three Dimensional Long-Range Radar (3DELRR)</i>	Project (Number/Name) 646002 / <i>Three Dimensional Expeditionary Long-Range Radar (3DELRR)</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
EMD Contract Award (Protested)	██████████																											
EMD	██████████				██████████				██████████				██████████				██████████				██████████							
Critical Design Review (CDR) (Aug 2016)					████																							
Contractor Test									██████████																			
Developmental Test & Evaluation Test Readiness Review (May 2018)													████															
Government Development Test													██████████															
Production Representative Units Delivery													████															
Operational Test Readiness Review (OTRR) (Oct 2019)																	████											
Milestone C (Nov 2019)																	████											
Government Operational Test																	██████████											
Low Rate Initial Production (LRIP)																	██████████											
Full Rate Production Decision (Jan 2021)																					████							
Production and Deployment Phase																					██████████							

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0207455F / <i>Three Dimensional Long-Range Radar (3DELRR)</i>	Project (Number/Name) 646002 / <i>Three Dimensional Expeditionary Long-Range Radar (3DELRR)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
EMD Contract Award (Protested)	1	2015	2	2016
EMD	1	2015	1	2020
Critical Design Review (CDR) (Aug 2016)	4	2016	4	2016
Contractor Test	1	2017	3	2018
Developmental Test & Evaluation Test Readiness Review (May 2018)	3	2018	3	2018
Government Development Test	3	2018	4	2019
Production Representative Units Delivery	3	2018	3	2018
Operational Test Readiness Review (OTRR) (Oct 2019)	1	2020	1	2020
Milestone C (Nov 2019)	1	2020	1	2020
Government Operational Test	1	2020	4	2020
Low Rate Initial Production (LRIP)	1	2020	4	2021
Full Rate Production Decision (Jan 2021)	2	2021	2	2021
Production and Deployment Phase	2	2021	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0305164F I NAVSTAR Global Positioning System (User Equipment) (SPACE)
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	202.600	152.144	141.861	278.147	0.000	278.147	235.790	188.750	170.937	173.989	247.888	1,792.106
643833: MILITARY GLOBAL POSITIONING SYSTEM USER EQUIP	202.600	152.144	141.861	278.147	0.000	278.147	235.790	188.750	170.937	173.989	247.888	1,792.106
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Program MDAP/MAIS Code: 447

A. Mission Description and Budget Item Justification

The Global Positioning System (GPS) is a space-based radio Positioning, Navigation, and Timing (PNT) distribution system. GPS User Equipment (UE) consists of standardized receivers, antennas, antenna electronics, etc., grouped together in sets to derive navigation and time information transmitted from GPS satellites. These receiver sets are used by DoD. RDT&E funds UE development, integration, test, and analysis for new PNT receiver capabilities in Navigation Warfare (NAVWAR) across all military platforms using GPS services.

The Military Global Positioning System User Equipment (MGUE) Increment 1 program is responsible for the development of standard modernized receiver form factors for the Service-nominated lead platforms identified in the MGUE Capability Development Document (CDD), approved by the Joint Requirements Oversight Council (JROC) on 24 Jul 2014. This new family of modernized GPS receivers will deliver significantly improved capability to counter current and emerging PNT threats and enable military operations in a NAVWAR environment where current legacy receiver performance would be compromised. MGUE Increment 1 received a Milestone A decision in April 2012 and is in the Technology Maturation and Risk Reduction phase. The program received direction in February 2014 from the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) to execute a new acquisition strategy, accelerating the program to provide test units faster to facilitate military end users. Based on direction from USD(AT&L) in the April 2015 Deep Dive, the MGUE program is seeking a tailored Milestone B/C decision in 3QFY16.

The MGUE Increment 2 effort is planned to begin in FY17 and will continue to employ Military Code (M-Code) receiver technology into additional applications (space receiver, precision guided munitions, and handheld receiver) to meet service requirements. This effort leverages the MGUE Increment 1 technology to the maximum extent while addressing producibility of M-code integrated circuits far into the future.

 Joint Service System Management Office (JSSMO)

Global Positioning System (GPS) receivers enable precision navigation solutions for warfighters across the spectrum of land, sea and air domains. In 2006, Assistant Secretary of Defense for Networks and Information Integration (ASD (NII)) directed the Air Force to develop production ready M-Code components to meet Service needs. Public Law 111-383 913, effective 7 January 2011, prohibits procurement of GPS equipment unless it is M-Code capable after FY17. The completion of card-level compatibility and security certifications in 2016/2017 will enable integration of M-Code capability into military GPS Receivers.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)
3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	PE 0305164F / <i>NAVSTAR Global Positioning System (User Equipment) (SPACE)</i>

Additionally, in 2010, the Federal Aviation Administration (FAA) published new Automatic Dependent Surveillance Broadcast (ADS-B) rules effective January 1, 2020. The ADS-B rule requires platform operators to have ADS-B avionics installed and operating in order to fly Mode S IFF Transponder equipped aircraft into FAA and/or International Civil Aviation Organization (ICAO) Mode S enabled Air-to-Air and Air-to-Ground, Surveillance airspace. DoD aircraft are not exempt from the FAA mandate.

FY17 funding includes Embedded GPS/Inertial Navigation System (INS) (EGI), Minaturized Airborne GPS Receiver (MAGR), Defense Advanced GPS Receiver (DAGR), and Government Reference Architecture development. This acquisition will enable the United States Air Force (USAF) to satisfy the DoD and civil mandates described above.

Activities also include, but are not limited to, both current program planning and execution and future program planning.

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

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	156.221	142.288	219.043	0.000	219.043
Current President's Budget	152.144	141.861	278.147	0.000	278.147
Total Adjustments	-4.077	-0.427	59.104	0.000	59.104
• Congressional General Reductions	0.000	-0.427			
• 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	-4.077	0.000			
• Other Adjustments	0.000	0.000	59.104	0.000	59.104

Change Summary Explanation

FY17: \$22.192M was added to fund the Increment 1 program to the Air Force cost estimate.

FY17: \$36.912M was added to fund Receiver Development.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Title: MGUE Increment 1	107.279	52.095	67.970
Description: The MGUE Increment 1 program will develop standard modernized receiver form factors for the service-nominated lead platforms identified in the MGUE Inc 1 CDD.			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 0305164F / NAVSTAR Global Positioning System (User Equipment) (SPACE)		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Continued MGUE Increment 1 Technology Maturation and Risk Reduction phase. Developed initial software and hardware prototypes. Implemented advanced cryptography and electronic warfare defense for two form factors (aviation/maritime and ground). Participated in operational demonstrations, piloted initial manufacturing process, assessed component reliability, and began security certification efforts.</p> <p><i>FY 2016 Plans:</i> Complete Milestone B/C. Begin developmental test of hardware and software. Continue security certification efforts. Assist each lead platform office to integrate and test M-Code receivers in their respective platforms. Evaluate Application Specific Integrated Circuit(ASIC) producibility and initiate long term M-Code ASIC producibility efforts.</p> <p><i>FY 2017 Plans:</i> Complete developmental test. Complete environmental and electromagnetic interference testing. Continue security certification efforts. Assist each lead platform office to integrate and test M-Code receivers in their respective platforms.</p>				
<p><i>Title:</i> MGUE Increment 2</p> <p><i>Description:</i> The MGUE Increment 2 effort is planned to begin in FY17 and will continue to employ M-Code receiver technology into additional applications (space receiver, precision guided munitions, and handheld receiver) to meet Service requirements. This effort leverages the MGUE Increment 1 technology to the maximum extent while ensuring producibility of M-Code integrated circuits far into the future to support DoD PNT requirements.</p> <p><i>FY 2015 Accomplishments:</i> N/A</p> <p><i>FY 2016 Plans:</i> N/A</p> <p><i>FY 2017 Plans:</i> Transition M-Code capability into space receivers and precision guided munitions. Initiate an effort to produce a M-Code handheld. Begin activities to ensure producibility of M-Code ASICs. The MGUE Program Office serves as the GPS technical expertise center for non-lead platforms as the DoD implements the mandate for M-Code integration.</p>		0.000	0.000	24.870
<p><i>Title:</i> Advanced Technology</p> <p><i>Description:</i> Advanced Technology includes efforts to mature technology for future GPS receivers called out in the MGUE CDD. These efforts aim to find innovative solutions to increase resiliency in GPS performance and improve on size, weight, power, and cost of military receivers.</p>		8.694	4.800	7.600

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>		R-1 Program Element (Number/Name) PE 0305164F / NAVSTAR Global Positioning System (User Equipment) (SPACE)		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>FY 2015 Accomplishments: Researched new technologies to augment military GPS capabilities and explored alternate sources of position, navigation, and timing for the warfighter. Invested in key technologies for advanced receivers to include modernized GPS simulators and clocks, advanced antennas, programmable receivers and software based receivers.</p> <p>FY 2016 Plans: Continue researching new technologies to augment military GPS and explore alternate sources of position, navigation, and timing for the warfighter. Continue investing in key technologies for advanced receivers to include modernized GPS simulators and clocks, advanced antennas, programmable receivers and software based receivers as part of targeted risk reduction efforts.</p> <p>FY 2017 Plans: Stand up the new M-Code Cryptographic Initialization Capability. The new program prepares for an improved key handling and tracking system for future M-Code GPS equipment. Research new technologies to augment military GPS and also explore alternate sources of position, navigation, and timing for the warfighter.</p>				
<p>Title: System/Platform Integration and Performance Certification</p> <p>Description: Technical and operational modernization impact analysis for MGUE Service lead platform integration. Development of DoD Policy, Strategy & Resource Requirements for MGUE Compatibility Certification. Compatibility Certification ensures future military GPS receivers continue working in all environments and concepts of operations called for by US Strategic Command.</p> <p>FY 2015 Accomplishments: Began prototype integration and testing of the aviation form factor into a GPS receiver box for the B-2. Successfully flew first prototype M-Code receiver and tracked M-code in C-12J aircraft during live sky testing at Nellis Air Force Base. Completed size and interface checks with Army and Air Force ground platform receivers. Assisted in integration of current GPS receivers for joint service platforms. Updated GPS Enterprise Interface Control Documents to include the new capabilities provided by the modernized GPS architecture.</p> <p>FY 2016 Plans: Continue lead platform integration efforts. Complete B-2 lab testing in preparation for B-2 Operational Testing. Begin GPS-based Positioning, Navigation, and Timing Service (GPNTS) integration and test activities supporting M-code migration into the Arleigh Burke Destroyer. Begin Army Defense Advanced Global Positioning System Receiver (DAGR) Distributed Device integration and test activities supporting M-code migration into the Stryker. Begin Marine Joint Light Tactical Vehicle host equipment integration and test. Continue developmental and characterization testing. Continue updating GPS Enterprise Interface Control Documents for new M-Code receivers.</p> <p>FY 2017 Plans:</p>		20.839	72.946	125.047

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)		R-1 Program Element (Number/Name) PE 0305164F I NAVSTAR Global Positioning System (User Equipment) (SPACE)		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Continue lead platform integration efforts in support of operational test events. Complete the first security and compatibility certification of MGUE ground form factors. Assist DoD integration of M-Code GPS receivers for joint service non-lead platforms to comply with FY17 M-Code mandate.				
<p>Title: Information Assurance and Test/Evaluation</p> <p>Description: Develop, implement and maintain GPS Security Certification programs.</p> <p>FY 2015 Accomplishments: Processed Modernized Security Evaluations/Tests for Selective Availability Anti-spoofing Module (SAASM) and other legacy GPS receiver equipment. Reviewed, approved, and tracked SAASM/legacy receiver certified platforms and integrated applications for all of the Department of Defense. This includes security approval for other than lead platforms, such as munitions, ground monitoring stations, and handhelds. Enforced policy and other requirements related to receiver compatibility accreditation with the GPS signal in space.</p> <p>FY 2016 Plans: Continue Modernized Security Evaluations/Tests for SAASM and other legacy GPS receiver equipment. Review, approve, and track SAASM/legacy receiver certified platforms and integrated applications for all of OSD. Continue MGUE security planning activities to include security approval for other than lead platforms, such as munitions and potentially handhelds. Continue to enforce policy and other requirements related to receiver compatibility accreditation with the GPS signal in space. Complete verification and validation required for security certification for all contractor's MGUE design. Complete Security Certification for MGUE receivers.</p> <p>FY 2017 Plans: Support lead platform integration and test activities. Complete first M-Code certification process for MGUE receivers. Continue Modernized Security Evaluations/Tests for SAASM and other legacy GPS receiver equipment. Review, approve, and track SAASM/ legacy receiver certified platforms and integrated applications for all of OSD. Continue MGUE security planning activities to include security approval for non-lead platforms. Continue to enforce policy and other requirements related to receiver compatibility accreditation with the GPS signal in space.</p>		15.332	12.020	15.748
<p>Title: JSSMO Embedded GPS/INS - Modernized (EGI-M)</p> <p>Description: Incorporates M-Code and ADS-B capability into EGI receivers while addressing parts obsolescence</p> <p>FY 2017 Plans: Develop a common core EGI-M design, begin missionization for initial platform and initiate box level testing.</p>		-	-	20.936
Title: JSSMO MAGR 2K-M		-	-	8.574

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0305164F I NAVSTAR Global Positioning System (User Equipment) (SPACE)
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: Incorporates M-Code capability into MAGR 2K receivers while addressing parts obsolescence and providing a pathway to ADS-B Out implementation.</p> <p>FY 2017 Plans: Complete MAGR 2K-M design and begin box level testing.</p>			
<p>Title: JSSMO DAGR-M</p> <p>Description: Integrates M-Code capability into DAGR receivers, providing M-Code capability for ground personnel and vehicles.</p> <p>FY 2017 Plans: Initiate design activities to incorporate the M-Code capability into the DAGR receiver.</p>	-	-	3.728
<p>Title: JSSMO Government Reference Architecture (GRA)</p> <p>Description: Establish a GRA embodying open systems architecture concepts enabling robust, resilient GPS receiver designs which support future modifications at an accelerated pace and at lower cost than the current contractor proprietary architecture.</p> <p>FY 2017 Plans: Continue selection and/or development of hardware standards and software navigation communication protocols, such as Universal Navigational Interface (UNI). Begin development of ground demonstrator for the GRA architecture.</p>	-	-	2.928
<p>Title: JSSMO Strategic Planning</p> <p>Description: Conduct strategic planning for GPS receiver modernization.</p> <p>FY 2017 Plans: Conduct strategic planning for GPS receiver, antenna and architecture development in support of M-Code incorporation and to accommodate mitigation of emerging navigation warfare threats; also travel and other PMA.</p>	-	-	0.746
Accomplishments/Planned Programs Subtotals	152.144	141.861	278.147

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPAF: BA 03: 836730: Navstar GPS Space	2.065	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.065

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0305164F / NAVSTAR Global Positioning System (User Equipment) (SPACE)
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D. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2017</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u>	<u>Total Cost</u>
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	
• SPAF: BA 01: GPSSPC: <i>Navstar GPS Space</i>	0.000	2.029	2.169	0.000	2.169	2.193	2.199	2.238	2.278	0.000	13.106

Remarks

E. Acquisition Strategy

The MGUE program has developed a comprehensive acquisition strategy to provide modernized GPS capabilities to US and Allied forces by developing a commercial market driven approach. This strategy establishes the signal compatibility and security criteria along with a process for evaluating components to enable rapid movement from development to fielding. The pillars of this effort are: (a) establishing time certain and low risk development; (b) bounding requirements to leverage mature technology to the maximum extent possible; (c) focusing on the development of form factors based on well-defined standards to support lead platform integration; and (d) implementing a proactive, collaborative MGUE platform integration activity to mitigate risk and reduce cost for DoD force structure modernization.

The MGUE program awarded three sole source contracts for the Increment 1 Technology Development Phase effort in September 2012, as follow-on efforts to the competitively awarded Modernized User Equipment (MUE) contracts awarded in June 2006. The effort spans the Technology Maturation and Risk Reduction Phase through design and includes integration and test of M-code receivers into Service-nominated lead platforms. This effort also includes the security and compatibility certification of GPS receiver cards as a part of the Integration effort. The Service lead platforms will select from the available vendors to integrate and perform operational testing with funding from the MGUE program. This supports compliance with Public Law 111-383, section 913.

MGUE Increment 2 is in the Materiel Solutions Analysis phase. The MGUE program is developing an acquisition strategy to expand upon the commercial, market driven approach utilized in Increment 1 while leveraging the core M-code technology developed in Increment 1. MGUE Increment 2 migrates M-code receiver solutions into additional platforms, including a space receiver, precision guided munitions receiver, and a handheld device. MGUE Increment 2 addresses long-term producibility of M-code integrated circuits far into the future.

JSSMO

Modifications to existing receivers designs will occur via Engineering Change Proposals (ECPs)/Task Orders on existing USAF contracts. There is associated procurement funding by aircraft platforms tied to this development activity.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0305164F / NAVSTAR Global Positioning System (User Equipment) (SPACE)	Project (Number/Name) 643833 / MILITARY GLOBAL POSITIONING SYSTEM USER EQUIP
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MGUE Increment 1 Technology Development (Rockwell)	C/CPIF	Rockwell Collins : Cedar Rapids, IA	40.147	32.446	Nov 2014	7.720	Jan 2016	19.013	Jan 2017	0.000		19.013	0.000	99.326	-
MGUE Increment 1 Technology Development (Raytheon)	C/CPIF	Raytheon : El Segundo, CA	36.657	34.800	Nov 2014	16.000	Jan 2016	13.056	Jan 2017	0.000		13.056	0.000	100.513	-
MGUE Increment 1 Technology Development (L3)	C/CPIF	L3 : Anaheim, CA	37.451	9.396	Nov 2014	6.320	Jan 2016	7.266	Jan 2017	0.000		7.266	0.000	60.433	-
MGUE Increment 1 Pre-Tech Development	C/CPAF	Various : Various	7.788	8.694	Jan 2015	4.800	Jan 2016	7.600	Jan 2017	0.000		7.600	19.000	47.882	-
MGUE Increment 1 MGUE Demonstrations	C/CPFF	TBD : TBD	15.000	9.000	Jan 2015	0.000		0.000		0.000		0.000	8.500	32.500	-
MGUE Increment 1 Platform Integration	C/CPAF	Various : Various	4.653	11.860	Jan 2015	63.141	Jan 2016	101.288	Jan 2017	0.000		101.288	203.386	384.328	-
MGUE Increment 1 Compatibility Certification	C/CPAF	Various : Various	3.048	3.500	Jan 2015	4.500	Jan 2016	2.900	Jan 2017	0.000		2.900	13.200	27.148	-
MGUE Increment 1 Information Assurance	C/CPAF	Various : Various	5.130	4.950	Jan 2015	3.000	Jan 2016	6.847	Jan 2017	0.000		6.847	14.795	34.722	-
MGUE Increment 1 Security Certification	C/CPAF	Various : Various	10.805	5.786	Jan 2015	4.900	Jan 2016	4.900	Jan 2017	0.000		4.900	21.600	47.991	-
MGUE Increment 1 Reliability Testing	C/CPFF	Various : Various	0.000	0.000		0.000		14.800	Jan 2017	0.000		14.800	0.000	14.800	0.000
MGUE Increment 2	C/CPAF	Various : Various	0.000	0.000		0.000		24.870	Jan 2017	0.000		24.870	588.130	613.000	-
MGUE Technical Mission Analysis	MIPR	Various : El Segundo, CA	0.000	2.733	Oct 2015	9.767	Oct 2016	10.109	Oct 2017	0.000		10.109	44.251	66.860	-
MGUE Increment 1 Enterprise SE&I	C/CPAF	TASC : El Segundo, CA	8.903	5.479	Nov 2014	5.305	Nov 2015	6.059	Nov 2015	0.000		6.059	21.402	47.148	-
JSSMO EGI-M 1	SS/CPFF	Honeywell : Clearwater, FL	0.000	0.000		0.000		7.586	Dec 2016	0.000		7.586	2.830	10.416	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0305164F / NAVSTAR Global Positioning System (User Equipment) (SPACE)	Project (Number/Name) 643833 / MILITARY GLOBAL POSITIONING SYSTEM USER EQUIP
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JSSMO EGI-M 2	SS/CPFF	Northrop Grumman : Woodland Hills, CA	0.000	0.000		0.000		13.350	Dec 2016	0.000		13.350	2.750	16.100	-
JSSMO MAGR 2K-M	SS/CPFF	Raytheon : El Segundo, CA	0.000	0.000		0.000		8.574	Dec 2016	0.000		8.574	5.430	14.004	-
JSSMO DAGR	SS/CPFF	Rockwell Collins : Des Moines, IA	0.000	0.000		0.000		3.728	Dec 2016	0.000		3.728	2.110	5.838	-
JSSMO GRA	TBD	Not specified. : TBD	0.000	0.000		0.000		2.928	Dec 2016	0.000		2.928	1.801	4.729	-
JSSMO Strat Planning	TBD	Not specified. : TBD	0.000	0.000		0.000		0.746	Apr 2017	0.000		0.746	0.153	0.899	-
Subtotal			169.582	128.644		125.453		255.620		0.000		255.620	949.338	1,628.637	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MGUE Increment 1 Test and Evaluation (1)	C/CPAF	SPAWAR : San Diego, CA	1.472	2.346	Jan 2015	2.200	Jan 2016	2.600	Jan 2017	0.000		2.600	8.677	17.295	-
MGUE Increment 1 Test and Evaluation (2)	Various	Various : Various	2.836	2.250	Jan 2015	1.920	Jan 2016	1.401	Jan 2017	0.000		1.401	16.913	25.320	-
Subtotal			4.308	4.596		4.120		4.001		0.000		4.001	25.590	42.615	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force											Date: February 2016				
Appropriation/Budget Activity 3600 / 4				R-1 Program Element (Number/Name) PE 0305164F / NAVSTAR Global Positioning System (User Equipment) (SPACE)				Project (Number/Name) 643833 / MILITARY GLOBAL POSITIONING SYSTEM USER EQUIP							

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MGUE Increment 1 FFRDC	Various	Aerospace : El Segundo, CA	14.705	8.538	Dec 2014	2.776	Dec 2015	3.318	Oct 2016	0.000		3.318	12.994	42.331	-
MGUE Increment 1 FFRDC 2	Various	MITRE : El Segundo, CA	5.450	1.622	Dec 2014	0.383	Dec 2015	0.396	Dec 2016	0.000		0.396	1.467	9.318	-
MGUE Increment 1 A&AS	Various	Various : Various	8.555	8.465	Dec 2014	8.889	Dec 2015	14.592	Dec 2016	0.000		14.592	27.021	67.522	-
MGUE Increment 1 Other Support	Various	Various : Various	0.000	0.279	Dec 2014	0.240	Dec 2015	0.220	Dec 2016	0.000		0.220	0.944	1.683	-
Subtotal			28.710	18.904		12.288		18.526		0.000		18.526	42.426	120.854	-
Project Cost Totals			202.600	152.144		141.861		278.147		0.000		278.147	1,017.354	1,792.106	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0305164F / NAVSTAR Global Positioning System (User Equipment) (SPACE)	Project (Number/Name) 643833 / MILITARY GLOBAL POSITIONING SYSTEM USER EQUIP

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
MGUE Increment 1 Security Risk Reduction	■																											
MGUE Increment 1 Developmental Test	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
MGUE Increment 1 Security Certification																												
MGUE Increment 1 Milestone B/C							■																					
MGUE Increment 1 Compatibility Certification							■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
JSSMO MAGR 2K-M																												
JSSMO GRA																												
JSSMO EGI-M																												
JSSMO DAGR-M																												
JSSMO Strategic Planning																												
MGUE Increment 2 Applications of M-Code receivers																												
MGUE Increment 1 First Lead Platforms Operational Test																												
MGUE Increment 1 All Lead Platforms Operational Test																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0305164F / NAVSTAR Global Positioning System (User Equipment) (SPACE)	Project (Number/Name) 643833 / MILITARY GLOBAL POSITIONING SYSTEM USER EQUIP

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
MGUE Increment 1 Security Risk Reduction	1	2015	1	2015
MGUE Increment 1 Developmental Test	1	2015	4	2017
MGUE Increment 1 Security Certification	4	2015	4	2017
MGUE Increment 1 Milestone B/C	3	2016	3	2016
MGUE Increment 1 Compatibility Certification	3	2016	4	2016
JSSMO MAGR 2K-M	1	2017	4	2018
JSSMO GRA	1	2017	2	2019
JSSMO EGI-M	1	2017	4	2019
JSSMO DAGR-M	1	2017	4	2019
JSSMO Strategic Planning	3	2017	4	2021
MGUE Increment 2 Applications of M-Code receivers	1	2017	4	2020
MGUE Increment 1 First Lead Platforms Operational Test	1	2018	1	2018
MGUE Increment 1 All Lead Platforms Operational Test	1	2018	4	2019

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	42.338	0.000	42.338	41.390	42.179	43.010	43.861	Continuing	Continuing
641334: <i>Common Data Link (CDL)</i>	-	0.000	0.000	42.338	0.000	42.338	41.390	42.179	43.010	43.861	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
In FY 2017, Project 4819, Common Data Link (CDL), efforts were transferred from PE 0305236F, Common Data Link Executive Agent (CDL EA), to PE 0305236F, Project 1334, Common Data Link (CDL), in order to transition from Budget Activity 7, Operational Systems Development, and align to Budget Activity 4, Advanced Component Development and Prototypes (ACD&P). The ACD&P phase includes system specific efforts that help expedite technology transition from the laboratory to operational use.

A. Mission Description and Budget Item Justification
Common Data Link Executive Agent (CDL EA) provides the DoD standard for interoperable, multi-service, multi-agency, Intelligence, Surveillance, and Reconnaissance (ISR) datalinks for 10,000+ DoD manned/unmanned airborne and ground platforms. As the DoD CDL EA, the Air Force is responsible for cross-service application of CDL RDT&E Military Intelligence Program (MIP) funds facilitating compliance to Congressional and DoD mandates. The CDL EA develops, modifies, distributes, and maintains specifications for the CDL waveform family; ensuring design configuration control, commonality, and interoperability among ISR platforms. Additionally, funds support managing resources allocated for development, maturation, and migration of CDL technologies.

CDL EA enables compliance with OSD and Congressional mandates to effectively utilize spectrum, use approved cryptographic equipment, and provide direct support to current operations. CDL is a vital link in DoD's existing and emerging communication architectures, providing flexibility to accommodate Command and Control (C2) data and myriad types of Signals Intelligence (SIGINT), Geospatial Intelligence (GEOINT), and Full-Motion Video (FMV) data. The CDL specifications permit current and future ISR asset operations worldwide by providing sensor data directly via point-to-point broadcast to ground sites, airborne platforms and dismounted users. Also, CDL provides the capability to relay data via air-to-air or compatible satellite links when the asset and ground site are not in line-of-sight.

CDL EA's research and development activities support a broad swath of tactical, operational, and strategic ISR users and include achieving higher data rates, multi-access and multi-node network management, crypto modernization, advancements needed to operate in contested environments, terminal and antenna design enhancements, operations in other spectral bands, and improving spectrum efficiency. Further, CDL development improves large area surveillance missions while supporting continuous improvements and implementation of line-of-sight platform and CDL terminal Command and Control (C2), plus increased ISR (C2ISR) capabilities. Activities also include studies and analysis to support current and future requirements documentation, program planning and execution. CDL prototype terminal designs provide for future technology insertion and reduce non-recurring engineering and life-cycle costs to the user.

In addition, the Cryptographic Modernization thrust enables CDL to develop a miniaturized gigabit rate Communications Security (COMSEC) device capable of managing CDL data. The miniaturized COMSEC device will allow faster throughput while reducing Size, Weight, and Power (SWaP) requirements.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0305236F I Common Data Link Executive Agent (CDL EA)
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This program is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P) because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	42.338	0.000	42.338
Total Adjustments	0.000	0.000	42.338	0.000	42.338
• 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	42.338	0.000	42.338

Change Summary Explanation

FY 2017: Other Adjustments row details Project 1334, Common Data Link Executive Agent, transition from Budget Activity 7 (BA-7) to BA-4.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Common Data Link (CDL) Technology Advancement	0.000	0.000	9.670	0.000	9.670
Description: CDL evolutionary concept development, exploratory prototyping, advanced technology demonstrations, and studies of emerging technologies and capability gaps.					
FY 2015 Accomplishments: In FY15 activities were reported in Budget Activity 7, PE 0305236F, Project 674819, CDL					
FY 2016 Plans: In FY16 activities were reported in Budget Activity 7, PE 0305236F, Project 674819, CDL					
FY 2017 Base Plans: - Will continue to research and evaluate technology developments for enhancing networking, as well as more effective ground and lightweight airborne terminal components - Will continue to develop multispectral operations flexibility, increased spectrum efficiency and integration of improved transmission components					

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
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<ul style="list-style-type: none"> - Will continue development of enhanced, CDL-based ISR communication capabilities across multiple platforms and echelons - Will continue exploratory prototyping efforts and advanced technology demonstrations in support of emerging communication backbone architecture development across air, space and terrestrial layers; to include: agile high capacity data transport, assured communications and multi-mode access networks - Will continue to research and develop upgrades to support current and future specification employment profiles <p>FY 2017 OCO Plans: N/A</p>					
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Title: Common Data Link (CDL) Specification Development, Validation, Test and Maintenance	0.000	0.000	25.672	0.000	25.672
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Description: Systems engineering lifecycle for CDL and NATO STANAG 7085 specification development: requirement decomposition, specification development (modeling, maturation, documentation), specification validation (and associated component prototyping), testing, configuration management, and process maintenance.

FY 2015 Accomplishments:
In FY15 activities were reported in Budget Activity 7, PE 0305236F, Project 674819, CDL

FY 2016 Plans:
In FY16 activities were reported in Budget Activity 7, PE 0305236F, Project 674819, CDL

FY 2017 Base Plans:

- Will continue development and testing of Higher Data Rates to existing and emerging terminals, while also prototyping terminal development that combines Size, Weight and Power (SWaP) improvements with higher data rate capability and integration of improved transmission components
- Will continue adding capabilities required to support the Joint Aerial Layer Network (JALN) High Capacity Backbone (HCB), Anti-Access Area-Denial (A2AD) requirements, and other emerging operational capabilities
- Will continue development of spectrally efficient CDL waveform specification
- Will continue to work with CDL industry partners and DoD Services to document, validate and implement common terminal control interfaces through use of commercially recognized standards
- Will maintain configuration control of the CDL architecture, standards, specifications and modules

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)	R-1 Program Element (Number/Name) PE 0305236F I Common Data Link Executive Agent (CDL EA)
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Will continue development of CDL test equipment capable of compliance testing to the latest, validated version of CDL specifications FY 2017 OCO Plans: N/A					
Title: Common Data Link (CDL) Cryptographic Modernization (previously listed as Gigabit Encryption) Description: Phased development effort to modernize CDL Communications Security (COMSEC) devices and standards to maximize performance and reduce SWaP requirements while supporting commonality, modularity, portability, remote management, multi-level security and releasability. FY 2015 Accomplishments: In FY15 activities were reported in Budget Activity 7, PE 0305236F, Project 674819, CDL FY 2016 Plans: In FY16 activities were reported in Budget Activity 7, PE 0305236F, Project 674819, CDL FY 2017 Base Plans: - Will continue development of generation two miniaturized (nano and mini) FVEY and NATO releasable cryptographic cores - Will continue development of FVEY multi-channel, gigabit data rate (mega) cryptographic cores - Will begin design and prototype for generation three multi-level security (MLS)-capable crypto cores FY 2017 OCO Plans: N/A	0.000	0.000	6.996	0.000	6.996
Accomplishments/Planned Programs Subtotals	0.000	0.000	42.338	0.000	42.338

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

Remarks

E. Acquisition Strategy
 The Air Force serves as the DoD Common Data Link Executive Agent, with support from each Service's designated CDL lead and the Airborne Network Division (AFLCMC/HNA). The CDL EA develops interoperable ISR data links mandated for use by Assistant Secretary of Defense (Networks and Information Integration) (ASD(NII)) policy. Once CDL technology development matures and a specification is published, platforms are responsible for CDL compliant terminal procurement;

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)
3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i>

National Security Agency (NSA) and Joint Interoperability Test Command (JITC) compliance certifications; integration; and installation. Acquisition strategy varies by contract. When possible, contracts are awarded under full and open competition.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i>	Project (Number/Name) 641334 / <i>Common Data Link (CDL)</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Air Force Information Assurance Modernization / Network Management	MIPR	NSA : Ft Meade, MD	-	0.000		0.000		6.996	Nov 2016	0.000		6.996	Continuing	Continuing	TBD
Marine CDL for Tactical UAS	Various	Various : Various	-	0.000		0.000		5.000	Mar 2017	0.000		5.000	Continuing	Continuing	TBD
Terminal Database	C/CPFF	Booze Allen : McClean, VA	-	0.000		0.000		1.000	Nov 2016	0.000		1.000	Continuing	Continuing	TBD
Compliance Test Tool	C/Various	Various : Various	-	0.000		0.000		5.000	Dec 2016	0.000		5.000	Continuing	Continuing	TBD
Under Threshold Combined	Various	Various : Various	-	0.000		0.000		3.042	Dec 2016	0.000		3.042	Continuing	Continuing	TBD
Subtotal			-	0.000		0.000		21.038		0.000		21.038	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Special studies, analysis, and engineering services	SS/CPFF	Johns Hopkins University/Applied Physics Lab : Laurel, MD	-	0.000		0.000		0.450	Jan 2017	0.000		0.450	Continuing	Continuing	TBD
Service Tech Support & Spec Development	MIPR	Various : Various	-	0.000		0.000		8.140	Jan 2017	0.000		8.140	Continuing	Continuing	TBD
Subtotal			-	0.000		0.000		8.590		0.000		8.590	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Joint Interoperability Test Center (JITC)	MIPR	JITC : Ft Huachuca, AZ	-	0.000		0.000		1.250	Jan 2017	0.000		1.250	Continuing	Continuing	TBD
46 Test Squadron	PO	46 TS/OGEX : Eglin AFB, FL	-	0.000		0.000		0.290	Feb 2017	0.000		0.290	Continuing	Continuing	TBD

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i>	Project (Number/Name) 641334 / <i>Common Data Link (CDL)</i>
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	0.000		0.000		1.540		0.000		1.540	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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-MITRE Engineering Support (FFRDC)	SS/T&M	MITRE Corp : Bedford, MA	-	0.000		0.000		0.790	Oct 2016	0.000		0.790	Continuing	Continuing	TBD
PMO/Service- MITRE Engineering Direct Mission Support (FFRDC)	SS/T&M	MITRE Corp. : Bedford, MA	-	0.000		0.000		6.070	Oct 2016	0.000		6.070	Continuing	Continuing	TBD
PMA - PASS Financial and PM Support (A&AS)	C/CPFF	PE Systems : Littleton, MA	-	0.000		0.000		1.200	Jul 2017	0.000		1.200	Continuing	Continuing	TBD
PMA - Under Threshold Program Mgmt/Tech Support	Various	Various : Various	-	0.000		0.000		3.110	Dec 2016	0.000		3.110	Continuing	Continuing	TBD
Subtotal			-	0.000		0.000		11.170		0.000		11.170	-	-	-

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	0.000	0.000	42.338	0.000	42.338	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i>	Project (Number/Name) 641334 / <i>Common Data Link (CDL)</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
CDL Technology Advancement	[REDACTED]																											
- Spectrum efficient/Frequency agile CDL	[REDACTED]																											
- Capability Gap Analysis / Roadmap Update	[REDACTED]																											
- Multi-access / Mesh Network Advancements	[REDACTED]																											
CDL Specification Development, Validation, Test and Maintenance	[REDACTED]																											
- SUAS SWAP Constrained Rev B Terminals	[REDACTED]																											
- CDL Compliance Test Set	[REDACTED]																											
CDL Cryptographic Modernization	[REDACTED]																											
- Multi-algorithm US/Coalition crypto core modules (Generation 2)	[REDACTED]																											
- Multi-sensor aware/Shared state crypto core modules (Generation 3)	[REDACTED]																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0305236F / <i>Common Data Link Executive Agent (CDL EA)</i>	Project (Number/Name) 641334 / <i>Common Data Link (CDL)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CDL Technology Advancement	1	2017	4	2021
- Spectrum efficient/Frequency agile CDL	1	2017	4	2018
- Capability Gap Analysis / Roadmap Update	1	2017	4	2017
- Multi-access / Mesh Network Advancements	1	2017	4	2019
CDL Specification Development, Validation, Test and Maintenance	1	2017	4	2021
- SUAS SWAP Constrained Rev B Terminals	1	2017	4	2017
- CDL Compliance Test Set	1	2017	4	2018
CDL Cryptographic Modernization	1	2017	2	2019
- Multi-algorithm US/Coalition crypto core modules (Generation 2)	1	2017	2	2018
- Multi-sensor aware/Shared state crypto core modules (Generation 3)	2	2017	2	2019

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity					R-1 Program Element (Number/Name)							
3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>					PE 0306250F / <i>Cyber Operations Technology Development</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.000	81.732	158.002	0.000	158.002	223.636	195.752	198.439	211.977	Continuing	Continuing
646008: <i>US Cyber Command Technology Development</i>	-	0.000	81.732	158.002	0.000	158.002	223.636	195.752	198.439	211.977	Continuing	Continuing

A. Mission Description and Budget Item Justification

US Cyber Command (USCYBERCOM) plans, coordinates, integrates, synchronizes, and conducts activities to: direct the operations and defense of specified Department of Defense information networks, and prepare to, and when directed, conduct full-spectrum military cyberspace operations in order to enable actions in all domains, ensure US/Allied freedom of action in cyberspace and deny the same to our adversaries. Emphasis is on providing component and subsystem maturity prior to integration in major and complex systems and may involve risk reduction initiatives.

USCYBERCOM, in conjunction with the Services and National Agencies, will develop and expand infrastructure architectures to support Cyber Mission Forces.

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

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.000	81.732	94.643	0.000	94.643
Current President's Budget	0.000	81.732	158.002	0.000	158.002
Total Adjustments	0.000	0.000	63.359	0.000	63.359
• 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	63.359	0.000	63.359

Change Summary Explanation

In FY17, funding increased due to growing DOD requirements and priority.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0306250F / <i>Cyber Operations Technology Development</i>				Project (Number/Name) 646008 / <i>US Cyber Command Technology Development</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
646008: <i>US Cyber Command Technology Development</i>	-	0.000	81.732	158.002	0.000	158.002	223.636	195.752	198.439	211.977	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

US Cyber Command (USCYBERCOM) plans, coordinates, integrates, synchronizes, and conducts activities to: direct the operations and defense of specified Department of Defense information networks, and prepare to, and when directed, conduct full-spectrum military cyberspace operations in order to enable actions in all domains, ensure US/Allied freedom of action in cyberspace and deny the same to our adversaries. Emphasis is on providing component and subsystem maturity prior to integration in major and complex systems and may involve risk reduction initiatives.

USCYBERCOM in conjunction with the Services and National Agencies will develop and expand infrastructure architectures to support Cyber Mission Forces:

Defend the Nation - Develop the tools and capabilities, as well as tactics, techniques and procedures (TTPs) to Defend the Nation from hostile cyber activity. Developing a diverse cyber portfolio is essential for USCYBERCOM to conduct operations to include reconnaissance, surveillance, and target acquisition (RSTA); block; and counter TTPs against imminent or hostile cyber activity in support of the Defend the Nation mission from adversary cyberspace operations. When directed, support the cybersecurity mission of non-DOD entities.

Combatant Command Support - Develop the tools and capabilities necessary to support Geographic or Functional Combatant Command (CCMD) contingency and crisis action plans. Focus is on developing target accesses and capabilities necessary to achieve CCMD objectives during OPLAN execution and expediting technology transition from the laboratory to operational use. This essential development work is focused exclusively on CCMD priorities and will ensure achievement of CCMD military objectives.

Operate and Defend the DODIN - CYBERCOM conducts global cyberspace operations to deter, disrupt, and defeat adversary cyberspace operations in order to defend U.S. Critical Infrastructure and Key Resources.

CYBER Situational Awareness - To develop a Common Operating Picture for cyber situational awareness for the Services and CCMDs. This capability will enable commanders to understand their network topology, identify cyber terrain, determine mission impact and increase commander information flow while enabling decisions and action within operationally relevant timelines.

Unified Platform - Development of the Unified Platform will enable the Cyber Mission Forces to conduct full spectrum cyberspace operations in support of national requirements.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0306250F / <i>Cyber Operations Technology Development</i>	Project (Number/Name) 646008 / <i>US Cyber Command Technology Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: Defend the Nation Mission</p> <p>Description: Funding supports the prototype development of a diverse cyber capability portfolio to enable efforts in order to defeat a wide variety of cyber attacks. Efforts include research, integration, analysis, access development, training, testing, and assessments for defensive cyber capabilities.</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Support cyber operations prototype tools development, engineering, data strategy, and development of a common operating picture that enables USCYBERCOM to conduct operations in defense of specified Department of Defense information networks - Support prototype tool development for Joint Cyber Centers with an event detection capability and engineering support to ensure smooth integration and development - Support efforts to solve operational limitations, vulnerabilities and requirements - Some aspects of the effort are classified and will be provided on a need to know basis. For further information please contact USCYBERCOM, 443-654-4765. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> - Will continue to support studies, analysis, testing and development of cyber operations capabilities and tools in support of Combatant Command military objectives - Will support advanced reverse engineering efforts, development of Electronic Warfare and cyberspace targeting efforts - Will develop Cyber capabilities and prototype tools in support of operational requirements - Some aspects of the effort are classified and will be provided on a need to know basis. For further information please contact USCYBERCOM, 443-654-4765. <p>FY 2017 OCO Plans:</p>	0.000	35.218	71.359	0.000	71.359

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force				Date: February 2016	
Appropriation/Budget Activity 3600 / 4		R-1 Program Element (Number/Name) PE 0306250F / <i>Cyber Operations Technology Development</i>		Project (Number/Name) 646008 / <i>US Cyber Command Technology Development</i>	
B. Accomplishments/Planned Programs (\$ in Millions)					
N/A					
Title: Combatant Command Support					
Description: Supports development and testing of various tools critical to achieving Combatant Command military objectives. Including research, studies, integration, analysis, access development and operational assessment of cyberspace capabilities, methodologies and tactics in support of Combatant Command objectives. Further details are held at higher classification levels.					
FY 2015 Accomplishments: N/A					
FY 2016 Plans:					
- Support studies, analysis, testing and prototype development of cyber operations capabilities and tools in support of Combatant Command military objectives					
- Support advanced reverse engineering efforts, development of Electronic Warfare and cyberspace targeting efforts, a framework to underpin analytic and targeting efforts and seed funding for cyber capabilities and tools in support of cyber operations requirements					
- Some aspects of the effort are classified and will be provided on a need to know basis. For further information please contact USCYBERCOM, 443-654-4765.					
FY 2017 Base Plans:					
- Will continue to support studies, analysis, testing and development of cyber operations capabilities and tools in support of Combatant Command military objectives					
- Will support advanced reverse engineering efforts, development of Electronic Warfare and cyberspace targeting efforts					
- Will support analytic and targeting efforts for cyber capabilities and prototype tools in support of cyber operations requirements					
	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
	0.000	19.051	32.000	0.000	32.000

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0306250F / <i>Cyber Operations Technology Development</i>	Project (Number/Name) 646008 / <i>US Cyber Command Technology Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Some aspects of the effort are classified and will be provided on a need to know basis. For further information please contact USCYBERCOM, 443-654-4765. FY 2017 OCO Plans: N/A					
Title: Operate and Defend the DODIN and Cyber Situational Awareness and Unified Platform Description: Supports engineering and development of tools, data strategy, and management of a common operating picture support operations focused on cyber key terrain at the global and national level and for cyber situational awareness for the services and CCMDs to support operations focused on cyber key terrain at the global and national level. Further details are held at higher classification levels. FY 2015 Accomplishments: N/A FY 2016 Plans: - Support cyber operations prototype tools development, engineering, data strategy, and development of a common operating picture that enables USCYBERCOM to conduct operations in defense of specified Department of Defense information networks - Support prototype tool development for Joint Cyber Centers with an event detection capability and engineering support to ensure smooth integration and development - Support efforts to solve operational limitations, vulnerabilities, and requirements - Some aspects of the effort are classified and will be provided on a need to know basis. For further information please contact USCYBERCOM, 443-654-4765. FY 2017 Base Plans: - Will continue cyber operations tools development, engineering, data strategy, and development of a common operating picture that enables USCYBERCOM to conduct operations in defense of specified Department of Defense information network - Will support prototype tool development for Joint Cyber Centers at all Combatant Commands with an event detection capability and engineering support to ensure smooth integration and development	0.000	27.463	54.643	0.000	54.643

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0306250F / <i>Cyber Operations Technology Development</i>	Project (Number/Name) 646008 / <i>US Cyber Command Technology Development</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
- Will support efforts to solve operational limitations, vulnerabilities and requirements					
- Some aspects of the effort are classified and will be provided on a need to know basis. For further information please contact USCYBERCOM, 443-654-4765.					
<i>FY 2017 OCO Plans:</i> N/A					
Accomplishments/Planned Programs Subtotals	0.000	81.732	158.002	0.000	158.002

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

N/A

Remarks

D. Acquisition Strategy

Develop and expand infrastructure architectures to support Cyber Mission Forces through modernization/modification efforts with focus on minimizing life cycle costs. Contracts are awarded under full and open competition whenever possible. Variations of both Fixed Price (FP) and Cost Plus (CP) contracting vehicles will be used and managed by various Service Components' contracting offices, COCOM contracting offices, and the National Security Administration contracting offices.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0306250F / <i>Cyber Operations Technology Development</i>	Project (Number/Name) 646008 / <i>US Cyber Command Technology Development</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Combatant Command Support	Various	Various : Various	-	0.000		19.051	Nov 2015	32.000	Nov 2016	0.000		32.000	Continuing	Continuing	TBD
Defend the Nation	Various	Multiple Agencies : Various	-	0.000		35.218	Nov 2015	71.359	Nov 2016	0.000		71.359	Continuing	Continuing	TBD
Operate and Defend the DoDIN / Cyber Situational Awareness / Unified Platform	Various	Service Partners, Agencies : Various	-	0.000		27.463	Nov 2015	54.643	Nov 2016	0.000		54.643	Continuing	Continuing	TBD
Subtotal			-	0.000		81.732		158.002		0.000		158.002	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force								Date: February 2016			
Appropriation/Budget Activity 3600 / 4			R-1 Program Element (Number/Name) PE 0306250F / <i>Cyber Operations Technology Development</i>				Project (Number/Name) 646008 / <i>US Cyber Command Technology Development</i>				
	Prior Years	FY 2015	FY 2016		FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals	-	0.000	81.732		158.002	0.000	158.002	-	-	-	

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0306250F / <i>Cyber Operations Technology Development</i>	Project (Number/Name) 646008 / <i>US Cyber Command Technology Development</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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

Combatant Command Support																												
FY17 Annual Call for Proposals																												
FY18 Annual Call for Proposals																												
FY19 Annual Call for Proposals																												
FY20 Annual Call for Proposals																												
FY21 Annual Call for Proposals																												
Defend the Nation																												
GIG Ops and Defense / Cyber Situational Awareness / Unified Platform																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0306250F / <i>Cyber Operations Technology Development</i>	Project (Number/Name) 646008 / <i>US Cyber Command Technology Development</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Combatant Command Support	1	2017	4	2021
FY17 Annual Call for Proposals	1	2017	1	2017
FY18 Annual Call for Proposals	1	2018	1	2018
FY19 Annual Call for Proposals	1	2019	1	2019
FY20 Annual Call for Proposals	1	2020	1	2020
FY21 Annual Call for Proposals	1	2021	1	2021
Defend the Nation	1	2017	4	2021
GIG Ops and Defense / Cyber Situational Awareness / Unified Platform	1	2017	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0306415F / <i>Enabled Cyber Activities</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	15.842	0.000	15.842	16.639	16.441	16.749	17.042	Continuing	Continuing
646008: <i>US Cyber Command Technology Development</i>	-	0.000	0.000	15.842	0.000	15.842	16.639	16.441	16.749	17.042	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
This program, BA 04 PE 0306415F, project 646008, Cyber Technology, is a new start.

A. Mission Description and Budget Item Justification

Demonstrate, develop, and evaluate prototype cyber technologies.

BA4 - This program is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P) because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

B. Program Change Summary (\$ in Millions)	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	15.842	0.000	15.842
Total Adjustments	0.000	0.000	15.842	0.000	15.842
• 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	15.842	0.000	15.842

C. Accomplishments/Planned Programs (\$ in Millions)	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>
Title: Cyber Technology	0.000	0.000	15.842
Description: Demonstrate, develop, and evaluate prototype cyber technologies			
FY 2015 Accomplishments:			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0306415F / <i>Enabled Cyber Activities</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
N/A			
FY 2016 Plans: N/A			
FY 2017 Plans: Demonstrate, develop, and evaluate prototype cyber technologies			
Accomplishments/Planned Programs Subtotals	0.000	0.000	15.842

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

Remarks

E. Acquisition Strategy
N/A

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0306415F / Enabled Cyber Activities	Project (Number/Name) 646008 / US Cyber Command Technology Development
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Technology Projects	Various	Not specified. : TBD	-	0.000		0.000		15.842	Mar 2017	0.000		15.842	Continuing	Continuing	-
Subtotal			-	0.000		0.000		15.842		0.000		15.842	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000	0.000	15.842	0.000	15.842	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0306415F / <i>Enabled Cyber Activities</i>	Project (Number/Name) 646008 / <i>US Cyber Command Technology Development</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Develop technology projects																												
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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0306415F / <i>Enabled Cyber Activities</i>	Project (Number/Name) 646008 / <i>US Cyber Command Technology Development</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Develop technology projects	2	2017	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0901410F / <i>Contracting Information Technology System</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	5.782	0.000	5.782	9.072	8.320	4.985	0.713	Continuing	Continuing
643483: <i>CON-IT</i>	-	0.000	0.000	5.782	0.000	5.782	9.072	8.320	4.985	0.713	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

CON-IT initiated as a New Start in FY2015 within PE 0728060F, Acquisition and Management Support, Project 662906, Electronic Acquisition Service Environment (EASE). In FY2017 CON-IT transfers to PE 0901410F, Contracting Information Technology System, Project 643483, CON-IT, due to scope expansion beyond the EASE project and to enhance transparency, reporting, and execution activities.

A. Mission Description and Budget Item Justification

Contracting Information Technology System (CON-IT) provides a single contract writing system for the Air Force contracting community to support all contracting needs including base operations, logistics, contingency and weapons system contracting world-wide. CON-IT will enable strategic sourcing and other acquisition efficiencies by standardizing data, business rules, and milestone tracking. Furthermore, CON-IT will allow for a standardized and integrated method of anticipating, reacting, and responding to the current pace and changes in process, regulation, and technology across the contract domain. CON-IT will also address the immediate need of a Standard Procurement System (SPS) replacement as directed by Under Secretary of Defense (USD) for Acquisition, Technology and Logistics (AT&L) by 30 Sep 20 (OUSD/AT&L Memo, 25 Sep 14). SPS has an initial brownout date of 30 Sep 18 with a sunset date of 30 Sep 20. When fully implemented, CON-IT will enable process changes necessary to converge on a common contract writing/management capability within the Air Force.

CON-IT will address the current inefficiencies in the contracting domain, given there are multiple contract writing systems that continue to challenge the ability to operate responsively, consistently, and cost-effectively to award, administer, and close out mission critical contracts in a timely fashion. CON-IT will allow the contracting community to fully support compliance with financial auditability and Financial Improvement Audit Readiness (FIAR) goals that depend on the integrity of the data flow through the Procure to Pay (P2P) process.

CON-IT activities also include studies and analyses to support ongoing and future program planning and execution associated with risk reduction, infrastructure, and other program activities.

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0901410F / <i>Contracting Information Technology System</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	5.782	0.000	5.782
Total Adjustments	0.000	0.000	5.782	0.000	5.782
• 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	5.782	0.000	5.782

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Title: CON-IT</p> <p>Description: CON-IT provides a single, standardized, integrated, efficient contract writing system for the Air Force contracting community to support all contracting needs including base operations, logistics, contingency and weapons system contracting world-wide. CON-IT serves as a replacement for the Standard Procurement System (SPS) allowing consistent, cost-effective, and timely contract actions that will allow the Air Force to comply with financial auditability and Financial Improvement Audit Readiness (FIAR) goals that depend on the integrity of the data flow through the Procure to Pay (P2P) process.</p> <p>FY 2015 Accomplishments: FY2015 activities were initiated within PE 0728060F, Project 662906, and included:</p> <ul style="list-style-type: none"> - Analysis of alternative solutions - Cost, schedule, and performance trade analysis - Affordability and risk analysis, along with risk mitigation planning <p>FY 2016 Plans: FY2015 activities were continued within PE 0728060F, Project 662906, and included:</p> <ul style="list-style-type: none"> - Analysis of alternative solutions - Cost, schedule, and performance trade analysis - Affordability and risk analysis, along with risk mitigation planning <p>- Initiated Milestone Acquisition activities</p> <p>FY 2017 Plans:</p>	0.000	0.000	5.782

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 4: Advanced Component Development & Prototypes (ACD&P)</i>	R-1 Program Element (Number/Name) PE 0901410F / <i>Contracting Information Technology System</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Continue following activities: - Acquisition milestone planning, Request for Proposal (RFP) development, system technical requirements planning and implementation - Studies and analysis for cost, schedule, and performance - Affordability and risk analysis, along with risk mitigation planning technical readiness, and risk reduction assessment - Development and test planning, infrastructure services planning, development government furnished equipment (GFE) requirements Initiate Information Technology (IT) infrastructure services Complete Milestone B Complete RFP development and award Milestone B contract			
Accomplishments/Planned Programs Subtotals	0.000	0.000	5.782

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

E. Acquisition Strategy

CON-IT is planned to be developed using an incremental approach following the Services Development and Delivery Process (SDDP). A competitive, best-value contracting strategy for the developer will be used. Re-use of existing Government-Off-The-Shelf (GOTS) products from Defense Information Systems Agency (DISA) are being considered and is the preferred approach.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0901410F / Contracting Information Technology System	Project (Number/Name) 643483 / CON-IT
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prime Developer/Systems Integrator	C/CPPF	Not specified. : TBD	-	0.000		0.000		2.840	Jan 2017	0.000		2.840	Continuing	Continuing	-
Subtotal			-	0.000		0.000		2.840		0.000		2.840	-	-	-

Remarks
Development contract award to systems integrator

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Prototype, risk reduction, test and staging environment from DISA	MIPR	Various : Various	-	0.000		0.000		1.000	Oct 2016	0.000		1.000	Continuing	Continuing	-
Subtotal			-	0.000		0.000		1.000		0.000		1.000	-	-	-

Remarks
DISA: Defense Information Systems Agency

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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, Cost Estimating Support, Travel,	Various	AFLCMC : Wright-Patterson AFB, OH : WPAFB, OH	-	0.000		0.000		1.942	Dec 2016	0.000		1.942	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0901410F / <i>Contracting Information Technology System</i>	Project (Number/Name) 643483 / <i>CON-IT</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Supplies, Equipment, Program Office Network Support, Engineering Services, etc.															
Subtotal			-	0.000		0.000		1.942		0.000		1.942	-	-	-

Remarks
A&AS: Advisory & Assistance Services
Multiple contract awards for less than \$1M per award

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	0.000	0.000	5.782	0.000	5.782	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0901410F / <i>Contracting Information Technology System</i>	Project (Number/Name) 643483 / <i>CON-IT</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Requirements, Development, Test Planning																												
Milestone B (October)																												
Milestone B Contract Award (January)																												
Development, Production, and Operational Testing Activities																												
Milestone C (August)																												
Deployment Activities																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0901410F / <i>Contracting Information Technology System</i>	Project (Number/Name) 643483 / <i>CON-IT</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Requirements, Development, Test Planning	1	2017	4	2021
Milestone B (October)	1	2017	1	2017
Milestone B Contract Award (January)	2	2017	2	2017
Development, Production, and Operational Testing Activities	1	2018	4	2018
Milestone C (August)	4	2018	4	2018
Deployment Activities	1	2019	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604233F / <i>Specialized Undergraduate Flight Training</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	0.000	12.903	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	12.903
654102: <i>Joint Primary Aircraft Training System (JPATS)</i>	0.000	3.809	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.809
654376: <i>T-38 Avionics Upgrade Program (AUP)</i>	0.000	9.094	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.094

Program MDAP/MAIS Code: 560

A. Mission Description and Budget Item Justification

Supports Air Education and Training Command's (AETC) implementation of Specialized Undergraduate Pilot Training (SUPT) and the Department of Defense initiative for joint pilot training.

The Joint Primary Aircraft Training System (JPATS) is a joint USAF/USN venture to replace the Services' fleets of primary trainer aircraft (T-37 and T-34 respectively) and their associated Ground Based Training Systems (GBTS) with the T-6 and its GBTS. The Air Force is the Executive Service.

The T-38 Avionics Upgrade Program (AUP) is an integrated modernization of the T-38A and AT-38B cockpits to support mission ready fighter and bomber training.

B. Program Change Summary (\$ in Millions)

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	13.324	0.000	0.000	0.000	0.000
Current President's Budget	12.903	0.000	0.000	0.000	0.000
Total Adjustments	-0.421	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	-0.421	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 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604233F / <i>Specialized Undergraduate Flight Training</i>			Project (Number/Name) 654102 / <i>Joint Primary Aircraft Training System (JPATS)</i>				
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
654102: <i>Joint Primary Aircraft Training System (JPATS)</i>	0.000	3.809	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.809
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Joint Primary Aircraft Training System (JPATS) is a joint USAF/USN venture to replace the Services' fleets of primary trainer aircraft (T-37 and T-34, respectively) and associated Ground Based Training Systems (GBTS). Additionally the US Army purchased four T-6 Army Variant aircraft to replace the T-34 aircraft for the Army Test and Evaluation Command. The T-6 aircraft and GBTS are used to train entry-level student aviators in the fundamentals of flying so they can transition into advanced training tracks leading to qualification as military pilots, combat systems officers, and naval flight officers. The project develops aircraft, simulators, and other associated ground-based training devices, Training Integration Management System (TIMS), instructional courseware, and logistics support to include Diminishing Manufacturing Sources and Material Shortages (DMSMS) and development activities related to DMSMS.

Although in the same project number, the T25 Simulator for Electronic Combat Technology (SECT) is unrelated to the JPATS program. This project upgrades software and threat libraries for the T25 SECT. The T25 SECT primary training mission is to train undergraduate Combat Systems Officers (CSO) in all fundamental aspects of Electronic Combat (EC), including the operation and application of a wide variety of representative EC equipment in Threat Penetration, Electronic Counter Measures (ECM), Electronic Surveillance Measurement (ESM), and Suppression of Enemy Air Defenses (SEAD) or electronic attack (EA) type operations.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Joint Primary Aircraft Training System (JPATS) Studies	1.235	0.000	0.000	-	0.000
Description: JPATS studies & development efforts.					
FY 2015 Accomplishments: Continued JPATS studies and development activities including but not limited to initial phases of the 6 Engine Upgrade Studies, completion of Phase 1 of the Parachute Surveillance Study, Safe/Arm Handle development, and further engine component improvement program (CIP) studies (Including High Cycle Fatigue Research).					
FY 2016 Plans: N/A					
FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604233F / <i>Specialized Undergraduate Flight Training</i>	Project (Number/Name) 654102 / <i>Joint Primary Aircraft Training System (JPATS)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
Title: T25 SECT Description: Funding upgrades to the Simulator for Electronic Combat Technology (SECT) FY 2015 Accomplishments: Updated threat database definitions and threat library. FY 2016 Plans: N/A FY 2017 Base Plans: N/A	1.080	0.000	0.000	-	0.000
Title: GBTS ATD IOS Joystick & Throttle Description: Joystick/Throttle ECP Project includes developing, integrating, testing, and delivering for the T-6 Aircrew Training Device (ATD) a Joystick and Throttle capability at the Instructor Operating System (IOS). This IOS Modification is only applicable to ATDs with Visual Systems (OFTs & IFTs) and will initially only be deployed to the ATDs at NAS Pensacola (AETC CSO and USN UMFO). FY 2015 Accomplishments: Developed, integrated, tested, and delivered for the T-6 Aircrew Training Device (ATD) Joystick/Throttle at the Instructor Operating System (IOS). This IOS Modification is only applicable to ATDs with Visual Systems (OFTs & IFTs) and will initially only be deployed to the ATDs at NAS Pensacola (AETC CSO and USN UMFO). FY 2016 Plans: N/A FY 2017 Base Plans: N/A	0.635	0.000	0.000	-	0.000
Title: Engine Upgrade Study Description: Compilation of six individual studies to investigate engine life limiting issues and to evaluate and recommend potential upgrade options to increase service life and decrease life cycle costs for the T106-PW-100 engine.	0.636	0.000	0.000	-	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604233F / <i>Specialized Undergraduate Flight Training</i>	Project (Number/Name) 654102 / <i>Joint Primary Aircraft Training System (JPATS)</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p><i>FY 2015 Accomplishments:</i> Accomplished a compilation of six individual studies to investigate engine life limiting issues and to evaluate and recommend potential upgrade options to increase service life and decrease life cycle costs for the T106-PW-100 engine.</p> <p><i>FY 2016 Plans:</i> N/A</p> <p><i>FY 2017 Base Plans:</i> N/A</p>					
<p><i>Title:</i> High Cycle Fatigue Research</p> <p><i>Description:</i> Support to provide High Cycle Fatigue (HCF) and Structural Health Monitoring (SHM) research and development analysis of the T106-PW-100 gas turbine engine</p> <p><i>FY 2015 Accomplishments:</i> Completed High Cycle Fatigue (HCF) and Structural Health Monitoring (SHM) research and development analysis of the T106-PW-100 gas turbine engine</p> <p><i>FY 2016 Plans:</i> N/A</p> <p><i>FY 2017 Base Plans:</i> N/A</p>	0.223	0.000	0.000	-	0.000
Accomplishments/Planned Programs Subtotals	3.809	0.000	0.000	-	0.000

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• APAF: BA06: Line Item #	4.248	0.875	0.000	0.000	0.000	4.449	2.631	2.679	2.728	Continuing	Continuing
000999: <i>Initial Spares/Repair Parts</i>											
• APAF: BA05: Line Item # JPAT00: T-6	14.484	14.968	12.765	0.000	12.765	51.127	26.035	26.486	26.975	Continuing	Continuing
• APN: BA03: Line Item # 033900: JPATS	0.000	8.914	5.849	0.000	5.849	0.000	0.000	0.000	0.000	0.000	2,036.802

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604233F / <i>Specialized Undergraduate Flight Training</i>	Project (Number/Name) 654102 / <i>Joint Primary Aircraft Training System (JPATS)</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APN: BA05: Line Item # 057100: <i>JPATS Series</i>	1.085	12.537	17.401	0.000	17.401	38.354	52.303	38.872	39.655	Continuing	Continuing
• APN: BA06: Line Item # 060500: <i>Spares and Repair Parts</i>	0.127	0.264	0.264	0.000	0.264	0.140	0.000	0.000	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

JPATS was competitively awarded with the intent of maximizing the use of commercially available equipment and best commercial practices. Initially, the JPATS Program competitively awarded two contracts: a Firm Fixed Price (FFP) Contractor Logistics Support (CLS) Operations and Maintenance funded contract and a Fixed Price Incentive Firm Target (FPIF) manufacturing development (MD)/production contract with seven options. The follow-on contract production for both the air vehicle and GBTS was awarded as a FAR Part 15 action. The FFP CLS Operations and Maintenance funded contract is a FAR Part 15 action.

The SECT upgrade effort is an Engineering Change Proposal (ECP) to the competitively awarded Firm Fixed Price Contractor Logistics Support (CLS) contract.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604233F / <i>Specialized Undergraduate Flight Training</i>	Project (Number/Name) 654102 / <i>Joint Primary Aircraft Training System (JPATS)</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JPATS Studies	Various	Various : Various	0.000	1.235	Jan 2015	0.000		0.000		0.000		0.000	0.000	1.235	5.676
JPATS Engine Study Upgrade	C/CPFF	BDC : Various	0.000	0.636	Jan 2015	0.000		0.000		0.000		0.000	0.000	0.636	-
JPATS Engine High Cycle Fatigue	C/CPFF	Universal Technology Corp : Dayton, OH	0.000	0.223	Jan 2015	0.000		0.000		0.000		0.000	0.000	0.223	0.417
JPATS PMU	Various	Various : Various	0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000	TBD
JPATS GBTS ATD IOS Joystick & Throttle	C/FFP	NAS Pensacola : Pensacola, FL	0.000	0.635	Apr 2015	0.000		0.000		0.000		0.000	0.000	0.635	0.651
SECT Upgrade	C/FFP	BowHead Systems Management, Inc. : King George, VA	0.000	1.080		0.000		0.000		0.000		0.000	0.000	1.080	-
JPATS Completed Contracts	C/Various	Various : Various	0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000	288.900
Subtotal			0.000	3.809		0.000		0.000		0.000		0.000	0.000	3.809	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604233F / <i>Specialized Undergraduate Flight Training</i>	Project (Number/Name) 654102 / <i>Joint Primary Aircraft Training System (JPATS)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Joint Primary Aircraft Training System (JPATS) Studies	1	2015	4	2017
JPATS GBTS ATD IOS Joystick & Throttle	1	2015	2	2016
JPATS Engine Upgrade Study	1	2015	2	2017
JPATS High Cycle Fatigue Research	1	2015	1	2018
SECT Update Software and Threat Library (FY2015/FY2016)	2	2015	3	2016

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604233F / <i>Specialized Undergraduate Flight Training</i>			Project (Number/Name) 654376 / <i>T-38 Avionics Upgrade Program (AUP)</i>				
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
654376: <i>T-38 Avionics Upgrade Program (AUP)</i>	0.000	9.094	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	9.094
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The T-38C Avionics Upgrade Program (AUP) installed a "Glass Cockpit" into the T-38 jet trainer and re-designated the upgraded aircraft from the T-38A/B to the T-38C model. The AUP modification, which utilized a Commercial Off-The-Shelf (COTS)/Non-Developmental Item (NDI) approach to acquire kits, is currently in sustainment phase under the T-38C Avionics Post Production Support acquisition program.

The avionics system requires regular block upgrades to keep the system current and airworthy. Block upgrades incorporate software and/or hardware improvements to comply with new requirements mandated by Department of Defense, Federal Aviation Administration or National Airspace System (DoD/FAA/NAS) and to address flight safety issues. The block upgrades support the T-38C aircraft and Aircrew Training Devices (ATD).

The APPS program provides Mission Planning System support through sustainment of the aircraft Joint Mission Planning System (JMPS). The JMPS program provides T-38C pilot mission planning currency and certification for T-38C flight operations. The JMPS requirements are levied from outside the T-38 program office and may or may not correlate with block upgrade requirements.

Additionally, engineering services, studies, analysis and support are required to determine the feasibility of integrating changes into the system and making informed business decisions related to Diminishing Manufacturing Sources and Material Shortages (DMSMS) and other lifecycle related concerns.

FY2015 includes an avionics obsolescence remediation effort to qualify updated instruments in the T-38C. The program will begin development of a replacement Mission Display Processor (MDP), refurbishment of the existing Heads-Up Display (HUD), Development and integration of an Automatic Dependent Surveillance - Broadcast (ADS-B) solution as well as replacement of the Very High Frequency (VHF) Communication radio system and the VHF Navigation system.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: T-38C Avionics Post Production Support (APPS)	9.094	0.000	0.000	0.000	0.000
Description: T-38C APPS hardware and software block upgrades, Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM) compliance, Joint Mission Planning System (JMPS) support and avionics system Diminishing Manufacturing Sources and Material Shortages (DMSMS) mitigation efforts.					
FY 2015 Accomplishments:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604233F / <i>Specialized Undergraduate Flight Training</i>	Project (Number/Name) 654376 / <i>T-38 Avionics Upgrade Program (AUP)</i>

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
The T-38C avionics program began system obsolescence mitigation efforts. The program office awarded the Avionics Component Integration contract in January 2016 to begin development of a replacement Mission Display Processor (MDP), refurbishment of the existing Heads-Up Display, development and integration of an Automatic Dependent Surveillance - Broadcast (ADS-B) solution as well as replacement of the Very High Frequency (VHF) Communication radio system and the VHF Navigation system.					
FY 2016 Plans: N/A					
FY 2017 Base Plans: N/A					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	9.094	0.000	0.000	0.000	0.000

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APAF: BA05: Line Item # T03800: T-38	28.845	30.604	45.090	0.000	45.090	54.692	97.503	25.795	26.269	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Avionics Post Production Support (APPS) acquisition program awarded a contract in FY2012 through a competitive bid, C type, Firm Fixed Price (FFP) contract with a period of performance from April 2012 through March 2017. The block 10 software update required no new capability and therefore did not utilize investment funding. AETC operational requirements for Block 11 is an option to the AvCI contract to address unknown software issues. Unknown/unforeseen engineering and system support requirements will be negotiated and separately priced by the government as an out-of-cycle update/modification as provisioned within the contract.

Component Diminishing Manufacturing Sources and Material Shortages (DMSMS) are mitigated incrementally and prioritized based on funding availability and impact to aircraft airworthiness.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity	R-1 Program Element (Number/Name)	Project (Number/Name)
3600 / 5	PE 0604233F / <i>Specialized Undergraduate Flight Training</i>	654376 / <i>T-38 Avionics Upgrade Program (AUP)</i>

The Avionics Component Integration (AvCI) contract awarded 4 January 2016. The current contract strategy is a Type D IDIQ contract competitively awarded to address T-38C avionics system obsolescence issues and provide CLS follow-on support. Avionics system DMSMS mitigation efforts began immediately upon award and the follow-on CLS effort will be begin upon termination of the current contracted effort (01 April 2017).

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604233F / <i>Specialized Undergraduate Flight Training</i>	Project (Number/Name) 654376 / <i>T-38 Avionics Upgrade Program (AUP)</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
T-38 APPS - Solutions for avionics component obsolescence and FAA ADS-B mandate; MDP, HUD, VHF Radios, ADS-B	C/FFP	The Boeing Company : St. Louis, MO	0.000	8.989	Jan 2016	0.000		0.000		0.000		0.000	0.000	8.989	-
Subtotal			0.000	8.989		0.000		0.000		0.000		0.000	0.000	8.989	-

Remarks
Contract awarded in January 2016 to begin development of a replacement Mission Display Processor (MDP), refurbishment of the existing Heads-Up Display, development an integration of an Automatic Dependent Surveillance - Broadcast (ADS-B) solution as well as replacement of the VHF Communication radio system and the VHF Navigation system. Additionally, \$2.2M from the JPATS program was realigned in February 2015 to this program. That funding was obligated upon contract award in January 2016.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
T-38 APPS Government Travel	C/Various	Various : TBD	0.000	0.055	Oct 2014	0.000		0.000		0.000		0.000	0.000	0.055	-
T-38 APPS PMA Contract Support	C/FFP	Not specified. : TBD	0.000	0.050	Dec 2014	0.000		0.000		0.000		0.000	0.000	0.050	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604233F / <i>Specialized Undergraduate Flight Training</i>	Project (Number/Name) 654376 / <i>T-38 Avionics Upgrade Program (AUP)</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			0.000	0.105		0.000		0.000		0.000		0.000	0.000	0.105	-

Remarks
T-38 SPO and program A&AS support.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	9.094	0.000	0.000	0.000	0.000	0.000	9.094	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604233F / <i>Specialized Undergraduate Flight Training</i>	Project (Number/Name) 654376 / <i>T-38 Avionics Upgrade Program (AUP)</i>

FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
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

AvCI - Begin mitigation of avionics component obsolescence and solution for FAA ADS-B mandate; MDP, HUD, VHF Radios, ADS-B



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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604233F / <i>Specialized Undergraduate Flight Training</i>	Project (Number/Name) 654376 / <i>T-38 Avionics Upgrade Program (AUP)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AvCI - Begin mitigation of avionics component obsolescence and solution for FAA ADS-B mandate; MDP, HUD, VHF Radios, ADS-B	2	2016	2	2017

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604270F / <i>Electronic Warfare Development</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	7.815	0.843	12.476	0.000	12.476	20.435	14.423	2.081	2.118	Continuing	Continuing
653891: <i>Advanced IR Counter Measures (AIRCМ)</i>	-	7.815	0.843	12.476	0.000	12.476	20.435	14.423	2.081	2.118	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
 This program, BA 05 PE 0604270F, project 653891, Military Code (M code) receiver, is a new start.

A. Mission Description and Budget Item Justification

The Advanced Infrared Countermeasure (AIRCМ) project contains related aircraft self-protection efforts aimed at increasing aircraft survivability against the increasing threat of sophisticated infrared-guided surface-to-air and air-to-air missiles. These missiles may employ sophisticated next-generation electro-optics or dual-mode IR and radio frequency seekers. AIRCМ will provide advanced IR expendable countermeasures and/or IRCМ techniques that will be functionally compatible with existing dispenser systems and employed across multiple USAF weapons systems. This also explicitly includes any and all flare and decoy development and testing that may be demanded or needed in current operations supporting the war on terrorism regardless of aircraft platform. Similar activities that are supplementary to this effort may be accomplished ad hoc using platform specific funding or through other testing activities such as joint services or NATO test groups.

BA5 - This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	7.815	0.929	2.601	0.000	2.601
Current President's Budget	7.815	0.843	12.476	0.000	12.476
Total Adjustments	0.000	-0.086	9.875	0.000	9.875
• Congressional General Reductions	0.000	-0.086			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	9.875	0.000	9.875

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604270F I Electronic Warfare Development
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Congressional Add Details (\$ in Millions, and Includes General Reductions)	FY 2015	FY 2016
Project: 653891: Advanced IR Counter Measures (AIRCM)		
Congressional Add: ANG Digital Radar Warning Receiver (RWR)	7.750	0.000
Congressional Add Subtotals for Project: 653891	7.750	0.000
Congressional Add Totals for all Projects	7.750	0.000

Change Summary Explanation

FY17: \$10M added for GPS M-code development and integration; -\$125K for inflation adjustment

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: IR Flare Testing Description: IR flare testing and qualification on aircraft FY 2015 Accomplishments: Activities included testing and qualification of IR flare cocktails on various aircraft. FY 2016 Plans: Activities include testing and qualification of IR flare cocktails on various aircraft. FY 2017 Base Plans: Activities include testing and qualification of IR flare cocktails on various aircraft. FY 2017 OCO Plans: N/A	0.065	0.843	2.476	0.000	2.476
Title: Military Code (M code) receiver Description: The development and integration of a GPS receiver capable of receiving a Military Code (M code). FY 2015 Accomplishments: N/A FY 2016 Plans: N/A FY 2017 Base Plans:	0.000	0.000	10.000	0.000	10.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604270F / <i>Electronic Warfare Development</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Prototype development/component level testing.					
<i>FY 2017 OCO Plans:</i> N/A					
Accomplishments/Planned Programs Subtotals	0.065	0.843	12.476	0.000	12.476

	FY 2015	FY 2016
<i>Congressional Add:</i> ANG Digital Radar Warning Receiver (RWR)	7.750	0.000
<i>FY 2015 Accomplishments:</i> Activities included development, integration and test of digital radar warning receivers on ANG aircraft.		
<i>FY 2016 Plans:</i> N/A		
Congressional Adds Subtotals	7.750	0.000

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• PAAF: BA01: Line Item # 356010: <i>Flares</i>	103.296	120.935	159.046	0.000	159.046	149.793	142.884	132.018	115.896	Continuing	Continuing

Remarks

Qualified flares, if not in AF inventory, will be procured under program 0208030F War Reserve Munitions, Flares.

E. Acquisition Strategy

Do not anticipate need to award contracts as activities will be completed with Military Interdepartmental Purchase Requests.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604270F / <i>Electronic Warfare Development</i>	Project (Number/Name) 653891 / <i>Advanced IR Counter Measures (AIRCM)</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Digital RWR development	MIPR	TBD : TBD	-	7.750	Jul 2016	0.000		0.000		0.000		0.000	Continuing	Continuing	-
Military Code (M code) receiver	SS/CPFF	Raytheon : Tucson, AZ	-	0.000		0.000		10.000	Jun 2017	0.000		10.000	Continuing	Continuing	-
Subtotal			-	7.750		0.000		10.000		0.000		10.000	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Aircraft/Unit Support	MIPR	AATC : Tucson, AZ	-	0.000		0.225	May 2016	0.290	Jun 2017	0.000		0.290	Continuing	Continuing	-
Mission Planning	MIPR	TBD : TBD	-	0.045	May 2015	0.125	May 2016	0.324	Jun 2017	0.000		0.324	Continuing	Continuing	-
Subtotal			-	0.045		0.350		0.614		0.000		0.614	-	-	-

Remarks
Performing activities dependent on test participants.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Modeling and Simulation	MIPR	Air Force Research Laboratory : WPAFB, OH	-	0.000		0.125	May 2016	0.325	Jun 2017	0.000		0.325	Continuing	Continuing	-
Range Test	MIPR	96th Test Wing : Eglin AFB, FL	-	0.000		0.271	May 2016	1.397	Jun 2017	0.000		1.397	Continuing	Continuing	-
Test Support	MIPR	Various : TBD	-	0.000		0.077	May 2016	0.120	Jun 2017	0.000		0.120	Continuing	Continuing	-
Subtotal			-	0.000		0.473		1.842		0.000		1.842	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604270F / <i>Electronic Warfare Development</i>	Project (Number/Name) 653891 / <i>Advanced IR Counter Measures (AIRCM)</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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/ Government Support	Various	Air National Guard Air Force Reserve Command Test Center : Tucson, AZ	-	0.020	May 2015	0.020	May 2016	0.020	May 2017	0.000		0.020	Continuing	Continuing	-
Subtotal			-	0.020		0.020		0.020		0.000		0.020	-	-	-

Remarks
Performing activity dependent on test participants.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	7.815	0.843	12.476	0.000	12.476	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604270F / <i>Electronic Warfare Development</i>	Project (Number/Name) 653891 / <i>Advanced IR Counter Measures (AIRCM)</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
FY16 Test Event					■																							
First FY17 Semi-Annual Test Event									■																			
Second FY17 Semi-Annual Test Event												■																
First FY18 Semi-Annual Test Event													■															
Second FY18 Semi-Annual Test Event																■												
First FY19 Semi-Annual Test Event																	■											
Second FY19 Semi-Annual Test Event																				■								
First FY20 Semi-Annual Test Event																					■							
Second FY20 Semi-Annual Test Event																								■				
First FY21 Semi-Annual Test Event																									■			
Second FY21 Semi-Annual Test Event																												■

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604270F / <i>Electronic Warfare Development</i>	Project (Number/Name) 653891 / <i>Advanced IR Counter Measures (AIRCM)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
FY16 Test Event	2	2016	2	2016
First FY17 Semi-Annual Test Event	2	2017	2	2017
Second FY17 Semi-Annual Test Event	4	2017	4	2017
First FY18 Semi-Annual Test Event	2	2018	2	2018
Second FY18 Semi-Annual Test Event	4	2018	4	2018
First FY19 Semi-Annual Test Event	2	2019	2	2019
Second FY19 Semi-Annual Test Event	4	2019	4	2019
First FY20 Semi-Annual Test Event	2	2020	2	2020
Second FY20 Semi-Annual Test Event	4	2020	4	2020
First FY21 Semi-Annual Test Event	2	2021	2	2021
Second FY21 Semi-Annual Test Event	4	2021	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604281F / <i>Tactical Data Networks Enterprise</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	30.282	59.996	82.380	0.000	82.380	74.628	22.073	22.512	22.909	Continuing	Continuing
655050: <i>TDL System Integration</i>	-	17.506	32.912	34.990	0.000	34.990	37.271	22.073	22.512	22.909	Continuing	Continuing
655262: <i>Family of Gateways</i>	-	12.776	27.084	47.390	0.000	47.390	37.357	0.000	0.000	0.000	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Tactical Data Networks Enterprise (TDNE) develops, enhances and fields Tactical Data Links (TDL), advanced waveforms, radios, network management tools, and associated hardware and software that comprise the aerial layer network. This will be accomplished by upgrading currently fielded communications and TDL systems and by developing and fielding more advanced systems in the future. Additional investments include addressing warfighter urgent demands through the establishment of Quick Reaction Capabilities (QRC). TDNE supports the development and fielding of aerial layer networking capabilities across multiple core functions including air superiority, ground precision attack, command and control, space operations, intelligence, surveillance and reconnaissance (ISR), and personal recovery. These activities provide the Joint Forces Air Component Commander with networks to build a common operating picture of the battlespace.

TDL System Integration will provide for the study (acquisitions current and proposed), analysis, enhancement, development, integration, demonstration, test, and evaluation of Tactical Data Links (TDLs) as a subset of the broader aerial layer networks. TDLs are used in both peace time and combat environments to exchange information such as character-oriented and fixed-formatted messages, data, radar tracks, target information, platform status, imagery, free-text messaging and command assignments. TDLs provide interoperability, local and global connectivity, and situational awareness to the user when training or fighting under rapidly changing operational conditions. TDLs increase mission effectiveness by providing enhanced air domain situational awareness, positive combat identification of aircraft in the network, fusion/correlation of on- and off-board sensor data, digital sharing of machine-to-machine target and threat information, thereby, enabling time critical targeting and other mission assignment tasking. TDLs are used by all service theater command and control (C2) elements, weapons platforms, and sensors. TDLs include, but are not limited to: Link 16, Link 11, Situational Awareness Data Link (SADL), Variable Message Format (VMF), Intra-Flight Data Link (IFDL), and other Advanced TDL Link technologies, such as Tactical Targeting Network Technology (TTNT), Common Data Link (CDL), and Multifunction Advanced Data Link (MADL). TDLs typically include both a waveform specification as well as the standards for exchanging messages.

Family of Gateways executes development of the 5th to 4th Generation Gateway acquisition program that enables F-22 IFDL and F-35 MADL to Link 16 translation. Funding also supports Family of Gateways study (acquisitions current and proposed), analysis, enhancement, development, integration, demonstration, test, and evaluation efforts. Results of this analysis work allows multi-national combat forces to exchange information quickly and accurately by bridging discrete airborne, terrestrial, maritime, and space-based C4ISR networks producing operational effects not possible within individual networks. Gateway functions include enabling interoperability between data formats, protocols, and communication mediums. Additionally, gateway functions extend connectivity range, consolidate data from multiple networks into high capacity links for transmission to key C4ISR nodes, route information between disadvantaged users, and fuse/correlate data from multiple sources to improve accuracy. Gateway functions also provide application hosting, shared data storage, on-demand information access, smart data forwarding, and system monitoring/network management. TDNE executes quick reaction response capability requests by the warfighter and support activities (including ramp-up) associated with the Joint Aerial Layer Network (JALN) Enterprise activities as directed by the JALN Council. Funding ensures the continued enhanced interoperability of

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604281F / <i>Tactical Data Networks Enterprise</i>
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Air Force and joint assets through efforts such as early systems engineering and use of the Political, Operational, Economic and Technical (POET) process for program requirements analysis and architectural design development/coordination of all TDN standards and management capabilities, configuration management, platform/system interoperability assessments, development of government reference architectures, interoperability certification testing, and flight testing. This includes North Atlantic Treaty Organization, Command and Control and Communications (NATO C3I) interoperability studies and analysis.

The FY 2017 funding request was reduced by \$2.047 million to account for the availability of prior year execution balances.
The FY 2017 funding request was reduced \$0.676 million for inflation

This program is in Budget Activity 5, System Development and Demonstration (SDD), because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	39.059	60.256	37.240	0.000	37.240
Current President's Budget	30.282	59.996	82.380	0.000	82.380
Total Adjustments	-8.777	-0.260	45.140	0.000	45.140
• Congressional General Reductions	0.000	-0.260			
• 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	-1.207	0.000			
• Other Adjustments	0.000	0.000	45.140	0.000	45.140

Change Summary Explanation

FY 2015: \$7.57 million reduced to support the Global Aircrew Strategic Network Terminal program; \$1.207 million reduced to support SBIR

FY 2017:

- Funding increase is \$47.863 million for 5th to 4th Generation Gateway development
- The FY 2017 funding request was reduced by \$2.047 million to account for the availability of prior year execution balances
- The FY 2017 funding requested was adjusted \$0.676 million for inflation

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604281F / <i>Tactical Data Networks Enterprise</i>	Project (Number/Name) 655050 / <i>TDL System Integration</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
655050: <i>TDL System Integration</i>	-	17.506	32.912	34.990	0.000	34.990	37.271	22.073	22.512	22.909	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

TDL System Integration provides for the study, analysis, enhancement, development, integration, demonstration, coalition interoperability exercises, costing, test, trials, and evaluation of Tactical Data Links (TDL) as a subset of the broader aerial layer network. TDLs are used in both peacetime and combat environments to exchange information such as character-oriented and fixed-formatted messages, data, radar tracks, target information, platform status, imagery, free-text messaging and command assignments. TDLs provide interoperability, local and global connectivity, and situational awareness to the user when training or fighting under rapidly changing operational conditions. TDLs increase mission effectiveness by providing enhanced air domain situational awareness, positive combat identification of aircraft in the network, fusion/correlation of on- and off-board sensor data, digital sharing of machine to machine target and threat information and, thereby, enabling time critical targeting and other mission assignment tasking. TDLs are used by all service, NATO, and coalition theater C2 elements, weapons platforms, and sensors.

The number of Air Force platforms hosting TDLs has expanded from C2 aircraft (E-3, E-8, E-11A, EQ-4B, or other (JALN analyzed platforms, etc.) to the fighter, bomber, intelligence, surveillance and reconnaissance (ISR), tanker, airlift and other tactical fleets (F-15, F-16, F-22A, Rivet Joint, B-1, B-2, B-52, KC-46, etc.), as well as to precision guided munitions. Utilization of TDLs in a joint and international environment requires the integration of terminals into host platforms and interoperability of TDL networks across all deployed joint, NATO, and coalition platforms. Mandates have dictated a required upgrade in Low Volume Terminal (LVT) and Multifunction Information Distribution System (MIDS) Joint Tactical Radio System (JTRS) terminals in order to meet new frequency and cryptographic re-programming requirements. Integration and test costs will be associated with these mandates. TDLs have become the primary means of tactical battlefield communications.

Efforts in this project include waveform and integration activities.

Waveform:

Waveform activities include but are not limited to, enabling and supporting Joint Interoperability of Tactical Command and Control Systems (JINTACCS), Coalition Interoperability, Link 16 Enhancements, and development of a next generation waveform. Funding will provide training, logistics development, certification of individual TDL implementations to joint/allied standards, establishment of service-wide network management procedures/operations, and system wide enhancements/testing.

Integration:

Integration activities include but are not limited to, Data Link Test Facility (DTF), Block Upgrade 2 (BU2) retrofit, Block Cycle 1 retrofit (BC1), Air Force Participating Test Unit (AFPTU), interoperable System Management and Requirements Transformation (iSMART), Joint Airborne Network Tactical Edge (JAN-TE), Network Centric Capability Assessment (NCCA), NATO interoperability, Coalition interoperability, TDL Planning, Analysis, and Monitoring (TDL PAM), integration analysis of C2 of JALN, Cursor on Target (CoT), Tactical Communications Suite (TCS), and analysis of integration on platforms of existing TDN systems, system-of-systems analysis. Funding will ensure continued enhanced interoperability of Air Force, Joint, NATO, and Coalition assets through efforts such as early systems engineering and use of the POET process for program requirements analysis and architectural design development/coordination of all TDN standards and management capabilities, configuration

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604281F / <i>Tactical Data Networks Enterprise</i>	Project (Number/Name) 655050 / <i>TDL System Integration</i>
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management, platform/system interoperability assessments, development of government reference architectures, integration of cyber technologies, interoperability certification testing, and flight testing.

Activities also include studies and analysis (engineering and cost) to support both current program planning and execution and future program planning efforts for Tactical Data Networks, including development of joint concepts for C2 of JALN, JALN Analysis of Alternatives (AoA) follow-on analysis, and JALN gateway planning.

Activities will also include NATO/Coalition Interoperability that provides program office system engineering to support Foreign Military Sales (FMS) case development, FMS planning for tech refresh modifications, Crypto-Modernization and TDL PAM.

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

	FY 2015	FY 2016	FY 2017
<p>Title: Tactical Data Networks (TDN) Integration</p> <p>Description: Tactical Data Networks (TDN) Integration activities include but are not limited to, DTF, AFPTU, NCCA, NATO/Coalition Interoperability, Joint Aerial Layer Network (JALN) Analysis of Alternatives (AoA) follow-on, JALN gateway planning, and TDL PAM</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Developed, certified, developmental training, and development of logistics plans for individual TDL implementations to joint/allied standards -- Provided management with the necessary engineering, technical and administrative support needed to facilitate development - Provided manpower and procured test equipment to support planning (e.g. Link-16 Modernization) testing, integration and fielding of all MIDS LVT and MIDS JTRS current and upgrade configurations for the various fighter/bomber and ground platforms -- Supported to TDL interoperability testing of development and fielded systems through the DTF -- Supported DoD mandated TDL Military-Standards (MIL-STD) conformance testing and interoperability assessments for all TDL capable Air Force platforms through the AFPTU -- Joint aerial layer network (JALN) focused studies and analysis (e.g. Anti-Jam Applique for Weapon Systems (AJAWS), F35 Contested LOS Voice study, Truck study, etc.) that support data link enhancements -- Assessed tactical airborne network and network management gaps that are validated in existing requirements documents through the Network Centric Capability Assessments (NCCA) -- Completed studies and analysis that include but not limited to supporting both current program planning and execution and future program planning efforts for Tactical Data Networks, including development of joint concepts for C2 and network management of the Joint Aerial Layer Network (JALN), and JALN gateway planning -- Provided support to Coalition Interoperability that provides program office system engineering to support Foreign Military Sales (FMS) case development, FMS planning for tech refresh modifications, and Crypto-Modernization <p>FY 2016 Plans:</p>	10.530	11.864	13.710

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604281F / <i>Tactical Data Networks Enterprise</i>	Project (Number/Name) 655050 / <i>TDL System Integration</i>

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

	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Fund the development, certification, developmental training, and to develop logistics plans for individual TDL implementations to joint/allied standards, and will provide management with the necessary engineering, technical and administrative support needed to facilitate development - Provide support planning (e.g. TDL/Link16 Modernization), testing, integration and fielding of all MIDS LVT and MIDS JTRS current and upgrade configurations -- Provide support to TDL interoperability testing of development and fielded systems through the DTF -- Support DoD mandated TDL MIL-STD conformance testing and interoperability assessments for all TDL capable Air Force platforms through the AFPTU - Conduct Aerial layer network focused studies and analysis that support data link enhancements -- Conduct assessments of tactical airborne network and network management gaps that are validated in existing requirements documents through the Network Centric Capability Assessments (NCCA) --- Studies and analysis include but are not limited to supporting both current program planning and execution and future program planning efforts for Tactical Data Networks, including development of joint concepts for C2 and network management of the Joint Aerial Layer Network (JALN), and JALN gateway planning - Provide support to Coalition Interoperability that provides program office system engineering to support NATO C3I, Foreign Military Sales (FMS) case development, FMS planning for tech refresh modifications, and Crypto-Modernization - Support development of TDL PAM acquisition effort <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Will continue development, certification, developmental training, and to develop logistics plans for individual TDL implementations to joint/allied standards, and will provide management with the necessary engineering, technical and administrative support needed to facilitate development - Will continue the planning for testing, integration, and fielding of all MIDS LVT and MIDS JTRS current and upgrade configurations - Will continue Support to TDL interoperability testing of development and fielded systems through the DTF - Will continue support to DoD mandated TDL MIL-STD conformance testing and interoperability assessments for all TDL capable Air Force platforms through the AFPTU - Will continue Aerial layer network focused studies and analysis that support data link enhancements, and assessment of tactical airborne network and network management gaps that are validated in existing requirements documents through the Network Centric Capability Assessments (NCCA) - Will continue studies, analysis and demonstrations that include but are not limited to supporting both current program planning and execution and future program planning efforts for Tactical Data Networks, including development of joint concepts for C2 and network management of the Joint Aerial Layer Network (JALN), and JALN gateway planning 			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604281F / <i>Tactical Data Networks Enterprise</i>	Project (Number/Name) 655050 / <i>TDL System Integration</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Will continue support to Coalition Interoperability that provides program office system engineering to support NATO C3I, Foreign Military Sales (FMS) case development, FMS planning for tech refresh modifications, and Crypto-Modernization - Will continue support of development of TDL PAM acquisition effort - Will prepare the TDL PAM acquisition strategy as well as the RFP 				
<p>Title: Joint Interoperability of Tactical Command and Control Systems (JINTACCS)</p> <p>Description: Joint Interoperability of Tactical Command and Control Systems (JINTACCS) ensures interoperability of AF Tactical Data Link (TDL) systems with associated joint, allied, and coalition systems and includes configuration management of TDL Military Standards (MIL-STDs), TDL message development, interoperability test/certification, and TDL message standard implementation using interoperable System Management and Requirements Transformation (iSMART) for Links 11A/B, 16, 22, Variable Message Format (VMF), Integrated Broadcast Service (IBS), Multifunction Advanced Data Link (MADL), etc.</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Ensured compatibility and interoperability of TDLs by developing TDL messaging capability that addressed new or updated operational requirements, and by conducting required joint compatibility and interoperability tests - Ensured management had support needed to facilitate AF updates to TDL MIL-STDs <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Provides the necessary engineering, technical, and administrative support required to add and/or update AF platform & system information exchange requirements - Ensures compatibility and interoperability of TDLs by funding required AF/Joint MIL-STD compliance and interoperability tests - Ensures compatibility and interoperability of TDLs by developing TDL messaging capability that addressed new or updated operational requirements, and by conducting required joint compatibility and interoperability tests -- Ensures management has support needed to facilitate AF updates to TDL MIL-STDs <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Will provide the necessary engineering, technical, and administrative support required to add and/or update AF platform & system information exchange requirements - Will ensure compatibility and interoperability of TDLs by funding required AF/Joint MIL-STD compliance and interoperability tests - Will continue to ensure compatibility and interoperability of TDLs by developing TDL messaging capability that addressed new or updated operational requirements -- Will begin support to IFDL and MADL specific message translation development in support of the 5th to 4th Generation Gateway program - Will continue support conducting required joint compatibility and interoperability tests 		5.422	6.850	6.924

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604281F / <i>Tactical Data Networks Enterprise</i>	Project (Number/Name) 655050 / <i>TDL System Integration</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
-- Will ensure management has support needed to facilitate AF updates to TDL MIL-STDs				
Title: Cursor on Target (CoT)		1.554	1.574	1.585
Description: Cursor on Target (CoT) is an extensible, 'What, When, Where' (W3) XML message format for interconnecting Command, Control, Communication & Computer (C4), intelligence, surveillance & reconnaissance (ISR) systems. The Cursor on Target (CoT) suite consists of the W3 base schema, tailored sub-schemas, and a set of software plug-ins and translators that facilitate machine to machine (M2M) transmission of Command and Control (C2), intelligence, surveillance and reconnaissance (ISR), and situational awareness data at reduced cost compared with traditional integration methods.				
FY 2015 Accomplishments:				
<ul style="list-style-type: none"> - Supported development, test, certification and accreditation of new Cursor on Target (CoT) apps/plugin/schema, investigated the development of the Cursor on Target(CoT) MIL-STD or CoT STANAG and transitioning of apps/plugin to sustainment - Began initial effort for componentized message infrastructure architecture including the router - Developed troubleshooting support (CoT adoption and configuration assistance) continuing to support COT users - Provided management with the necessary engineering, technical, and administrative support needed to facilitate development and support the annual COT User Group meeting 				
FY 2016 Plans:				
<ul style="list-style-type: none"> - Provides support development, test, certification and accreditation of new Cursor on Target (CoT) apps/plugin/debugger, pursue the development of the Cursor on Target (CoT) STANAG or commercial standard - Conducts CoT on MADL implementation study thus expanding the use of COT - Pursue Website set up and development that will provide additional support (tutorial videos, FAQs, message board, signup, etc.) - Provides engineering, technical, and administrative support needed to facilitate development and support the annual COT User Group meeting - Plans discussions for integration/testing of COT in the DTF 				
FY 2017 Plans:				
<ul style="list-style-type: none"> - Will support development, test, certification and accreditation of new Cursor on Target (CoT) apps/plugin/debugger, pursue the development of the Cursor on Target (CoT) STANAG or commercial standard - Will conduct CoT on MADL implementation study thus expanding the use of COT - Will develop Website set up that will provide additional support (tutorial videos, FAQs, message board, signup, etc.) - Will continue to provide engineering, technical, and administrative support needed to facilitate development and support the annual COT User Group meeting - Will pursue integration/testing of COT in the Datalinks Test Facility 				
Title: 5th to 4th Generation Gateway		0.000	12.624	12.771

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604281F / <i>Tactical Data Networks Enterprise</i>	Project (Number/Name) 655050 / <i>TDL System Integration</i>

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

	FY 2015	FY 2016	FY 2017
<p>Description: 5th to 4th Generation Gateway facilitates sharing track and sensor data between 5th Generation and 4th Generation aircraft as well as Command and Control (C2) nodes. Gateway functions include enabling interoperability between data formats, protocols, and communication mediums. Additionally, gateway functions extend the connectivity range; consolidate data from multiple networks, domains and sensors into high capacity links for transmission to key C2ISR nodes, route information between disadvantaged users, and correlate data from multiple sources to facilitate early detection & tracking while enabling collaborative targeting. The addition of multi-domain capabilities as a future requirement of the 5th to 4th Generation Gateway enables track sharing at the tactical edge for the timely destruction of ground and airborne target sets. These additional capabilities are a combat fires multiplier that enhance total force synergy for target prosecution and weapons employment. The initial increment of this Gateway program provides the baseline 5th to 4th communication capability for the future requirements of the Gateway program of record to build upon.</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: - Provide support for development and fielding of the 5th to 4th Generation Gateway -- Begin activities in support of source selection and award of a 5th to 4th development and production contract and plan for future upgrades - This activity was previously bound to Project 655262 Family of Gateways</p> <p>FY 2017 Plans: - Will continue development of the 5th to 4th Generation Gateway -- Will provide systems engineering support to the 5th to 4th Generation Gateway program manager to support Engineering, Manufacturing and Development, including Bending the Cost Curve type activities - This activity was previously bound to Project 655262 Family of Gateways</p>			
Accomplishments/Planned Programs Subtotals	17.506	32.912	34.990

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

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• RDTE: BA07: PE 0207448F: C2ISR TDL	1.699	1.674	1.515	0.000	1.515	1.749	1.750	1.782	1.814	Continuing	Continuing
• APAF: BA05: Line Item #F01500: F-15	0.002	2.837	0.000	0.000	0.000	5.266	46.903	53.211	40.167	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604281F / <i>Tactical Data Networks Enterprise</i>	Project (Number/Name) 655050 / <i>TDL System Integration</i>

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

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• APAF: BA05: Line Item #F01600: <i>F-16</i>	0.000	3.200	6.447	0.000	6.447	6.117	6.755	8.371	8.525	Continuing	Continuing
• APAF: BA05: Line Item #B00200: <i>B-2A</i>	0.049	0.474	0.415	0.000	0.415	0.295	0.247	0.201	0.206	Continuing	Continuing
• APAF: BA05: Line Item #B01B00: <i>B-1B</i>	0.223	1.011	1.380	0.000	1.380	0.535	0.794	0.000	0.000	Continuing	Continuing
• APAF: BA05: Line Item #OTHACF: <i>Other Aircraft</i>	0.000	0.239	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• OPAF: BA03: Line Item #834010: <i>General Information Technology</i>	0.000	0.002	3.422	0.000	3.422	1.799	1.665	1.694	1.725	Continuing	Continuing
• OPAF: BA03: Line Item #831010: <i>Comsec Equipment</i>	0.000	2.426	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Airborne Networking Directorate provides for common development, integration, and interoperability across the entire airborne network and ensures that data links are procured and maintained as a joint, end-to-end command and control system. Platform acquisition strategies vary by program, but the majority of development and integration is normally accomplished by the weapon system prime contractor.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604281F / <i>Tactical Data Networks Enterprise</i>	Project (Number/Name) 655050 / <i>TDL System Integration</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
TDN Integration	Various	Various : Various	-	1.572	Jun 2015	1.101	Jan 2016	1.700	Jan 2017	0.000		1.700	Continuing	Continuing	TBD
TDN Integration - Tactical Edge Network C2	MIPR	Various : Various	-	0.000		0.500	Mar 2016	2.000	Mar 2017	0.000		2.000	Continuing	Continuing	TBD
5th to 4th Generation Gateway	MIPR	Various : Various	-	0.000		12.624	Sep 2016	12.770	Sep 2017	0.000		12.770	Continuing	Continuing	TBD
Subtotal			-	1.572		14.225		16.470		0.000		16.470	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
TDN Integration - NCCA	C/T&M	MITRE : Bedford, MA	-	1.315	Nov 2014	1.315	Dec 2015	1.400	Nov 2016	0.000		1.400	Continuing	Continuing	TBD
Cursor on Target	C/T&M	MITRE : Bedford, MA	-	1.330	Dec 2014	1.404	Dec 2015	1.300	Oct 2016	0.000		1.300	Continuing	Continuing	TBD
Subtotal			-	2.645		2.719		2.700		0.000		2.700	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
TDN Integration - DTF	PO	46th Test Squadron : Eglin AFB, FL	-	1.809	Jan 2015	1.000	Mar 2016	1.358	Feb 2017	0.000		1.358	Continuing	Continuing	TBD
JINTACCS	C/FFP	Spectrum Comm Inc : Newport News, VA	-	2.015	Feb 2015	2.171	Feb 2016	2.731	Feb 2017	0.000		2.731	Continuing	Continuing	TBD
TDN Integration - AFPTU	MIPR	Various : Various	-	0.000		1.369	Mar 2016	0.000		0.000		0.000	Continuing	Continuing	TBD
TDN Integration - JALN AoA	MIPR	Various : Various	-	3.376	Mar 2015	3.554	Mar 2016	5.379	Mar 2017	0.000		5.379	Continuing	Continuing	TBD
Subtotal			-	7.200		8.094		9.468		0.000		9.468	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604281F / <i>Tactical Data Networks Enterprise</i>	Project (Number/Name) 655050 / <i>TDL System Integration</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
TDN Integration PMA - A&AS support - NCCA, Coalition Interoperability, JALN AoA	C/CPAF	Various : Various	-	0.968	Jan 2015	0.500	May 2016	1.300	Jan 2017	0.000		1.300	Continuing	Continuing	TBD
Cursor on Target PMA - A&AS support	C/CPAF	Various : Various	-	0.199	Dec 2014	0.171	May 2016	0.211	Dec 2016	0.000		0.211	Continuing	Continuing	TBD
TDN Integration PMA - FFRDC support - NCCA	C/T&M	MITRE : Bedford, MA	-	0.160	Jan 2015	0.160	Dec 2015	1.700	Oct 2016	0.000		1.700	Continuing	Continuing	TBD
TDN Integration PMA - FFRDC support - Coalition Interoperability, JALN AoA	C/T&M	MITRE : Bedford, MA	-	3.508	Nov 2014	5.590	Jan 2016	1.841	Oct 2016	0.000		1.841	Continuing	Continuing	TBD
TDN Integration PMA - Travel, Government Purchase Cards, etc...DTF, NCCA, Coalition Interoperability, AFPTU, JALN AoA	Various	Various : Various	-	0.876	Jan 2015	1.127	Jan 2016	0.900	Jan 2017	0.000		0.900	Continuing	Continuing	TBD
JINTACCS PMA - Travel, Government Purchase Cards, etc...	Various	Various : Various	-	0.087	Jan 2015	0.025	Jan 2016	0.100	Jan 2017	0.000		0.100	Continuing	Continuing	TBD
Cursor on Target PMA - Travel, Government Purchase Cards, etc...	Various	Various : Various	-	0.291	Oct 2014	0.301	Dec 2015	0.300	Dec 2016	0.000		0.300	Continuing	Continuing	TBD
Subtotal			-	6.089		7.874		6.352		0.000		6.352	-	-	-

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		-	17.506	32.912	34.990	0.000	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force			Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604281F / <i>Tactical Data Networks Enterprise</i>	Project (Number/Name) 655050 / <i>TDL System Integration</i>	

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
TDN Integration	[REDACTED]																											
JINTACCS	[REDACTED]																											
Cursor on Target (CoT)	[REDACTED]																											
5th to 4th Generation Gateway - Development	[REDACTED]																											
5th to 4th Development/Production Contract Award (Nov 2016)	[REDACTED]																											
5th to 4th Milestone C (Aug 2018)	[REDACTED]																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604281F / <i>Tactical Data Networks Enterprise</i>	Project (Number/Name) 655050 / <i>TDL System Integration</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
TDN Integration	1	2015	4	2021
JINTACCS	1	2015	4	2021
Cursor on Target (CoT)	1	2015	4	2021
5th to 4th Generation Gateway - Development	1	2016	4	2018
5th to 4th Development/Production Contract Award (Nov 2016)	1	2017	1	2017
5th to 4th Milestone C (Aug 2018)	4	2019	4	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604281F / <i>Tactical Data Networks Enterprise</i>				Project (Number/Name) 655262 / <i>Family of Gateways</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
655262: <i>Family of Gateways</i>	-	12.776	27.084	47.390	0.000	47.390	37.357	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Family of Gateways provides for the study (acquisitions current and proposed), analysis, enhancement, development, integration, costing, demonstration, test, and evaluation efforts that will allow joint combat forces to exchange information quickly and accurately by bridging discrete airborne, terrestrial, maritime, and space-based C4ISR networks producing operational effects not possible within individual networks. Gateway functions include enabling interoperability between data formats, protocols, and communication mediums. Additionally, gateway functions extend the connectivity range, consolidate data from multiple networks into high capacity links for transmission to key C2ISR nodes, route information between disadvantaged users, and fuse/correlate data from multiple sources to improve accuracy. Gateway functions also provide application hosting, shared data storage, on-demand information access, smart data forwarding, and system monitoring/network management. Funding in this project will also support requests by the warfighter such as the Battlefield Airborne Communications Node (BACN), 5th to 4th and 5th to 5th Generation efforts. Additionally, Family of Gateways will support activities associated with the JALN Enterprise recommendations, in line with applicability of existing TDL performance, upgrade plans and engineering analysis of system designs and TDN Performance Improvements.

Efforts in this project include waveform, ground, and quick reaction capability activities.

Waveforms:
Waveform activities include, but are not limited to Situational Awareness Data Link (SADL) and 5th to 4th Generation and 5th-5th Generation efforts. SADL integrates US Air Force close air support aircraft with the networked battlefield via the US Army's Enhanced Position Location Reporting System (EPLRS) or the Operational Tactical Interface for SADL (OTIS). The 5th to 4th Generation Gateway facilitates sharing of 5th Generation aircraft track data with 4th Generation aircraft as well as C2 nodes.

Ground:
Ground activities include, but are not limited to the TDL PAM. Funding will support enhancements to the interoperability and capabilities of fielded gateways through processing capability upgrades, operating system updates, display/graphical user interface upgrades, incorporation of additional messaging standards and protocols, and completion of gateway architecture fielding.

Quick Reaction Capability:
Quick reaction capability activities include, but are not limited to BACN. Funding will support AF rapid acquisition requirements for communications bridging of waveforms through gateway technology.

Activities also include studies and analysis to support both current program planning and execution and future program planning efforts for Family of Gateways.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604281F / <i>Tactical Data Networks Enterprise</i>	Project (Number/Name) 655262 / <i>Family of Gateways</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Title: 5th to 4th Generation Gateway</p> <p>Description: 5th to 4th Generation Gateway facilitates sharing track and sensor data between 5th Generation and 4th Generation aircraft as well as Command and Control (C2) nodes. Gateway functions include enabling interoperability between data formats, protocols, and communication mediums. Additionally, gateway functions extend the connectivity range; consolidate data from multiple networks, domains and sensors into high capacity links for transmission to key C2ISR nodes, route information between disadvantaged users, and correlate data from multiple sources to facilitate early detection & tracking while enabling collaborative targeting. The addition of multi-domain capabilities as a future requirement of the 5th to 4th Generation Gateway enables track sharing at the tactical edge for the timely destruction of ground and airborne target sets. These additional capabilities are a combat fires multiplier that enhance total force synergy for target prosecution and weapons employment. The initial increment of this Gateway program provides the baseline 5th to 4th communication capability for the future requirements of the Gateway program of record to build upon.</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> -Conducted acquisition planning for the 5th to 4th Generation Gateway -- Funded risk reduction projects and engineering, technical, and administrative support required for Request For Proposal (RFP) development -- Funded risk reduction efforts including MADL to Link 16 Data Forward standards as well as Data porting to a new card was completed -- Initiated F15 Size Weight and Power (SWaP) study to provide power availability to be included in the RFP -- Worked on preparation of the RFP with release in early FY16 <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Initiate source selection and award of a 5th to 4th development and production contract, and planning for future upgrades -- Begin acquisition of materiel items, including datalink radio terminals, required for the development, fabrication and testing of 5th to 4th Gen Gateway prototypes to include multi-domain capability integration using OMS constructs -- Execute various risk reduction activities at PEO direction <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Will develop the 5th to 4th Generation Gateway - Will upgrade the 46TS facility to MADL capability and conduct Link-16 NDL development demo - Will complete design reviews associated with development of Engineering and Manufacturing Development (EMD) prototypes - Will provide Government Furnished Equipment (GFE) radios to gateway developer - Will begin construction of the EMD prototypes - Will begin acquisition of A kits utilizing OMS constructs to provide rapid upgrades 	12.776	27.084	47.390

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604281F / <i>Tactical Data Networks Enterprise</i>	Project (Number/Name) 655262 / <i>Family of Gateways</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
- Will procure Boeing engineering support to design and construction of the EMD prototypes and A kits through Operational Testing			
Accomplishments/Planned Programs Subtotals	12.776	27.084	47.390

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

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• RDTE: BA07: PE 0207448F: <i>C2ISR TDL</i>	1.699	1.674	1.515	0.000	1.515	1.749	1.750	1.782	1.814	Continuing	Continuing
• APAF: BA05: Line Item #F01500: <i>F-15</i>	0.002	2.837	0.000	0.000	0.000	5.266	46.903	53.211	40.167	Continuing	Continuing
• APAF: BA05: Line Item #F01600: <i>F-16</i>	0.000	3.200	6.447	0.000	6.447	6.117	6.755	8.371	8.525	Continuing	Continuing
• APAF: BA05: Line Item #B00200: <i>B-2A</i>	0.049	0.474	0.415	0.000	0.415	0.295	0.247	0.201	0.206	Continuing	Continuing
• APAF: BA05: Line Item #B01B00: <i>B-1B</i>	0.223	1.011	1.380	0.000	1.380	0.535	0.794	0.000	0.000	Continuing	Continuing
• APAF: BA05: Line Item #OTHACF: <i>Other Aircraft</i>	0.000	0.239	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
• OPAF: BA03: Line Item #834010: <i>General Information Technology</i>	0.000	0.002	3.422	0.000	3.422	1.799	1.665	1.694	1.725	Continuing	Continuing
• OPAF: BA03: Line Item #831010: <i>COMSEC Equipment</i>	0.000	2.246	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

The Airborne Networking Directorate provides for common development, integration and interoperability across the entire airborne network and ensures that data links are procured and maintained as a joint, end-to-end, command and control system. Platform acquisition strategies vary by program, but the majority of development and integration is normally accomplished by the weapon system prime contractor.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 5				PE 0604281F / Tactical Data Networks Enterprise				655262 / Family of Gateways							
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
5th To 4th Generation Gateway development	MIPR	Various : Various	-	6.458	Feb 2016	18.188	Jun 2016	40.990	Jun 2017	0.000		40.990	Continuing	Continuing	TBD
Subtotal			-	6.458		18.188		40.990		0.000		40.990	-	-	-
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
5th-4th Generation Gateway Engineering services	Various	Various : Bedford, MA	-	4.152	Feb 2016	4.815	Mar 2016	2.205	Jan 2017	0.000		2.205	Continuing	Continuing	TBD
Subtotal			-	4.152		4.815		2.205		0.000		2.205	-	-	-
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
5th To 4th Generation Gateway PMA - A&AS support	C/Various	Various : Various	-	1.252	Sep 2015	2.136	Jun 2016	2.099	Jan 2017	0.000		2.099	Continuing	Continuing	TBD
5th To 4th Generation Gateway PMA - FFRDC support	C/Various	MITRE : Bedford, MA	-	0.342	Feb 2016	0.125	Jun 2016	0.346	Jun 2016	0.000		0.346	Continuing	Continuing	TBD
5th To 4th Generation Gateway PMA - Travel,	Various	Various : Various	-	0.572	Sep 2015	1.820	Jun 2016	1.750	Jun 2017	0.000		1.750	Continuing	Continuing	TBD

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604281F / <i>Tactical Data Networks Enterprise</i>	Project (Number/Name) 655262 / <i>Family of Gateways</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
5th to 4th Generation Gateway - Development	1	2015	4	2018
5th to 4th Development/Production Contract Award (Nov 2016)	1	2017	1	2017
5th to 4th Milestone C (Aug 2018)	4	2019	4	2019

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604287F / <i>Physical Security Equipment</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	3.926	5.973	8.458	0.000	8.458	9.212	9.488	9.769	10.141	Continuing	Continuing
655120: <i>Physical Security Equipment - SD ED</i>	-	3.926	5.973	8.458	0.000	8.458	9.212	9.488	9.769	10.141	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
 In FY15, PE 0604287F, Physical Security Equipment, Project Number 655120, Physical Security Equipment SD ED efforts were transferred from PE 0603287F, Physical Security Equipment, Project Number 645121, in order to align funding in the correct Budget Activity (BA05).

A. Mission Description and Budget Item Justification

Integrated Base Defense Security Systems (IBDSS) provides improvements and enhancements, demonstrates, and tests Physical Security Equipment (PSE) systems to include Force Protection. This program supports the protection of tactical, fixed, and nuclear weapons systems, AF personnel and AF facilities. The PSE program is organized to provide PSE RDT&E for Air Force specific needs but as a complement to, and in conjunction with, the PSE RDT&E programs funded by the DOD Physical Security Enterprise and Analysis Group (PSEAG). As such this program will obtain, demonstrate, and test PSE in the same manner and to the same standards and architecture as PSEAG-funded projects to ensure interoperability with PSEAG-developed PSE. In support of PSE, this RDT&E program includes spectrum planning for radio frequency (RF), communication security (cyber), and information assurance requirements. This Program Element also includes funding for Force Protection Commercial Off The Shelf (FP COTS) market research, evaluation and testing. The FP COTS testing applies to all available technologies (delay, denial, detection, assessment, communication display, access control, power, mobility, and defeat effects) which are considered effective for AF physical security use. This program supports the maintenance and test support at Site C 3 and the Cold Weather Test Site (CWTS), as annotated in DoD Directive 3200.11, listing the 46th Test Wing (TW) as a Major Range and Test facility, conducting developmental and operational testing as the primary mission.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604287F / <i>Physical Security Equipment</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	3.926	5.973	4.122	0.000	4.122
Current President's Budget	3.926	5.973	8.458	0.000	8.458
Total Adjustments	0.000	0.000	4.336	0.000	4.336
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	4.336	0.000	4.336

Change Summary Explanation

The FY17 funding increase of \$4.4M is to support Physical Security Equipment RDT&E.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Title: Integrated Base Defense Security Systems (IBDSS)</p> <p>Description: IBDSS qualifies, demonstrates, and tests Physical Security Equipment (PSE) systems to include Force Protection. This continuing effort was previously named Physical Security Equipment.</p> <p>FY 2015 Accomplishments: Continue Force Protection Commercial Off The Shelf (COTS) market research, evaluation and testing to address capability gaps and obsolescence. This includes integration and testing to qualify COTS equipment to provide essential upgrades/improvements and state-of-the art technology to support integrated based security systems installations worldwide. Type of technologies includes delay/ denial/detection/assessment/communication display/access control/power equipment & systems for IBDSS projects.</p> <p>Also continuing previously developed or modified COTS efforts to improve IBDSS physical security equipment:</p> <ul style="list-style-type: none"> - Continue Tactical Automated Security System (TASS)(also known as Tactical Security System) efforts including improvements to the annunciator. - Develop internal & external delay, denial, and detection options for the Nuclear Storage environment. - Delay advancements include semi-hardened transport containers for logistic movement of nuclear assets. - Denial advancement includes prototypes for denial capability within protective aircraft shelters. - Denial capability integration to improve life cycle cost and effectiveness for the Remote Target Engagement System (RTES) 	3.926	5.973	8.458

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604287F / <i>Physical Security Equipment</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Conduct RTES Independent Validation and Verification (IV&V) and safety reviews with NNMSB and applicable safety agencies to assure OSS&E of developed systems - Analyses and maturity assessment of interruption methods to disable or mitigate adversary remote airborne platforms. - Conduct IV&V of fielded PSE and integrated systems - Continue to research technological advances with other agencies and industry. - Conduct analyses to include the adversary needs assessment and System Effectiveness Assessment (SEA) of the Nuclear Environment. - Qualify Physical Security Alarm Systems; identify, integrate and evaluate fusion and display capability to improve command, control and communication to include fusion of disparate sensor technologies and threat indicators; improve situational awareness and increase the decision support provided to security system operators through a Common Operational Picture or an enhancement to established alarm display capability; planned environments are in the missile field and for weapons storage where Base Defense Operations Center aggregates threat, sensor alarms, video and thermal assessment for developing response plans and priorities. - Support the maintenance and test support at Site C-3 and the Cold Weather Test Site (CWTS), as annotated in DoD Directive 3200.11, listing the 46TW as a Major Range and Test facility, conducting developmental and operational testing as the primary mission. <p>FY 2016 Plans: Will continue Force Protection Commercial Off The Shelf (COTS) market research, evaluation and testing to address capability gaps and obsolescence. This includes integration and testing to qualify COTS equipment to provide essential upgrades/improvements and state-of the art technology to support integrated based security systems installations worldwide. Type of technologies includes delay/denial/detection/assessment/communication display/access control/power equipment & systems for IBDSS projects.</p> <p>Will continue previously developed or modified COTS efforts to improve IBDSS physical security equipment:</p> <ul style="list-style-type: none"> - Continue Tactical Automated Security System (TASS)efforts including improvements to the annunciator. - Develop internal & external delay, denial, and detection options for the Nuclear Storage environment. - Delay advancements include semi-hardened transport containers for logistic movement of nuclear assets. - Denial advancement includes prototypes for denial capability within protective aircraft shelters. - Denial capability integration to improve life cycle cost and effectiveness for the Remote Target Engagement System (RTES) - Conduct RTES Independent Validation and Verification (IV&V) and safety reviews with NNMSB and applicable safety agencies to assure OSS&E of developed systems - Analyses and maturity assessment of interruption methods to disable or mitigate adversary remote airborne platforms. 			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604287F / <i>Physical Security Equipment</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Conduct IV&V of fielded PSE and integrated systems - Continue to research technological advances with other agencies and with industry. - Conduct analyses to include the adversary needs assessment and System Effectiveness Assessment (SEA) of the Nuclear Environment. - Qualify Physical Security Alarm Systems; identify, integrate and evaluate fusion and display capability to improve command, control and communication to include fusion of disparate sensor technologies and threat indicators; improve situational awareness and increase the decision support provided to security system operators through a Common Operational Picture or an enhancement to established alarm display capability; planned environments are in the missile field and for weapons storage where Base Defense Operations Center aggregates threat, sensor alarms, video and thermal assessment for developing response plans and priorities. - Support the maintenance and test support at Site C-3 and the Cold Weather Test Site (CWTS), as annotated in DoD Directive 3200.11, listing the 46TW as a Major Range and Test facility, conducting developmental and operational testing as the primary mission. <p>FY 2017 Plans: Will continue Force Protection Commercial Off The Shelf (COTS) market research, evaluation and testing to address capability gaps and obsolescence. This includes integration and testing to qualify COTS equipment to provide essential upgrades/ improvements and state-of the art technology to support integrated based security systems installations worldwide. Type of technologies includes delay/denial/detection/assessment/communication display/access control/power equipment & systems for IBDSS projects.</p> <p>Will continue previously developed or modified COTS efforts to improve IBDSS physical security equipment:</p> <ul style="list-style-type: none"> - Continue Tactical Automated Security System (TASS)(also known as Tactical Security System) efforts including improvements to the annunciator. - Develop internal & external delay, denial, and detection options for the Nuclear Storage environment. - Delay advancements include semi-hardened transport containers for logistic movement of nuclear assets. - Denial advancement includes prototypes for denial capability within protective aircraft shelters. - Denial capability integration to improve life cycle cost and effectiveness for the Remote Target Engagement System (RTES) - Conduct RTES Independent Validation and Verification (IV&V) and safety reviews with NNMSB and applicable safety agencies to assure OSS&E of developed systems - Analyses and maturity assessment of interruption methods to disable or mitigate adversary remote airborne platforms. - Conduct IV&V of fielded PSE and integrated systems. - Continue to research technological advances with other agencies and with industry. 			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604287F / <i>Physical Security Equipment</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Conduct analyses to include the adversary needs assessment and System Effectiveness Assessment (SEA) of the Nuclear Environment. - Qualify Physical Security Alarm Systems; identify, integrate and evaluate fusion and display capability to improve command, control and communication to include fusion of disparate sensor technologies and threat indicators; improve situational awareness and increase the decision support provided to security system operators through a Common Operational Picture or an enhancement to established alarm display capability; planned environments are in the missile field and for weapons storage where Base Defense Operations Center aggregates threat, sensor alarms, video and thermal assessment for developing response plans and priorities. - FY17 Plans: Add/Develop automation tools for inventory management, documenting equipment status, and documenting equipment operator qualifications. Develop mobile platforms compatible access to the automation tools, allowing real-time status updates. - FY18 Plans: Continue development and refinement of automation tools for inventory management, documenting equipment status, and documenting equipment operator qualifications. Expand mobile platforms access to the automation tools allowing real-time status updates. - Support the maintenance and test support at Site C-3 and the Cold Weather Test Site (CWTS), as annotated in DoD Directive 3200.11, listing the 46TW as a Major Range and Test facility, conducting developmental and operational testing as the primary mission. 			
Accomplishments/Planned Programs Subtotals	3.926	5.973	8.458

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• OPAF: BA03: Line Item #28: <i>Air Force Physical Security System</i>	26.157	75.849	84.482	0.000	84.482	53.768	79.674	75.650	49.740	Continuing	Continuing

Remarks

E. Acquisition Strategy
 COTS sub-systems, equipment and components are competitively acquired from industry after thorough market research. Equipment for testing is purchased via competitive selection processes via direct purchase orders. For security systems COTS that are required to be qualified for nuclear security environments where industry COTS sources may not be mature, consideration is given to replacement of new items or modification of COTS through the competitive selection procedure as well.

Delivery Orders on Indefinite Delivery/Indefinite Quantity contract vehicles or other approved purchase methods are utilized to acquire equipment.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity

3600: *Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)*

R-1 Program Element (Number/Name)

PE 0604287F / *Physical Security Equipment*

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604287F / <i>Physical Security Equipment</i>	Project (Number/Name) 655120 / <i>Physical Security Equipment - SD ED</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Integrated Base Defense Security Systems (IBDSS)	Various	Various : Various	-	3.531		5.833		8.178		0.000		8.178	Continuing	Continuing	-
Subtotal			-	3.531		5.833		8.178		0.000		8.178	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Integrated Base Defense Security Systems (IBDSS)	Various	Various : Various	-	0.395		0.140		0.280		0.000		0.280	Continuing	Continuing	-
Subtotal			-	0.395		0.140		0.280		0.000		0.280	-	-	-

Remarks
The support funding is planned at the above amounts. If the support contracts are less, the available funds will be transitioned to the Product Development line.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	3.926	5.973	8.458	0.000	8.458	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force							Date: February 2016			
Appropriation/Budget Activity 3600 / 5			R-1 Program Element (Number/Name) PE 0604287F / <i>Physical Security Equipment</i>			Project (Number/Name) 655120 / <i>Physical Security Equipment - SD ED</i>				
	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	

Remarks
 Various delivery orders will be awarded throughout the fiscal year for numerous projects.

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604287F / <i>Physical Security Equipment</i>	Project (Number/Name) 655120 / <i>Physical Security Equipment - SD ED</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
TSS (VADS Upgrade)																												
TSS (Future TASS)																												
TSS (Mobile TASS)																												
Wide Area Detection (COTS Qual)																												
Wide Area Detection (B-Static)																												
Wide Area Detection (Multi-Sensor)																												
Wide Area Detection (Seismic)																												
Wide Area Detection (Foliage Penetrating)																												
CCDE (Re-Compete)																												
Sensors (Interior)																												
Sensors (MW)																												
Sensors (PIR)																												
Sensors (PBLS)																												
Sensors (Fence)																												
Sensors (Interior) (5 year cycle)																												
Sensors (Narrow Band)																												
Sensors (Interior Class 1/Div 2 Environment)																												
Assessment /Surveillance(Cameras)																												
Assessment/Surveillance (Cameras) (2nd cycle)																												
Assessment/Surveillance (Cameras) (3rd cycle)																												
Assessment/Surveillance (Cameras) (4th cycle)																												
Annunciator (Phase 1 and 2)																												

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604287F / <i>Physical Security Equipment</i>	Project (Number/Name) 655120 / <i>Physical Security Equipment - SD ED</i>
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
RTES (Internal Denial) (Market Research)																												
RTES (IP Cameras)																												
RTES (Pop Up Towers)																												
RTES (Counter-UAV Capability)																												
RTES (RTES Gen 4) (Market Research & Development)																												
RTES (Internal RTES)																												
Network (PL-1 Upgrade)																												
Network (Network Security)																												
Network (Secure Wireless Comm)																												
Network (TSS & Fixed Infrastructure)																												
Network (Fiber Integrity Sensor)																												
Advanced Technology (Narrow Beam LOD)																												
Advanced Technology (Video SA System)																												
Advanced Technology (360 Degree Camera)																												
Advanced Technology (Buried Fiber LOD)																												
Advanced Technology (Tethered UAV)																												
Advanced Technology (Handheld Display)																												
Advanced Technology (Advanced Biometrics)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604287F / <i>Physical Security Equipment</i>	Project (Number/Name) 655120 / <i>Physical Security Equipment - SD ED</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
TSS (VADS Upgrade)	3	2015	2	2017
TSS (Future TASS)	4	2018	2	2021
TSS (Mobile TASS)	2	2017	2	2019
Wide Area Detection (COTS Qual)	2	2016	3	2017
Wide Area Detection (B-Static)	1	2015	3	2015
Wide Area Detection (Multi-Sensor)	1	2017	3	2018
Wide Area Detection (Seismic)	2	2016	3	2016
Wide Area Detection (Foliage Penetrating)	1	2019	3	2020
CCDE (Re-Compete)	2	2017	4	2019
Sensors (Interior)	3	2015	3	2016
Sensors (MW)	3	2016	2	2017
Sensors (PIR)	3	2017	2	2018
Sensors (PBLs)	3	2018	2	2019
Sensors (Fence)	3	2019	2	2020
Sensors (Interior) (5 year cycle)	3	2020	3	2021
Sensors (Narrow Band)	1	2017	4	2019
Sensors (Interior Class 1/Div 2 Environment)	2	2016	4	2018
Assessment /Surveillance(Cameras)	2	2015	3	2020
Assessment/Surveillance (Cameras) (2nd cycle)	2	2017	3	2020
Assessment/Surveillance (Cameras) (3rd cycle)	2	2019	3	2020
Assessment/Surveillance (Cameras) (4th cycle)	1	2021	3	2021
Annunciator (Phase 1 and 2)	1	2016	1	2018

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604287F / <i>Physical Security Equipment</i>	Project (Number/Name) 655120 / <i>Physical Security Equipment - SD ED</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
RTES (Internal Denial) (Market Research)	2	2016	2	2017
RTES (IP Cameras)	1	2016	3	2017
RTES (Pop Up Towers)	3	2017	2	2019
RTES (Counter-UAV Capability)	1	2018	1	2021
RTES (RTES Gen 4) (Market Research & Development)	1	2020	2	2021
RTES (Internal RTES)	1	2015	4	2016
Network (PL-1 Upgrade)	1	2015	1	2016
Network (Network Security)	2	2016	2	2017
Network (Secure Wireless Comm)	1	2017	3	2019
Network (TSS & Fixed Infrastructure)	3	2017	3	2020
Network (Fiber Integrity Sensor)	1	2016	2	2018
Advanced Technology (Narrow Beam LOD)	1	2015	2	2017
Advanced Technology (Video SA System)	1	2016	3	2017
Advanced Technology (360 Degree Camera)	1	2017	3	2018
Advanced Technology (Buried Fiber LOD)	1	2018	4	2019
Advanced Technology (Tethered UAV)	1	2019	4	2020
Advanced Technology (Handheld Display)	3	2019	1	2021
Advanced Technology (Advanced Biometrics)	4	2020	3	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604329F / <i>Small Diameter Bomb (SDB) - EMD</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	966.537	66.374	29.083	54.838	0.000	54.838	47.369	70.080	31.462	6.441	0.000	1,272.184
655191: <i>SDB Increment II</i>	966.537	66.374	29.083	54.838	0.000	54.838	47.369	70.080	31.462	6.441	0.000	1,272.184
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Program MDAP/MAIS Code: 439

Note

This program, BA 05 PE 0604329F, project 655191, SDB II M-Code, is a new start.

A. Mission Description and Budget Item Justification

Small Diameter Bomb Increment II (SDB II) is a joint interest United States Air Force (USAF) and Department of Navy (DoN) ACAT ID program, with the Air Force (AF) as the lead service. SDB II provides the warfighter the capability to attack mobile targets from stand-off, through weather. SDB II addresses the following warfighter requirements: attack moving and stationary targets, adverse weather operations, multiple kills per pass, multiple ordnance carriage, precision munitions capability, reduced munitions footprint, increased weapons effectiveness, minimized potential for collateral damage, reduced susceptibility of munitions to countermeasures and provides a network enabled weapon capability via Link-16 and Ultra High Frequency (UHF) Weapon Data Link. The threshold aircraft for the AF is the F-15E, and the threshold aircraft for the (DoN) are the F-35B and F-35C. Objective aircraft include the F-22, F-16, F-35A, B-2, A-10, MQ-9, B-1, B-52, AC-130 and the F/A-18 E/F. SDB II will be compatible with the BRU-61 (Bomb Rack Unit) miniature munitions carriage, the Joint Miniature Munitions BRU, the CNU-660/E carriage system, the Common Munitions BIT/Reprogramming Equipment (CMBRE), and the Joint Mission Planning System (JMPS). The SDB II program will develop and field a single weapon storage container (USAF) and a dual weapon container (DoN).

SDB II completed a 42-month competitive Risk Reduction phase in October 2009 and entered the Milestone B Engineering and Manufacturing Development (EMD) phase in August 2010. A Fixed Price Incentive Firm EMD contract was awarded on 09 August 2010. The SDB II Program received Milestone C approval to enter Low Rate Initial Production (LRIP) on 4 June 2015 and exercised the Lot 1 production contract option on 12 June 2015. A Fixed Price Incentive Firm Contract for Lot 1 production of 144 weapons was awarded on 12 June 2015. An updated Milestone C Acquisition Program Baseline is complete.

SDB II is a key component of the Air Force's Global Strike Task Force CONOPs and Global Precision Attack Core Function.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting Engineering and Manufacturing Development tasks aimed at meeting validated requirements prior to full-rate production.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604329F I Small Diameter Bomb (SDB) - EMD
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	68.738	32.624	47.489	0.000	47.489
Current President's Budget	66.374	29.083	54.838	0.000	54.838
Total Adjustments	-2.364	-3.541	7.349	0.000	7.349
• Congressional General Reductions	0.000	-0.141			
• Congressional Directed Reductions	0.000	-3.400			
• 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	-2.364	0.000			
• Other Adjustments	0.000	0.000	7.349	0.000	7.349

Change Summary Explanation

FY17 increase for M-Code.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: SDB II Development	43.598	11.074	26.215	0.000	26.215
<p>Description: Development of SDB II to deliver the capability described in the SDB II Capability Development Document (CDD), in lieu of Capability Production Document (CPD) as specified in the government approved SDB II System Performance Specification (SPS) for production, deployment, and sustainment. Upgrades to SDB II hardware and software to meet emerging threats (i.e., M-Code, Cryptographic Modernization). Development of the SDB II design to ensure exportability and program protection, and address obsolescence issues and affordability opportunities.</p>					
<p>FY 2015 Accomplishments: Conducted System Verification and Production Readiness Reviews. Continued Guided Test Vehicle (GTV) and Captive Flight Test (CFT) Development Test for Normal Attack (NA) Mode, Coordinate Attack (CA) Mode and Laser Illuminated Attack (LIA) Mode. Continued executing the Live Fire Test and Evaluation (LFT&E) program. Executed F-15E captive cueing missions to better understand on- and off-board tactical targeting sources. Completed Test, Analyze and Fix (TAAF). Began the Developmental Testing (DT) Captive Carry Reliability Test (CCRT) program. Continued detailed planning of the Government Confidence Test (GCT) program, which consists of 28 government-directed Normal Attack GTV test shots. GCT is scheduled to begin after verification of the NA capability and will complete prior to dedicated Multiservice Operational Test and Evaluation (MOT&E).</p>					

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604329F / <i>Small Diameter Bomb (SDB) - EMD</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
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Began planning for the Operational Test Readiness Review (OTRR) that must be completed prior to the start of the dedicated MOT&E. Began Operational Flight Program (OFP) update and qualification efforts for the BRU-61 carriage. Continued Advanced Joint Effectiveness Model (AJEM) lethality modeling and testing. Continued collaboration with National Security Agency (NSA) on weapon data link key management software. Continued collaboration with Joint Interoperability Test Command (JITC) on interoperability testing. Continued integration of SDB II with Command and Control Infrastructure, including Air and Space Operations Center (AOC) and integration with Joint Terminal Attack Controller (JTAC) kits. Continued mission planning support during DT.

FY 2016 Plans:
 Complete EMD flight testing for the NA, CA, (LIA), and LFT&E efforts. Continue the DT (CCRT) Test program. Continue captive F-15E cueing missions to better understand on- and off-board tactical targeting sources. Begin the GCT program which consists of 28 NA GTV test shots, several CFT deployments, and numerous F-15E captive carry test missions. Continue planning for OTRR. Continue OFP update and qualification efforts for the BRU-61. Continue collaboration with JITC on interoperability testing. Continue integration of SDB II with Command and Control Infrastructure, including AOC and integration with JTAC kits. Upgrade SDB II hardware and software to meet emerging threats, to maintain compatibility with external systems, ensure exportability and program protection, and address obsolescence issues and affordability opportunities.

FY 2017 Base Plans:
 Complete GCT and CCRT programs. Conduct the OTRR and gain approval to begin MOT&E which consists of 45 GTV and 10 LFT&E test shots on the F-15E platform. Continue OFP update and qualification efforts for the BRU-61. Continue AJEM lethality modeling and testing. Continue collaboration with NSA on weapon data link key management software. Continue collaboration with JITC on interoperability testing. Continue integration of SDB II with Command and Control Infrastructure, including AOC and integration with JTAC kits. Continue mission planning support during Developmental Test/Operational Test (DT/OT). Continue upgrade of SDB II hardware and software to meet emerging threats to maintain compatibility with external systems (i.e., M-Code, Cryptographic Modernization, ensure exportability and program protection, and address obsolescence issues and affordability opportunities).

FY 2017 OCO Plans:
 N/A

Title: SDB II Integration and Qualification Testing	22.776	18.009	4.872	0.000	4.872
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Description: F-15E Aircraft Integration incorporates tests and targets, Modeling and Simulation (M&S), target lethality, data link and mission planning. Develop Suite 8E OFP upgrade to provide the capability to program the

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604329F / <i>Small Diameter Bomb (SDB) - EMD</i>
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C. Accomplishments/Planned Programs (\$ in Millions)

weapon with mission planned targets, weapon data link control, and exclusion zone information prior to launch of the weapon. It also allows the aircrew to make in-flight edits of target and weapon data link programming if/when required based on employment scenarios.

FY 2015 Accomplishments:

Continued to conduct ground and flight testing and target procurement to support testing. Began CCRT program. Continued OFP update and qualification efforts. Continued AJEM lethality modeling and testing. Continued collaboration with NSA on weapon data link key management software. Continued collaboration with JITC on interoperability testing. Continued integration of SDB II with Command and Control Infrastructure, including AOC and integration with ground controller kits. Continued mission planning support during DT.

FY 2016 Plans:

Complete EMD GTV, LFT&E, and CFT DT for NA, CA, and LIA modes. Complete OFP for NA, CA, and LIA modes. Begin GCT program which consists of 28 Normal Attack GTV test shots. Begin update to F-15E training devices. Continue AJEM lethality modeling and testing. Continue collaboration with NSA on weapon data link key management software. Continue collaboration with JITC on interoperability testing. Continue integration of SDB II with Command and Control Infrastructure, including AOC and integration with ground controller kits. Continue mission planning support during DT/OT. Continue development activities to upgrade SDB II hardware and software to meet emerging threats, maintain compatibility with external systems, ensure exportability and program protection, and address obsolescence issues and affordability opportunities.

FY 2017 Base Plans:

Complete GCT program which consists of 28 Normal Attack GTV test shots. Continue update to F-15E training devices. Continue qualification efforts for the BRU-61. Continue AJEM lethality modeling and testing. Continue collaboration with NSA on weapon data link key management software. Continue collaboration with JITC on interoperability testing. Continue integration of SDB II with Command and Control Infrastructure, including AOC and integration with ground controller kits. Continue mission planning support during DT/OT. Continue development activities to upgrade SDB II hardware and software to meet emerging threats, maintain compatibility with external systems (i.e., M-Code, Cryptographic Modernization, ensure exportability and program protection, and address obsolescence issues and affordability opportunities).

FY 2017 OCO Plans:

N/A

Title: SDB II M-Code

FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
0.000	0.000	23.751	0.000	23.751

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604329F / <i>Small Diameter Bomb (SDB) - EMD</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: M-code provides an enhanced anti-jam capability and secure access to military GPS signals. M-code will provide the ability to operate in increasing adversarial A2/AD jamming environment with increased accuracy, better signal acquisition, and advanced security.</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans: Continue activities to provide SDB II with M-code capabilities for improved anti-jamming and secure access to military GPS signals. M-Code activities include, but are not limited to, trade studies; development and implementation of an acquisition strategy; and design, development, integration and testing of M-code components.</p> <p>FY 2017 OCO Plans: N/A</p>					
Accomplishments/Planned Programs Subtotals	66.374	29.083	54.838	0.000	54.838

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• MPAF: BA05: Line Item # SDB000: <i>Small Diameter Bomb</i>	51.298	135.117	92.361	167.800	260.161	78.963	69.200	169.435	334.512	1,177.716	2,276.402
• RDT&E: BA05: PE 0604329N: <i>Small Diameter Bomb</i>	11.159	29.329	37.605	0.000	37.605	57.913	72.769	70.921	56.340	21.856	500.727
• WPN: BA05: Line Item # 223800: <i>Small Diameter Bomb</i>	0.000	0.000	0.000	0.000	0.000	20.910	92.117	121.647	117.741	413.166	765.582

Remarks
 Navy RDT&E funds include F-35B and F-35C Integration and Support Cost
 FY15 MPAF BA05 Line Item #SDB000 includes \$10.720M Overseas Contingency Operation (OCO) for SDB I.
 FY16 MPAF BA05 Line Item #SDB000 includes \$2.52M Overseas Contingency Operations (OCO) for SDB I.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604329F / <i>Small Diameter Bomb (SDB) - EMD</i>
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D. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
FY17 MPAF BA05 Line Item #SDB000 includes \$167.8M Overseas Contingency Operation (OCO) for SDB I.											

E. Acquisition Strategy

The SDB II Engineering and Manufacturing Development (EMD) contract was awarded using competitive procedures. At the completion of the 42-month Risk Reduction phase in October 2009, one contractor was selected in April 2010 and awarded the EMD contract in August 2010. The EMD contract is a Fixed-Price Incentive Firm (FPIF) contract with priced production options for the first five production lots. SDB II production Lots 1-3 are FPIF. Production Lots 4-5 are fixed price not-to-exceed pricing with an economic price adjustment clause for labor and materials. The Government is buying the SDB II based on the contractor System Performance Specification (SPS) which has been approved by the Government. The contractor is accountable for system performance as defined in the SPS and a system warranty as defined in the EMD contract and follow-on production contracts. Accordingly, the contractor is accountable to the Government for the design of the weapon system, as well as the planning and execution of the Development Test & Evaluation (DT&E) program to verify system performance. The Government formally arranges and funds the use of Government flight test support for DT&E.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604329F / <i>Small Diameter Bomb (SDB)</i> - EMD	Project (Number/Name) 655191 / <i>SDB Increment II</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Risk Reduction Contract 1	C/CPFF	Boeing : St. Louis, MO	151.922	0.000		0.000		0.000		0.000		0.000	0.000	151.922	151.922
Risk Reduction Contract 2	C/CPFF	Raytheon : Tucson, AZ	150.800	0.000		0.000		0.000		0.000		0.000	0.000	150.800	150.800
EMD Contract	C/FPIF	Raytheon : Tucson, AZ	430.835	24.685	Oct 2014	4.648	Apr 2016	0.000		0.000		0.000	0.000	460.168	460.168
Technical Support Contract	SS/ Various	Raytheon : Tucson, AZ	41.340	15.061	Dec 2014	5.068	Mar 2016	26.033	Dec 2016	0.000		26.033	11.818	99.320	99.320
M Code Development	C/Various	Not specified. : TBD	0.000	0.000		0.000		23.751	Mar 2017	0.000		23.751	92.038	115.789	115.789
MPACT High Pressure Air Compressor System	SS/FFP	Boeing : St. Charles, MO	3.175	0.000		0.000		0.000		0.000		0.000	0.000	3.175	3.175
F-15E Integration and Test Support	SS/ Various	Boeing : St. Louis, MO	40.778	2.692	Jan 2015	0.891	Apr 2016	0.081	Jan 2017	0.000		0.081	0.000	44.442	44.442
BRU-61/A Integration and Test Support	SS/ Various	Boeing : St. Charles, MO	8.417	0.112	Mar 2015	1.973	May 2016	0.000		0.000		0.000	0.000	10.502	10.502
Mission Planning	Various	Various : Various	4.969	0.204	Dec 2014	0.053	Feb 2016	0.000		0.000		0.000	0.000	5.226	5.226
Data Link Integration & Support	Various	Various : Various	2.791	0.144	Dec 2014	0.075	Mar 2016	3.456	Dec 2016	0.000		3.456	0.000	6.466	6.466
System Performance & Lethality	Various	Various : Various	33.809	3.893	Nov 2014	1.070	Feb 2016	0.329	Nov 2016	0.000		0.329	0.635	39.736	39.736
Other Product Development	Various	Various : Various	10.089	1.128	Nov 2014	0.812	Mar 2016	0.000	Nov 2016	0.000		0.000	43.273	55.302	55.302
Subtotal			878.925	47.919		14.590		53.650		0.000		53.650	147.764	1,142.848	1,142.848

Remarks
 EMD contract is budgeted to the contract ceiling price \$509.9M.

 The EMD Target Value is AF funding only. This represents the total liability for the AF (target cost plus ceiling). The contract's target value including Navy funding is \$450.827M. The target price is \$509.9M. This includes AF and Navy ceiling.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604329F / <i>Small Diameter Bomb (SDB)</i> - EMD	Project (Number/Name) 655191 / <i>SDB Increment II</i>
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Other Government Costs	Various	Various : Various	3.320	1.282	Apr 2015	0.746	Apr 2016	1.035	Apr 2017	0.000		1.035	3.000	9.383	9.383
Subtotal			3.320	1.282		0.746		1.035		0.000		1.035	3.000	9.383	9.383

Remarks
None.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DT&E: 96th Test Wing	PO	96th Test Wing : Eglin AFB, FL	19.109	8.021	Nov 2014	6.156	Nov 2015	0.000		0.000		0.000	2.114	35.400	35.400
DT&E: UTTR, WSMR	Various	Various : Various	7.165	2.278	Nov 2014	2.877	Nov 2015	0.000		0.000		0.000	0.000	12.320	12.320
Targets	PO	Various : Various	23.975	0.536	Jan 2015	1.068	Jan 2016	0.000		0.000		0.000	0.518	26.097	26.097
Other Test Support	Various	Various : Various	6.698	2.486	Dec 2014	3.463	Dec 2015	0.019	Dec 2016	0.000		0.019	1.418	14.084	14.084
Subtotal			56.947	13.321		13.564		0.019		0.000		0.019	4.050	87.901	87.901

Remarks
None.

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Technical Acquisition Management Support (TAMS)/EPASS	Various	Various : Eglin AFB, FL	1.693	0.489	Feb 2015	0.000		0.000		0.000		0.000	0.000	2.182	2.182
Technical and Engineering Acquisition Support (TEAS)/EPASS	Various	Various : Eglin AFB, FL	16.479	2.008	Dec 2014	0.000		0.000		0.000		0.000	0.000	18.487	18.487
Program Management Administration (PMA)	Various	Various : Eglin AFB, FL	9.173	1.355	Oct 2014	0.183	Oct 2015	0.134	Oct 2016	0.000		0.134	0.538	11.383	11.383

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604329F / <i>Small Diameter Bomb (SDB)</i> - EMD	Project (Number/Name) 655191 / <i>SDB Increment II</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			27.345	3.852		0.183		0.134		0.000		0.134	0.538	32.052	32.052

Remarks
EPASS: Engineering, Professional & Administrative Support Services

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	966.537	66.374	29.083	54.838	0.000	54.838	155.352	1,272.184	1,272.184

Remarks
 UTTR: Utah Test and Training Range
 WSMR: White Sands Missile Range

 EMD contract is budgeted to the contract ceiling price \$509.9M.

 The EMD Target Value is AF funding only. This represents the total liability for the AF (target cost plus ceiling). The contract's target value including Navy funding is \$450.827M. The target price is \$509.9M. This includes AF and Navy ceiling.

 EPASS: Engineering, Professional & Administrative Support Services

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604329F / <i>Small Diameter Bomb (SDB)</i> - EMD	Project (Number/Name) 655191 / <i>SDB Increment II</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
F-15 Integration Developmental/Operational Testing	1	2015	2	2020
Milestone C	3	2015	3	2015
SDB II M-Code	1	2017	4	2019
Government Confidence Testing	2	2016	1	2017
Operational Testing	1	2017	2	2018
F-15E Required Assets Available	2	2019	2	2019
SDB II Integration on Threshold F-35B/C	3	2018	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604421F / <i>Counterspace Systems</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	22.654	24.134	34.394	0.425	34.819	40.762	22.643	18.909	19.213	Continuing	Continuing
65A001: <i>Counter Satellite Communications System</i>	-	15.618	14.615	28.862	0.000	28.862	32.130	13.884	9.916	10.094	0.000	125.119
65A005: <i>Offensive Counterspace (OCS) C2</i>	-	7.036	7.737	3.961	0.000	3.961	7.032	7.131	7.334	7.431	0.000	47.662
65A013: <i>BOUNTY HUNTER</i>	-	0.000	1.782	1.571	0.425	1.996	1.600	1.628	1.659	1.688	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program conducts critical planning, technology and capability insertion, and system acquisition of Air Force space control systems and associated command and control systems to meet current and future military space control needs in the face of an emerging threat. This funding supports the acquisition process including concept development, risk reduction, design, integration, test, and demonstration. Space control systems include both offensive counterspace (OCS) and defensive counterspace (DCS) systems. OCS systems include the means to disrupt, deny, degrade, or destroy an adversary's space systems, or the information they provide, which may be used for purposes hostile to U.S. national security interests. DCS systems include both active and passive measures to protect U.S. and friendly space related capabilities (satellites, communications links, and supporting ground systems) from enemy attack or interference. This includes development efforts to prevent adversarial ability to use U.S. space systems and services for purposes hostile to U.S. national security interests.

Counterspace Command and Control (C2) includes command and control and mission planning capabilities required for the fielding and employment of counterspace systems. Additional funds in FY2017 and beyond allow the program to continue spiral upgrades of critical battle management command and control (BMC2) functions in concert with the incremental updates to the counterspace systems it supports.

Bounty Hunter supports the Defensive Space Control of US systems in a specific Area of Responsibility and provides the capacity to prevent effective adversary use of Command, Control, Communications, Computers, and Intelligence (C4I). FY2017 OCO funding is for in-theater recapitalization activities to include: R&D and fielding of new capabilities to address evolving threats; hardware and software replacement; and obsolescence issue resolution.

This program is in Budget Activity 5, System Development and Demonstration, because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604421F / <i>Counterspace Systems</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	23.424	24.208	30.468	0.000	30.468
Current President's Budget	22.654	24.134	34.394	0.425	34.819
Total Adjustments	-0.770	-0.074	3.926	0.425	4.351
• Congressional General Reductions	-0.770	-0.074			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	3.926	0.425	4.351

Change Summary Explanation

FY2017: +\$3.926M funds allow the program to add new user capability, to included battle management command and control (BMC2), to coincide with Joint Space Operations Center Mission System (JMS) Increment 3 integration.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604421F / <i>Counterspace Systems</i>				Project (Number/Name) 65A001 / <i>Counter Satellite Communications System</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
65A001: <i>Counter Satellite Communications System</i>	-	15.618	14.615	28.862	0.000	28.862	32.130	13.884	9.916	10.094	0.000	125.119
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Acquisition Decision Memorandum (24 April 2009) directed all capabilities identified in the October 2006 CCS Block 20, Joint Requirements Oversight Council (JROC) approved Capability Development Document (CDD) shall be accomplished as a Pre-planned Product Improvement Program (P3I) upgrades to the Counter Communications System (CCS) Block 10.

CCS provides expeditionary, deployable, reversible offensive space control (OCS) effects applicable across the full spectrum of conflict. It prevents adversary SATCOM in AOR including C2, Early Warning and Propaganda, and hosts Rapid Reaction Capabilities in response to Urgent Needs. This program effort includes architecture engineering, system hardware design and development, software design and integration, and testing and demonstration of capabilities to provide disruption of satellite communications signals.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Counter Communications System (CCS) Pre-planned Product Improvement (P3I) Program	15.618	14.615	28.862	-	28.862
Description: Develop, integrate, test and field the CCS Pre-planned Product Improvement (P3I) program. This is an incremental approach to deliver Block 20 CCS capabilities.					
FY 2015 Accomplishments: Continued development, integration and testing of Increment 2 of the Block 10 Pre-planned Product Improvement (P3I) program (CCS 10.2).					
FY 2016 Plans: Continue development, integration and testing of Increment 2 of Block 10 Pre-planned Product Improvement (P3I) program (CCS 10.2).					
FY 2017 Base Plans: Continue development, integration and testing of Increment 2 of Block 10 Pre-planned Product Improvement (P3I) program (CCS 10.2). Planned delivery of one system with a Development Support Facility. Begin development of Increment 3 of Block 10 Pre-planned Product Improvement (P3I) program (CCS 10.3).					
Accomplishments/Planned Programs Subtotals	15.618	14.615	28.862	-	28.862

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604421F / <i>Counterspace Systems</i>	Project (Number/Name) 65A001 / <i>Counter Satellite Communications System</i>

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>			<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• OPAF:BA03:Line Item #836810: <i>Counterspace Systems</i>	59.439	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
• SPAF:BA01:Line Item CTRSPC: <i>Counterspace Systems</i>	0.000	43.065	26.984	0.000	26.984	22.676	0.000	0.000	0.000	0.000	160.599

Remarks

D. Acquisition Strategy

All contracts in this program element will be awarded using competitive procedures to the maximum extent possible, to upgrade existing capabilities as well as to acquire next generation capabilities through incremental acquisitions.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604421F / <i>Counterspace Systems</i>	Project (Number/Name) 65A001 / <i>Counter Satellite Communications System</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Block 10 P3I Development (1)	C/CPIF	Harris : Melbourne, FL	-	9.898	Dec 2014	9.066	Dec 2015	21.240	Dec 2016	0.000		21.240	Continuing	Continuing	-
Block 10 P3I Development (2)	Various	Various : El Segundo, CA	-	0.000	May 2015	0.628	May 2016	1.337		0.000		1.337	Continuing	Continuing	TBD
Technical Mission Analysis	RO	Aerospace Corp : El Segundo, CA	-	0.223	Oct 2014	1.009	Oct 2015	1.029	Oct 2016	0.000		1.029	Continuing	Continuing	11.144
CCS Enterprise Systems Engineering and Integration	C/FFP	AT&T : El Segundo, CA	-	0.490	Jun 2015	0.118	Jun 2016	0.163	Jun 2017	0.000		0.163	Continuing	Continuing	TBD
Subtotal			-	10.611		10.821		23.769		0.000		23.769	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Security	C/CPAF	Mantech : El Segundo, CA	-	1.571	Nov 2014	1.929	Nov 2015	1.989	Nov 2016	0.000		1.989	0.000	5.489	-
Miscellaneous Support Services	Various	Various : TBD	-	0.000	May 2015	0.147	May 2016	0.000		0.000		0.000	Continuing	Continuing	TBD
Subtotal			-	1.571		2.076		1.989		0.000		1.989	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force											Date: February 2016				
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0604421F / <i>Counterspace Systems</i>					Project (Number/Name) 65A001 / <i>Counter Satellite Communications System</i>				

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total		Cost To Complete	Total Cost	Target Value of Contract
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			
FFRDC	RO	Aerospace Corp : El Segundo, CA	-	1.001	Oct 2014	0.088	Oct 2015	0.091	Oct 2016	0.000		0.091	Continuing	Continuing	-	
A&AS	Various	Space and Missile Systems Center : El Segundo, CA	-	1.926	Nov 2014	1.531	Nov 2015	2.752	Nov 2016	0.000		2.752	0.000	6.209	TBD	
Other Support	Various	Various : El Segundo, CA	-	0.509	Oct 2014	0.099	Oct 2015	0.261	Oct 2016	0.000		0.261	Continuing	Continuing	-	
Subtotal			-	3.436		1.718		3.104		0.000		3.104	-	-	-	
Project Cost Totals			-	15.618		14.615		28.862		0.000		28.862	-	-	-	

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604421F / Counterspace Systems	Project (Number/Name) 65A001 / Counter Satellite Communications System

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				
	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	
USAF 10.2 CDR	■	■																											
USAF 10.1 System Delivery: #6	■	■																											
USAF 10.2 SVT							■	■																					
USAF 10.2 SVR								■	■																				
USAF 10.2 DT/OT											■	■																	
USAF 10.2 System Delivery: #1											■	■																	
ANG 10.2 System Delivery #1											■	■																	
ANG 10.2 System Delivery: #2												■	■																
USAF 10.2 Trainer Delivery												■	■																
USAF 10.2 System Deliveries: #2-#6													■	■	■	■													
ANG 10.2 Trainer Delivery															■	■													
ANG 10.2 System Delivery: #3																■	■												
ANG 10.2 System Delivery: #4																			■	■									

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604421F / <i>Counterspace Systems</i>	Project (Number/Name) 65A001 / <i>Counter Satellite Communications System</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
USAF 10.2 CDR	1	2015	1	2015
USAF 10.1 System Delivery: #6	1	2015	1	2015
USAF 10.2 SVT	3	2016	3	2016
USAF 10.2 SVR	4	2016	4	2016
USAF 10.2 DT/OT	1	2017	1	2017
USAF 10.2 System Delivery: #1	1	2017	1	2017
ANG 10.2 System Delivery #1	1	2017	1	2017
ANG 10.2 System Delivery: #2	2	2017	2	2017
USAF 10.2 Trainer Delivery	3	2017	3	2017
USAF 10.2 System Deliveries: #2-#6	1	2018	3	2018
ANG 10.2 Trainer Delivery	4	2018	4	2018
ANG 10.2 System Delivery: #3	1	2019	1	2019
ANG 10.2 System Delivery: #4	2	2019	2	2019

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604421F / Counterspace Systems				Project (Number/Name) 65A005 / Offensive Counterspace (OCS) C2			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
65A005: <i>Offensive Counterspace (OCS) C2</i>	-	7.036	7.737	3.961	0.000	3.961	7.032	7.131	7.334	7.431	0.000	47.662
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This effort supports the evolution of command and control (C2) and mission planning capabilities in support of the fielding and employment of Counterspace Systems. It provides for the integration and upgrade of collaborative tools to link deployable counterspace systems with Joint Warfighting C2 systems and to enable integrated planning and execution of the counterspace mission. Upgraded capabilities will be integrated into current and future command and control systems. This program will leverage the Joint Execution and Tasking System for Space (JETSS) effort in C2 for future space control and counterspace mission capabilities. Requirements for this program are derived from AFSPC prioritized AF IMT 1067 IAW AFSPCI 63-104.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Joint Execution and Tasking System for Space (JETSS)	7.036	7.737	3.961	-	3.961
Description: Evolve with upgrades the counterspace mission planning and C2 capability to support counterspace systems space control warfighter activities.					
FY 2015 Accomplishments: Continued JETSS development of Spiral 4 and began development of Spiral 5. Also accomplished future system planning.					
FY 2016 Plans: Deliver JETSS Spiral 4 capability and continue development of JETSS Spiral 5 in FY 2017, which includes future systems.					
FY 2017 Base Plans: Deliver JETSS Spiral 5, including C2 Integrated Site Picture (ISP) improvement and Multi Compartmented Collaboration Service (MCS) voice upgrades.					
Accomplishments/Planned Programs Subtotals	7.036	7.737	3.961	-	3.961

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

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• None: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604421F / <i>Counterspace Systems</i>	Project (Number/Name) 65A005 / <i>Offensive Counterspace (OCS) C2</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

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D. Acquisition Strategy

All contracts will be awarded using competitive procedures to the maximum extent possible to acquire next generation capabilities through incremental acquisitions.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604421F / <i>Counterspace Systems</i>	Project (Number/Name) 65A005 / <i>Offensive Counterspace (OCS) C2</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Counterspace Planning and C2 System (JETSS)	C/CPAF	General Dynamics : Santa Clara, CA	-	5.312	Dec 2014	6.031	Dec 2015	2.836	Dec 2016	0.000		2.836	Continuing	Continuing	TBD
Counterspace Architecture Development	C/CPFF	NGMS : Redondo Beach, CA	-	0.913	Jun 2015	0.839	Jun 2016	0.470	Jun 2017	0.000		0.470	Continuing	Continuing	TBD
Subtotal			-	6.225		6.870		3.306		0.000		3.306	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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 : TBD	-	0.761	Oct 2014	0.817	Oct 2015	0.605	Oct 2016	0.000		0.605	Continuing	Continuing	TBD
Other Support	C/Various	Variu : TBD	-	0.050	Oct 2014	0.050	Oct 2015	0.050	Oct 2016	0.000		0.050	Continuing	Continuing	TBD
Subtotal			-	0.811		0.867		0.655		0.000		0.655	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	7.036	7.737	3.961	0.000	3.961	-	-	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604421F / Counterspace Systems	Project (Number/Name) 65A005 / Offensive Counterspace (OCS) C2
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
C2 Spiral #4 Development	██████████																											
C2 Spiral #4 Test					██████████																							
C2 Spiral #4 Delivery					██████████																							
C2 Spiral #5 Development	██████████																											
C2 Spiral #5 Test									██████████																			
C2 Spiral #5 Delivery									██████████																			
C2 Spiral #6 Development													██████████															
C2 Spiral #6 Test																					██████████							
C2 Spiral #6 Delivery																					██████████							
JMS Integration Study																	██████████											
JMS Integration																					██████████							

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604421F / <i>Counterspace Systems</i>	Project (Number/Name) 65A005 / <i>Offensive Counterspace (OCS) C2</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
C2 Spiral #4 Development	1	2015	3	2015
C2 Spiral #4 Test	3	2015	1	2016
C2 Spiral #4 Delivery	4	2015	3	2016
C2 Spiral #5 Development	2	2015	3	2017
C2 Spiral #5 Test	2	2017	3	2017
C2 Spiral #5 Delivery	3	2017	4	2017
C2 Spiral #6 Development	2	2018	3	2021
C2 Spiral #6 Test	4	2020	3	2021
C2 Spiral #6 Delivery	3	2021	4	2021
JMS Integration Study	2	2019	3	2019
JMS Integration	1	2020	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604421F / <i>Counterspace Systems</i>				Project (Number/Name) 65A013 / <i>BOUNTY HUNTER</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
65A013: <i>BOUNTY HUNTER</i>	-	0.000	1.782	1.571	0.425	1.996	1.600	1.628	1.659	1.688	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Bounty Hunter (BH) supports the Defensive Space Control of US systems in a specific AOR and provides the capacity to prevent effective adversary use of Command, Control, Communications, Computers, and Intelligence (C4I). Continuing yearly spiral development is needed to meet new user needs in an ever changing threat environment.

FY17 OCO funding is for in-theater recapitalization activities to include: R&D and fielding of new capabilities to address evolving threats; hardware and software replacement; and obsolescence issue resolution.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Bounty Hunter	0.000	1.782	1.571	0.425	1.996
Description: Develop new capabilities for the Bounty Hunter program to maintain operational capability. Specific accomplishments are classified.					
FY 2015 Accomplishments: N/A					
FY 2016 Plans: Plan, develop and deliver Spiral 1 upgrades based on verified warfighter needs (which are classified).					
FY 2017 Base Plans: Develop and deliver Spiral 2 upgrades based on verified warfighter needs (which are classified).					
FY 2017 OCO Plans: In-theater recapitalization activities to include: R&D and fielding of new capabilities to address evolving threats; hardware and software replacement; and obsolescence issue resolution.					
Accomplishments/Planned Programs Subtotals	0.000	1.782	1.571	0.425	1.996

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

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604421F / <i>Counterspace Systems</i>	Project (Number/Name) 65A013 / <i>BOUNTY HUNTER</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

D. Acquisition Strategy

Contracts funded for this program shall be awarded to the MITRE Federally Funded Research and Development Center (FFRDC).

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604421F / <i>Counterspace Systems</i>	Project (Number/Name) 65A013 / <i>BOUNTY HUNTER</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Bounty Hunter Spiral Development	MIPR	MITRE : Colorado Springs, CO	-	0.000		1.782	Apr 2016	1.571	Oct 2016	0.425		1.996	Continuing	Continuing	-
Subtotal			-	0.000		1.782		1.571		0.425		1.996	-	-	-

Remarks
Bounty Hunter program was a new start in FY 2016.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000	1.782	1.571	0.425	1.996	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604421F / <i>Counterspace Systems</i>	Project (Number/Name) 65A013 / <i>BOUNTY HUNTER</i>
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Bounty Hunter Development Spiral 1					■	■	■	■																				
Spiral #1 Delivery								■																				
Bounty Hunter Development Spiral 2									■	■	■	■																
Spiral #2 Delivery												■																
Bounty Hunter Development Spiral 3													■	■	■	■												
Spiral # 3 Delivery																■												
Bounty Hunter Development Spiral 4																	■	■	■	■								
Spiral #4 Delivery																				■								
Bounty Hunter Development Spiral 5																					■	■	■	■				
Spiral #5 Delivery																								■				
Bounty Hunter Development Spiral 6																									■	■	■	■
Spiral #6 Delivery																												■

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604421F / <i>Counterspace Systems</i>	Project (Number/Name) 65A013 / <i>BOUNTY HUNTER</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Bounty Hunter Development Spiral 1	2	2016	3	2016
Spiral #1 Delivery	4	2016	4	2016
Bounty Hunter Development Spiral 2	1	2017	3	2017
Spiral #2 Delivery	4	2017	4	2017
Bounty Hunter Development Spiral 3	1	2018	3	2018
Spiral # 3 Delivery	4	2018	4	2018
Bounty Hunter Development Spiral 4	1	2019	3	2019
Spiral #4 Delivery	4	2019	4	2019
Bounty Hunter Development Spiral 5	1	2020	3	2020
Spiral #5 Delivery	4	2020	4	2020
Bounty Hunter Development Spiral 6	1	2021	3	2021
Spiral #6 Delivery	4	2021	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	1,067.753	9.031	29.288	23.945	0.000	23.945	48.309	148.642	108.571	29.964	0.000	1,465.503
65A006: <i>Space Based Space Surveillance</i>	974.562	0.000	28.404	23.945	0.000	23.945	48.309	148.642	108.571	29.964	0.000	1,362.397
65A012: <i>Net-centric Sensors and Data Sources</i>	74.417	6.724	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	81.141
65A026: <i>C-Band Radar</i>	18.774	2.307	0.884	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	21.965

Program MDAP/MAIS Code: 328

A. Mission Description and Budget Item Justification

Space Situational Awareness (SSA) is knowledge of all aspects of space related to operations as described in the approved SSA Initial Capabilities Document (ICD). As the foundation for space control, SSA encompasses intelligence on adversary space operations; surveillance of all space objects and activities; detailed reconnaissance of specific space assets; monitoring space environmental conditions; monitoring cooperative space assets; and conducting integrated command, control, communications, processing, analysis, dissemination, and archiving activities. This Program Element (PE) develops new Air Force sensors, and improved information capabilities for integration across the SSA network; it also includes developmental planning and technology forecasting for future blocks and emerging needs.

A companion program element, 0305940F, Space Situational Awareness Operations, fields, upgrades, operationalizes, operates, and sustains existing sensors and information integration capabilities within the SSA network. An additional companion program element, 0305614F, JSpOC Mission System, processes surveillance of all space objects and activities, maintains detailed reconnaissance of space assets, fuses space data, maintains awareness of cooperative space assets, and allows JFCC-Space to conduct integrated C2 of space forces.

Development activities are necessary to deploy new advanced sensors capable of searching for, tracking, and identifying the expanding number of debris objects on orbit as well as the increasing number of satellites launched by other nations, of which many are smaller and more capable than previous spacecraft. These activities are also required to better integrate the disparate elements of SSA in order to enable rapid and responsive space operations.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	9.462	32.374	50.598	0.000	50.598
Current President's Budget	9.031	29.288	23.945	0.000	23.945
Total Adjustments	-0.431	-3.086	-26.653	0.000	-26.653
• Congressional General Reductions	0.000	-0.086			
• Congressional Directed Reductions	0.000	-3.000			
• 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	-0.431	0.000			
• Other Adjustments	0.000	0.000	-26.653	0.000	-26.653

Change Summary Explanation

FY2017: -\$26.415M for re-phase of SBSS Follow-on; -\$0.238M inflation adjustment

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A006 / <i>Space Based Space Surveillance</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
65A006: <i>Space Based Space Surveillance</i>	974.562	0.000	28.404	23.945	0.000	23.945	48.309	148.642	108.571	29.964	0.000	1,362.397
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Space-Based Space Surveillance (SBSS) Block 10 satellite was launched September 2010 and is currently operational. The SBSS Follow-On program will develop and deliver a system, including ground segment, that continues providing space object surveillance from space post SBSS Block 10 End-of-Life. The Follow-On program is based upon the current Space Situational Awareness (SSA) Initial Capabilities Document (ICD) architectural requirements focused on protecting High Value Assets (HVAs) in Geosynchronous Orbit (GEO). It will provide the capability to search, detect, and track objects primarily in deep space GEO from a space-based sensor for timely custody and event detection. Surveillance from space augments existing ground sensors with timely 24-hour, above the weather collection of GEO satellite metric data only possible with a space based sensor and then communicates its findings to the Joint Space Operations Center (JSpOC).

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

	FY 2015	FY 2016	FY 2017
Title: SBSS Follow-On Design & Development	0.000	28.404	23.945
Description: Performs space based SSA analysis, research, and development for the SBSS system.			
FY 2015 Accomplishments: N/A			
FY 2016 Plans: Transition technology from the ORS-5 operational demonstration mission to begin development of payload hardware. Initiate analysis of Space Surveillance Network (SSN) 2025 to evaluate against threat paradigm.			
FY 2017 Plans: Complete source selection, award contract, and start development of SBSS Follow-On with entry into Engineering and Manufacturing Development (EMD). Perform risk reduction activities and analyses for the SBSS Follow-On based on threat paradigm analyzed/out-briefed by the Space Security and Defense Program (SSDP).			
Accomplishments/Planned Programs Subtotals	0.000	28.404	23.945

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

N/A

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A006 / <i>Space Based Space Surveillance</i>

D. Acquisition Strategy

SBSS Block 10 currently operational with End of Life expected in 2020.

Architectural studies have been conducted to determine the best way to provide future space-based space surveillance beyond the life of the current system.

The Acquisition Strategy for SBSS Follow-On is under development.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A006 / <i>Space Based Space Surveillance Systems</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Block 10 design and development	C/CPAF	Northrop Grumman : Redondo Beach, CA	549.291	0.000		0.000		0.000		0.000		0.000	0.000	549.291	-
Block 10 Technical risk reduction, mission planning & mission data processing	SS/CPFF	MIT Lincoln Laboratory : Lexington, MA	29.271	0.000		0.000		0.000		0.000		0.000	0.000	29.271	-
Block 10 Launch vehicle integration	MIPR	Space and Missile Systems Center : Kirtland AFB, NM	85.644	0.000		0.000		0.000		0.000		0.000	0.000	85.644	-
Block 10 Contractor Ops & Interim Contract Support	SS/CPAF	Boeing : Huntington Beach, CA	152.223	0.000		0.000		0.000		0.000		0.000	0.000	152.223	-
SBSS Follow-on Design & Development	Various	Various : Various	10.894	0.000		0.000		0.000		0.000		0.000	0.000	10.894	-
SSA risk reduction and technology transfer	Various	Various : Various	33.247	0.000		0.000		0.000		0.000		0.000	0.000	33.247	-
STARE Study and Design work	MIPR	Lawrence Livermore National Laboratory : Livermore, CA	1.576	0.000		0.000		0.000		0.000		0.000	0.000	1.576	-
SBSS Follow On Ground Feasibility Assessment and Implementation	TBD	TBD : TBD	0.000	0.000		0.600	Mar 2016	1.219	Mar 2017	0.000		1.219	Continuing	Continuing	-
SBSS Follow On Prime Development	C/TBD	TBD : TBD	0.000	0.000		0.000		12.038	Mar 2017	0.000		12.038	0.000	12.038	-
Technical Mission Analysis (WS)	Various	Various : Various	0.000	0.000		19.975	Oct 2015	2.764	Oct 2016	0.000		2.764	0.000	22.739	-
Subtotal			862.146	0.000		20.575		16.021		0.000		16.021	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A006 / <i>Space Based Space Surveillance Systems</i>
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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, FFRDC	SS/CPFF	Aerospace : Los Angeles, CA	44.559	0.000		0.000		0.000		0.000		0.000	0.000	44.559	-
Engineering and Technical Services	C/FFP	AT&T Government Solutions, Inc : Los Angeles, CA	22.296	0.000		0.000		0.000		0.000		0.000	0.000	22.296	-
Other Support	Various	Various : Los Angeles, CA	30.867	0.000		0.000		0.000		0.000		0.000	0.000	30.867	-
Subtotal			97.722	0.000		0.000		0.000		0.000		0.000	0.000	97.722	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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	C/FFP	Aerospace Corp. : Los Angeles, CA	0.000	0.000		2.885	Oct 2015	3.121	Oct 2016	0.000		3.121	0.000	6.006	-
A&AS	Various	Various : TBD	9.728	0.000		4.870	Oct 2015	4.725	Oct 2016	0.000		4.725	0.000	19.323	-
Other Support	Various	Various : TBD	4.966	0.000		0.074	Oct 2015	0.078	Oct 2016	0.000		0.078	0.000	5.118	-
Subtotal			14.694	0.000		7.829		7.924		0.000		7.924	0.000	30.447	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			974.562	0.000	28.404	23.945	0.000	23.945	-	-	-

Remarks

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A006 / <i>Space Based Space Surveillance</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Pre-Phase A Acquisition Planning	1	2015	1	2016
Acq Strategy, RFP Dev and Source Selection	1	2016	2	2017
MDD	2	2016	2	2016
Contract Award	3	2017	3	2017
Tech Dev / Engineering and Manufacturing Development / Production	3	2017	3	2021
CDD	1	2018	1	2018
Preliminary Design Review (PDR)	3	2018	3	2018
Milestone B	4	2018	4	2018
Critical Design Review (CDR)	3	2019	3	2019
Launch	3	2021	3	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>				Project (Number/Name) 65A012 / <i>Net-centric Sensors and Data Sources</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
65A012: <i>Net-centric Sensors and Data Sources</i>	74.417	6.724	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	81.141
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	

Note

Project 65A012, Net-centric Sensors and Data Sources (N-CSDS), completed in FY15

A. Mission Description and Budget Item Justification

Net-centric Sensors and Data Sources (N-CSDS) efforts migrate the Space Surveillance Network, non-traditional SSA sensors and data sources for use by any entity (primarily the Joint Space Operations Center (JSpOC)) into a net-centric enterprise, enabling more rapid distribution of data to the warfighter based on an AFSPC provided prioritization list. This effort will define and implement the technical architecture, and support the concept to provide the foundational data necessary to enable rapid, responsive decisions by the Commander, United States Strategic Command's Joint Functional Component Commander for Space (JFCC Space) and other national capability users to detect, evaluate, and attribute space events. This effort builds upon and operationalizes the successful Extended Space Sensor Architecture Advanced Concept Technology Demonstration (ESSA ACTD) and prototypes how disparate and legacy space sensor network data can be translated into a net-centric operating environment. Data will be exposed as defined by published DoD and community interface standards to ensure technical interoperability.

Data exposed from Space Situational Awareness (SSA) sensors and other non-traditional data sources via N-CSDS effort will be integrated into the JMS program (PE 0305614F).

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

	FY 2015	FY 2016	FY 2017
Title: Sensor & Data Integration & Exposure	6.724	0.000	0.000
Description: Providing Data Exposure and Data Source Integration Net-Centrically for consumption and use by the JSpOC and other users.			
FY 2015 Accomplishments: Completed exposure of three classified data sources (Concept C, Concept J, and Concept G). Completed Ground-based Electro-Optical Deep Space Surveillance System (GEODSS) net-centric delivery.			
FY 2016 Plans: N/A			
FY 2017 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A012 / <i>Net-centric Sensors and Data Sources</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
N/A			
Accomplishments/Planned Programs Subtotals	6.724	0.000	0.000

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

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• OPAF: BA03: 836790: <i>Space Mods Space</i>	4.577	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	19.110

Remarks

D. Acquisition Strategy

Project utilizes existing engineering and study contracts and a competitively selected system engineering team to conduct sensor and data source activities.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A012 / <i>Net-centric Sensors and Data Sources</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Sensor Data Exposure - Sidecar Development	C/Variou	MIT/LL : Lexington, MA	11.569	0.000		0.000		0.000		0.000		0.000	0.000	11.569	11.569
Net-Centric Capability Development and Data Exposure	Various	Various : Various	28.318	4.494	Jan 2015	0.000		0.000		0.000		0.000	0.000	32.812	36.317
Technical Mission Analysis (WS)	Various	Various : Various	0.000	0.363	Nov 2014	0.000		0.000		0.000		0.000	0.000	0.363	-
N-CSDS Enterprise Systems Engineering and Integration	C/CPFF	Lockheed Martin Integrated Systems : Endicott, NY	15.300	0.000		0.000		0.000		0.000		0.000	0.000	15.300	15.300
Subtotal			55.187	4.857		0.000		0.000		0.000		0.000	0.000	60.044	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Activities	RO	46th Test Squadron : Eglin AFB, FL	1.353	0.078	Jan 2015	0.000		0.000		0.000		0.000	0.000	1.431	1.713
Subtotal			1.353	0.078		0.000		0.000		0.000		0.000	0.000	1.431	1.713

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A012 / <i>Net-centric Sensors and Data Sources</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Concept C	██████																											
Common Data Model (Integration with JMS)	██████████████																											
Concept J Database Exposure Adapters	████																											
Concept G			██████																									
GEODSS Site 1 Operational Test			████																									

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A012 / <i>Net-centric Sensors and Data Sources</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Concept C	1	2015	2	2015
Common Data Model (Integration with JMS)	1	2015	4	2015
Concept J Database Exposure Adapters	2	2015	2	2015
Concept G	3	2015	4	2015
GEODSS Site 1 Operational Test	4	2015	4	2015

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A026 / <i>C-Band Radar</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
65A026: <i>C-Band Radar</i>	18.774	2.307	0.884	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	21.965
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

A Memorandum of Understanding (MOU) between the United States Air Force and the Australian Department of Defence was signed by the United States Secretary of Defense and the Australian Minister for Defence on November 14, 2012 to support this international effort to provide an improved space situational awareness capability in the Australian geographic area. The MOU includes description of the need for Australian funding for part of the relocation project. The project will relocate a C-Band radar to Harold E. Holt Naval Communications Station (HEH NCS) in Australia and upgrade it to perform a Space Situational Awareness (SSA) mission. When completed, the radar will provide data for catalog maintenance, space object identification, and support for special events (e.g., space launches, satellite breakups, and maneuvers).

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

	FY 2015	FY 2016	FY 2017
Title: C-Band Radar	2.307	0.884	-
Description: Relocates a C-Band Radar to Harold E. Holt Naval Communications Station (HEH NCS) in Australia and upgrades it to perform a Space Situational Awareness (SSA) mission.			
FY 2015 Accomplishments: Completed radar assembly and system upgrades.			
FY 2016 Plans: Complete Developmental Test and Evaluation, Operational Test and Evaluation, and Initial Operating Capability (IOC).			
Accomplishments/Planned Programs Subtotals	2.307	0.884	-

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

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• OPAF: PE 35940F: Line Item # 861900: <i>C-Band Radar Spares and Repairs</i>	0.000	4.868	4.861	0.000	4.861	0.000	0.000	0.000	0.000	0.000	9.729

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A026 / <i>C-Band Radar</i>

D. Acquisition Strategy

This project will utilize a mix of experienced contractors, FFRDC and Air National Guard resources to upgrade the C-Band system and complete the relocation to Australia.

The MOU between the United States Air Force and the Australian Department of Defence includes the need for Australian funding for part of the relocation project. Site renovation in Australia began in FY 2013 as Australian funding became available.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A026 / <i>C-Band Radar</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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-Band Radar Upgrades	TBD	Various : Various	16.924	0.641	Dec 2014	0.044	Dec 2015	0.000		0.000		0.000	0.000	17.609	15.665
Subtotal			16.924	0.641		0.044		0.000		0.000		0.000	0.000	17.609	15.665

Remarks
Funding will be used to complete the Radar Open Systems Architecture (ROSA) and Space Surveillance Support Software (S4) upgrades to the existing C-Band Radar.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
DISA	WR	DISA : Ft Meade, MD	0.005	0.000		0.000		0.000		0.000		0.000	0.000	0.005	0.005
Subtotal			0.005	0.000		0.000		0.000		0.000		0.000	0.000	0.005	0.005

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental Test, Operational Test, & Initial Operating Capability Test	Various	Various : Los Angeles, CA	0.654	0.218	Oct 2014	0.022	Oct 2015	0.000		0.000		0.000	0.000	0.894	0.613
Subtotal			0.654	0.218		0.022		0.000		0.000		0.000	0.000	0.894	0.613

Remarks
Test support is being provided by the 96th Test Wing Eglin AFB and 17th Test Squadron Schriever AFB.

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
A&AS	Various	Various : Los Angeles, CA	1.191	1.448	Oct 2014	0.818	Oct 2015	0.000		0.000		0.000	0.000	3.457	2.889

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A026 / <i>C-Band Radar</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Complete Radar Renovation/Relocation	██████																											
Complete Design/Development	██████████																											
Test					██████████																							
Operational Acceptance (Sep 2016)									████																			

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A026 / <i>C-Band Radar</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Complete Radar Renovation/Relocation	1	2015	2	2015
Complete Design/Development	1	2015	4	2015
Test	1	2016	4	2016
Operational Acceptance (Sep 2016)	4	2016	4	2016

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604426F / <i>Space Fence</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	0.000	191.708	240.692	168.364	0.000	168.364	50.217	5.265	0.000	0.000	0.000	656.246
65A009: <i>Space Fence</i>	0.000	191.708	240.692	168.364	0.000	168.364	50.217	5.265	0.000	0.000	0.000	656.246
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Program MDAP/MAIS Code: 438

A. Mission Description and Budget Item Justification

The Space Fence effort will develop a system of ground-based sensors to improve upon the former Air Force Space Surveillance System (AFSSS), a Very High Frequency (VHF) radar operational from 1961 to 2013. The Space Fence will provide a more accurate and timely detection capability of smaller orbiting objects, primarily in low-earth orbit (LEO). The system will use higher frequency S-band radars at globally dispersed sites. As a result, it will greatly expand the uncued detection and tracking capacity of the Space Surveillance Network, from around 20,000 to 100,000+ objects, while working in concert with other network sensors. Requirements are identified in the June 2012 approved Space Fence Capabilities Development Document (CDD).

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

B. Program Change Summary (\$ in Millions)

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	200.082	243.909	196.042	0.000	196.042
Current President's Budget	191.708	240.692	168.364	0.000	168.364
Total Adjustments	-8.374	-3.217	-27.678	0.000	-27.678
• Congressional General Reductions	0.000	-0.717			
• Congressional Directed Reductions	0.000	-2.500			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-8.374	0.000			
• Other Adjustments	0.000	0.000	-27.678	0.000	-27.678

Change Summary Explanation

FY16: -\$2.5M Congressional Mark

FY17: -\$27.3M Budget reduced from Contract Ceiling to Contract Target; -\$0.378M inflation adjustment.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604426F / <i>Space Fence</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Title: Space Fence Description: Develops S-band SSA radar system to provide detection and tracking capability of objects in Low Earth Orbit. FY 2015 Accomplishments: Continued Engineering and Manufacturing Development (EMD), Production and Deployment activities. These activities included: the continued construction of Site 1 facilities; continued manufacturing and integration of radar components and assemblies; and the further development and integration of the Space Fence Operations Center (SOC) and Site 1 Radar hardware and software. Initiated SOC facility preparation. FY 2016 Plans: Continue system manufacture, software builds, in-plant integration and test, training, technical orders, and technical manual development. This includes the majority of radar facility and operations building construction as well as power plant annex construction and commissioning and radar final production and test. FY 2017 Plans: Complete on-island assembly of the Receive and Transmit arrays. Conduct Contractor installation, checkout and test of the system at the Kwajalein Atoll, Marshall Islands and the SOC at the Reagan Test Site Operations Center, Huntsville, AL. (ROC-H). Conduct Deputy Assistant Secretary of Defense (DASD)/Development Test & Evaluation (DT&E) and Director, Operational Test and Evaluation (DOT&E) assessments of system level capabilities. Conduct Developmental Test Readiness Review (DTRR) to confirm and certify readiness to enter DT&E.	191.708	240.692	168.364
Accomplishments/Planned Programs Subtotals	191.708	240.692	168.364

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• SPAF: BA01: Line Item 23SFNC: <i>Space Fence</i>	0.000	0.000	0.000	0.000	0.000	0.000	45.982	50.199	12.776	Continuing	Continuing

Remarks

E. Acquisition Strategy
 A single Engineering Manufacturing and Development (EMD) Production and Deployment contract was awarded on 2 Jun 14 to Lockheed Martin Mission Systems and Training. The contract will take the contractor through Critical Design Review (CDR), fabrication, integration, test, production and deployment, with up to two years of Interim Contractor Support (ICS). The program will utilize a two increment approach. Increment 1/Initial Operational Capability (IOC) will consist of successful operations

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force Date: February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)
3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	PE 0604426F / <i>Space Fence</i>

at the first radar site located in the Kwajalein Atoll and the SOC at ROC-H. Increment 2 (contract option) will include completion of the second radar at a location which is to be determined pending negotiations with the proposed host nation.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604426F / <i>Space Fence</i>	Project (Number/Name) 65A009 / <i>Space Fence</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Fence Development	C/FPIF	Lockheed Martin : Moorestown, NJ	0.000	171.052	Apr 2015	218.101	Nov 2015	150.894	Dec 2016	0.000		150.894	35.543	575.590	914.699
Various (Independent Program Assessment, site survey, software, Site Activation Task Force (SATAF))	Various	Various : Various	0.000	5.388	Oct 2014	4.148	Oct 2015	1.529	Oct 2016	0.000		1.529	1.529	12.594	-
Design Oversight and Management	SS/FP	MIT Lincoln Laboratory : Lexington, MA	0.000	1.150	Nov 2014	1.150	Nov 2015	0.682	Nov 2016	0.000		0.682	0.000	2.982	-
Subtotal			0.000	177.590		223.399		153.105		0.000		153.105	37.072	591.166	-

Remarks
 Prior to FY15 all funds were executed and reported in PE 0604225F (Space Situational Awareness Systems)
 Product Development: \$774.994

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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 - 46th Test Group	PO	46th Test Group : Eglin AFB, FL	0.000	1.520	Jan 2015	2.086	Jan 2016	1.983	Jan 2017	0.000		1.983	4.009	9.598	-
Test - Joint Interoperability Test Command	MIPR	Joint Interoperability Test Command : Fort Huachuca, AZ	0.000	0.028	Jan 2015	0.049	Jan 2016	0.185	Jan 2017	0.000		0.185	0.370	0.632	-
Subtotal			0.000	1.548		2.135		2.168		0.000		2.168	4.379	10.230	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604426F / <i>Space Fence</i>	Project (Number/Name) 65A009 / <i>Space Fence</i>
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

Remarks
Prior to FY15 all funds were executed and reported in PE 0604225F (Space Situational Awareness Systems)
Test and Evaluation: \$1.366

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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 1	Various	Various : Various	0.000	0.849	Oct 2014	0.531	Oct 2015	1.700	Oct 2016	0.000		1.700	2.261	5.341	-
A&AS 2	Various	Various : Various	0.000	0.908	Oct 2014	5.937	Oct 2015	4.518	Oct 2016	0.000		4.518	2.907	14.270	-
A&AS 3	C/CPIF	Odyssey Systems : Wakefield, MA	0.000	1.861	Dec 2014	0.763	Dec 2015	0.700	Dec 2016	0.000		0.700	4.195	7.519	-
A&AS 4	C/CPFF	Jacobs Technology : Tullahoma, TN	0.000	1.714	Dec 2014	2.422	Jan 2016	1.781	Dec 2016	0.000		1.781	4.668	10.585	-
FFRDC - CM	SS/FP	Carnegie Mellon : Pittsburgh, PA	0.000	0.475	Nov 2014	0.000		0.000		0.000		0.000	0.000	0.475	-
FFRDC - MITRE	SS/FP	MITRE Corp : Bedford, MA	0.000	5.349	Oct 2014	4.311	Nov 2015	3.368	Oct 2016	0.000		3.368	0.000	13.028	-
FFRDC - MIT LL	SS/FP	MIT Lincoln Laboratory : Lexington, MA	0.000	1.414	Oct 2014	1.194	Dec 2015	1.024	Nov 2016	0.000		1.024	0.000	3.632	-
Subtotal			0.000	12.570		15.158		13.091		0.000		13.091	14.031	54.850	-

Remarks
Prior to FY15 all funds were executed and reported in PE 0604225F (Space Situational Awareness Systems)
Management Services: \$68.683

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	191.708	240.692	168.364	0.000	168.364	55.482	656.246	-

Remarks

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604426F / <i>Space Fence</i>	Project (Number/Name) 65A009 / <i>Space Fence</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Increment 1 EMD	1	2015	2	2019
Critical Design Review (CDR) Increment 1	2	2015	3	2015
Development Test and Evaluation	2	2018	4	2018
Initial Operational Test and Evaluation	1	2019	2	2019
Initial Operational Capability (IOC) Increment 1	2	2019	2	2019
Increment 1 Interim Contractor Support Option 1	3	2019	2	2020
Increment 1 Interim Contractor Support Option 2	3	2020	2	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604429F / <i>Airborne Electronic Attack</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	26.555	8.358	9.187	0.000	9.187	7.071	7.204	0.000	0.000	Continuing	Continuing
655192: <i>Network & Sys -of-Sys Dev</i>	-	26.555	8.358	9.187	0.000	9.187	7.071	7.204	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project concentrates on the overall systems engineering, modeling and simulation, architecture and network requirements development, effectiveness assessment and requirements allocation to component systems of the Airborne Electronic Attack (AEA) System of Systems (SoS). It also includes establishment and use of virtual test capabilities for system of systems effectiveness testing/evaluation for AEA, instantiating updated Defense Planning Guidance (DPG) scenarios into digital representations suitable for supporting modeling and simulation, conducting studies and technology risk mitigation demonstrations for potential AEA SoS components and AEA SoS battle management, development planning, and the development and maintenance of the Air Force electronic warfare capability investment strategy. These efforts are crucial in the development of critical electronic attack capabilities in support of Air Force and joint operations to include Global Strike and Persistent Global Attack Concepts of Operations (CONOPS).

As the joint AEA SoS has evolved since it's origination in 2004, it now includes the Navy EA-18G and its Next Generation Jammer (NGJ) increment 1 subsystem and the Air Force EC-130H Compass Call Baseline 3 (significant upgrades to the former Block 35) configuration as stand-off components. As stand-in components, the AEA SoS includes the Air Force Miniature Air Launched Decoy (MALD) and its jammer variant, MALD-J; Active Electronically Scanned Array (AESA) radar equipped aircraft; and potentially unmanned stand-in jamming/counter electronics platforms, as well as other stand-in and distributed components capable of suppressing or degrading enemy integrated air defense system (IADS) and non-IADS targets. Current military actions continue to drive the need for increased focus on developing advanced electronic attack capabilities for use against both IADS and non-IADS targets such as radar sensors, infrared (IR) sensors, communications networks, remote controlled improvised explosive devices, computers, command and control links, man portable air defenses, etc. in both major combat and irregular warfare scenarios.

This program is included in Budget Activity 5, System Development and Demonstration, because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604429F / <i>Airborne Electronic Attack</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	30.687	8.358	7.779	0.000	7.779
Current President's Budget	26.555	8.358	9.187	0.000	9.187
Total Adjustments	-4.132	0.000	1.408	0.000	1.408
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-3.076	0.000			
• SBIR/STTR Transfer	-1.056	0.000			
• Other Adjustments	0.000	0.000	1.408	0.000	1.408

Change Summary Explanation

FY15: \$3.076 reprogrammed for higher Air Force priorities
 FY17: \$1.5M added for increased AoA scope, -\$92K for inflation

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: AEA System Engineering Studies & Technology Transition	2.750	4.698	4.409	0.000	4.409
Description: Apply systems engineering rigor to manage Air Force Airborne Electronic Attack (AEA) System of Systems (SoS) program requirements, designs, and operational concepts. Assess operational effectiveness of multiple Electronic Warfare systems in both offensive and defensive roles.					
FY 2015 Accomplishments: Conducted cost and operational effectiveness assessments of AEA components such as recapitalizing the COMPASS CALL capability onto a high performance platform, examining use of non-kinetic counter electronics capabilities in both IADS and non-IADS scenarios for major and irregular warfare, and establishing the basis for conducting offensive AEA SoS alternative analyses; defined and recommended implementation strategies to mitigate AF electronic support system risks; updated AF EW Roadmap as directed by HQ AF; and updated AF EW Capability Investment Strategy with studies in support of CAF Core Function Support Plans.					
FY 2016 Plans: Conduct cost and operational effectiveness assessments of all components of the AEA SoS in preparation for conducting a joint Air Force/Navy offensive AEA SoS Analysis of Alternatives. Further define and recommend implementation strategies to resolve AF electronic support system risks; update AF EW Roadmap as directed by					

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604429F / <i>Airborne Electronic Attack</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
HQ AF; and update AF EW Capability Investment Strategy with studies in support of CAF Core Function Support Plans. FY 2017 Base Plans: Support the joint AF/Navy offensive AEA SoS Analysis of Alternatives. Conduct technology maturation demonstrations to address AF electronic support system risks; update AF EW Roadmap as directed by HQ AF; update AF EW Capability Investment Strategy with studies in support of CAF Core Function Support Plans. FY 2017 OCO Plans: N/A					
Title: AEA Capability Planning Description: Provide capability planning to the Air Force electronic warfare and Airborne Electronic Attack (AEA) System of Systems (SoS) portfolio and constructive modeling and simulation and analysis management. FY 2015 Accomplishments: Began work on various analysis of alternatives related to electronic attack as well as conducted additional AEA simulations in support of a non-kinetic counter electronics analysis of alternatives and contributions of AEA components to effectiveness and survivability of 4th Generation fighters operating in both stressing IADS and Irregular Warfare/non-IADS environments. Initiated phase I of an AF offensive AEA SoS analysis of alternatives to examine and recommend a suitable high performance platform for rehosting COMPASS CALL electronic warfare capabilities. FY 2016 Plans: Complete phase I of the AF offensive AEA analysis of alternatives. Initiate phase II of the offensive AEA SoS analysis of alternatives, in conjunction with the Navy, to examine and develop cost and operationally effective joint stand-off, stand-in, and distributed EW capabilities for operations in the 2030+ time frame. FY 2017 Base Plans: Conduct and complete the joint offensive AEA SoS analysis of alternatives. Report out preferred concepts that provide advanced cost and operationally effective materiel solutions to joint AF/Navy combat operations in the 2030+ time frame. FY 2017 OCO Plans: N/A	23.805	3.660	4.778	0.000	4.778
Accomplishments/Planned Programs Subtotals	26.555	8.358	9.187	0.000	9.187

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force Date: February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604429F / <i>Airborne Electronic Attack</i>
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D. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

E. Acquisition Strategy

"Network and System of Systems Development" uses existing Air Force Life Cycle Management Center, Air Force Research Lab, and other contracts and instruments to provide engineering, architecture development, and other support for the Airborne Electronic Attack (AEA) System of Systems.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604429F / Airborne Electronic Attack	Project (Number/Name) 655192 / Network & Sys -of-Sys Dev
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AEA system of systems engineering	C/CPFF	Various : Various	-	2.750	Dec 2014	4.698	Dec 2015	4.409	Dec 2016	0.000		4.409	Continuing	Continuing	-
AF EW Capability/ Development Planning	MIPR	Various : Various	-	22.955	Dec 2014	3.285	Dec 2015	4.397	Dec 2016	0.000		4.397	Continuing	Continuing	-
Subtotal			-	25.705		7.983		8.806		0.000		8.806	-	-	-

Remarks
Includes system of systems engineering; architecture development; network requirements planning; requirements refinement and development; EW assessments, including Air Force Electronic Warfare Capability Investment Strategy (AFEWCIS) roadmap development, maintenance & assessments; technology risk mitigation, DoD scenario initiation & distribution; working group support; engineering and test planning; capability planning for AF EW portfolio; conduct of constructive/virtual modeling simulation and analysis.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Mission Support	Various	Various : Various	-	0.850	Dec 2014	0.375	Dec 2015	0.381	Dec 2016	0.000		0.381	Continuing	Continuing	-
Subtotal			-	0.850		0.375		0.381		0.000		0.381	-	-	-

Remarks
Element includes miscellaneous support to projects. Costs include travel and unique security expenses.

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604429F / <i>Airborne Electronic Attack</i>	Project (Number/Name) 655192 / <i>Network & Sys -of-Sys Dev</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
DoD Planning Scenarios Suppressor updates	1	2015	4	2020
Continuing to Support EW Assessments	1	2015	4	2020
AEA SoS Suppressor Improvements	1	2015	4	2020
AF EW Investment Strategy	1	2015	4	2020
AESA/RWR analysis/test	1	2015	4	2015
Non Kinetic Counter Electronics Analysis	1	2015	4	2016
NKCE Technology Demonstration	1	2015	2	2015

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604441F / <i>Space Based Infrared System (SBIRS) High EMD</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	9,738.188	308.788	291.510	181.966	0.000	181.966	444.177	798.344	650.492	911.263	Continuing	Continuing
653616: <i>SBIRS High Element EMD</i>	9,601.716	229.580	202.929	108.890	0.000	108.890	95.454	0.000	0.000	0.000	0.000	10,238.569
657009: <i>Space Modernization Initiative</i>	136.472	79.208	88.581	73.076	0.000	73.076	116.337	115.022	110.748	112.356	Continuing	Continuing
657106: <i>EVOLVED SBIRS</i>	0.000	0.000	0.000	0.000	0.000	0.000	232.386	683.322	539.744	798.907	Continuing	Continuing

Program MDAP/MAIS Code: 210

Note
 Prior Years: Total Program Element above includes \$39.831M for BPAC 65A040 Commercially Hosted Payload funded in FY11 and FY12. MDAP PNO 210 includes only BPAC 653616 SBIRS High EMD.

A. Mission Description and Budget Item Justification
 The SBIRS RDT&E FY17 budget justification exhibits describe three elements of the SBIRS program: 1) the SBIRS Engineering and Manufacturing Development (EMD) program of record PNO 210 MDAP, 2) the Space Modernization Initiative (SMI) (non-MDAP) and the 3) Evolved SBIRS follow-on (pre-MDAP PNO 499).

1. SBIRS EMD: The Space-Based Infrared System (SBIRS) primary mission is to provide initial warning of a ballistic missile attack on the US, its deployed forces, and its allies. SBIRS enhances detection and improves reporting of intercontinental ballistic missile launches, submarine launched ballistic missile launches, and tactical ballistic missile launches. SBIRS supports Missile Defense, Battlespace Awareness, and Technical Intelligence missions by providing reliable, accurate, and timely data to Unified Combatant Commanders, Joint Task Force (JTF) Commanders, the intelligence community, and other users. SBIRS provides increased detection and tracking performance over legacy systems in order to meet requirements in Air Force Space Command's (AFSPC) Operational Requirements Document (ORD). The SBIRS system includes both space and ground elements. The space segment consists of Geosynchronous Earth Orbit (GEO) satellites, payloads hosted on satellites in Highly Elliptical Orbit (HEO), and Defense Support Program (DSP) satellites. The ground segment consists of both fixed and mobile data processing elements, communications infrastructure, and relay ground stations serving all SBIRS space elements. The three HEO payloads and two GEO satellites are on-orbit. Both GEO and two of the three HEO satellites have completed AFSPC and USSTRATCOM operational acceptance and are certified for Integrated Tactical Warning/Attack Assessment (ITW/AA) missile warning operations and technical intelligence operations. HEO-3 is in a storage/residual operational mode. The program of record ground segment development exploits both the new scanner and starrer sensor data through software processing and builds user messages for missile warning and missile defense. Also, data exploitation efforts enable access to raw and processed data to expand capabilities for battlespace awareness and other applications. FY17 and FY18 funds support ground segment development. The baseline requirement document is the 1996 SBIRS ORD. Enterprise systems engineering and integration (SE&I) provides intra- and inter-program requirements development, enterprise master planning, validation and verification, specialty engineering, and architecture development.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604441F / <i>Space Based Infrared System (SBIRS) High EMD</i>	
<p>2. SMI: The primary objective of SMI is to enable and inform future decisions to maintain and evolve a capable, resilient, and affordable OPIR architecture by maturing technologies and mitigating risk areas to facilitate OPIR modernization within the Department's constrained resources. SMI supports the Program of Record (PoR) by assessing future parts and material obsolescence and designing future space and ground modifications focused on affordability and capability while simultaneously maximizing the effectiveness of existing system data products. SMI funds engineering activities to reduce both production and future system costs through manufacturing and producibility enhancements and through technology insertion. SMI will also mature potential technology upgrades at the component and system level for future space and ground architecture affordability and capability enhancements. The SBIRS OPIR SMI plan includes studies and risk reduction activities to evolve the current PoR SBIRS constellation, reduce production timelines, and reduce recurring production costs. Based on the outcome of these studies, the Sensor Ground Demonstration will develop capability for current, next generation sensors, processors, and algorithms. SMI funded data exploitation efforts include OPIR mission data processing, data fusion, data dissemination, algorithm development, network connectivity, efficient interfaces and sensor performance assessments to enable greater exploitation of SBIRS PoR and other data sources. SMI exploitation efforts build upon PoR capabilities and inform the PoR decision process. The data exploitation efforts identify affordable, responsive and resilient measures to improve technical intelligence and battlespace awareness processing and data dissemination tools to enhance OPIR support to the warfighters and other data users. The SMI Hosted Payloads and Wide Field of View (WFOV) Testbed activities explore technology maturation, qualification of new components, and subsystem/component prototyping to evolve the OPIR architecture. Hosted Payloads and WFOV Testbeds support maturation of mission data processing algorithms for tactical and strategic applications which are critical demonstration efforts to enhance PoR capabilities and to reduce program risks for future OPIR systems, whether new systems or evolutions of the PoR. Collection of on-orbit WFOV data is critical to develop algorithms to process large data sets generated by emerging large format focal planes and to reduce risk for possible SBIRS follow-on architectures. SBIRS Enterprise Ground Services (EGS) infrastructure modernization efforts under SMI will introduce Telemetry, Tracking and Command systems (TT&C) and Ground Control automation, mission data processing as well as competition into SBIRS Ground with an emphasis to on-ramp to EGS as soon as practical. SMI activities are balanced and phased to enable an expanded tradespace and improve the competitive environment.</p> <p>In FY17, this program element supports EGS from the SMI BPAC. EGS is performing tech maturation, experiments and prototyping for increased commonality and resiliency in space program ground systems.</p> <p>3. Evolved SBIRS Follow-on: The SBIRS Follow-On Analysis of Alternatives (AoA) and knowledge gained from the SBIRS SMI projects will inform a future Defense Acquisition Board (DAB) decision for the Evolved SBIRS effort. DAB alternatives are expected to include: 1) continued production of SBIRS PoR design with modernization changes; 2) an evolved satellite and ground system derived from the SBIRS POR designs; 3) an evolved satellite and ground system that includes a combination of PoR derivatives and new systems; or 4) an alternative architecture (potentially disaggregated). The Evolved SBIRS effort will implement the DAB directed program alternative. The Evolved SBIRS AoA will consider the requirement for global coverage in the post-GEO-6 and post-HEO-4 timeframe.</p> <p>This program element is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604441F / <i>Space Based Infrared System (SBIRS) High EMD</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	308.788	292.235	198.779	0.000	198.779
Current President's Budget	308.788	291.510	181.966	0.000	181.966
Total Adjustments	0.000	-0.725	-16.813	0.000	-16.813
• Congressional General Reductions	0.000	-0.725			
• 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	-16.813	0.000	-16.813

Change Summary Explanation

FY17 Other Adjustments: -\$15.0M SMI re-phased to FY18 (+\$9M) and FY19 (+\$6M), -\$1.813M inflation adjustments

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604441F / <i>Space Based Infrared System (SBIRS) High EMD</i>				Project (Number/Name) 653616 / <i>SBIRS High Element EMD</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
653616: <i>SBIRS High Element EMD</i>	9,601.716	229.580	202.929	108.890	0.000	108.890	95.454	0.000	0.000	0.000	0.000	10,238.569
Quantity of RDT&E Articles	4	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

Note: The quantity of RDT&E articles above reflects delivery of GEO-1 in FY11, GEO-2 in FY12, HEO-1 in FY04, and HEO-2 in FY05.

The Space-Based Infrared System (SBIRS) primary mission is to provide initial warning of a ballistic missile attack on the US, its deployed forces, and its allies. SBIRS enhances detection and improves reporting of intercontinental ballistic missile launches, submarine launched ballistic missile launches, and tactical ballistic missile launches. SBIRS supports Missile Defense, Battlespace Awareness, and Technical Intelligence missions by providing reliable, accurate, and timely data to Unified Combatant Commanders, Joint Task Force (JTF) Commanders, the intelligence community, and other users. SBIRS provides increased detection and tracking performance over legacy systems in order to meet requirements in Air Force Space Command's (AFSPC) Operational Requirements Document (ORD). The SBIRS system includes both space and ground elements. The space segment consists of Geosynchronous Earth Orbit (GEO) satellites, payloads hosted on satellites in Highly Elliptical Orbit (HEO), and Defense Support Program (DSP) satellites. The ground segment consists of both fixed and mobile data processing elements, communications infrastructure, and relay ground stations serving all SBIRS space elements. The three HEO payloads and two GEO satellites are on-orbit. Both GEO and two of the three HEO satellites have completed AFSPC and USSTRATCOM operational acceptance and are certified for Integrated Tactical Warning/Attack Assessment (ITW/AA) missile warning operations and technical intelligence operations. HEO-3 is in a storage/residual operational mode. The program of record ground segment development exploits both the new scanner and starrer sensor data through software processing and builds user messages for missile warning and missile defense. Also, data exploitation efforts enable access to raw and processed data to expand capabilities for battlespace awareness and other applications. FY17 and FY18 funds support ground segment development. The baseline requirement document is the 1996 SBIRS ORD. Enterprise systems engineering and integration (SE&I) provides intra- and inter-program requirements development, enterprise master planning, validation and verification, specialty engineering, and architecture development.

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

	FY 2015	FY 2016	FY 2017
Title: SBIRS EMD	229.580	202.929	108.890
Description: Continued EMD contracts for Space and Ground segment development, concept studies/activities for obsolescence issues.			
FY 2015 Accomplishments: Continued Ground System Development (Block 10) and started pre certification use of the staring sensor for Technical Intelligence. Block 10 provides significantly enhanced missile warning capabilities for our nation and allies by exploiting both scanner and starrer sensor data with the improved ability for quicker detection and warning against a wider-ranging number of smaller missiles that are proliferating around the globe. Continued Block 20 Ground System Development, System Engineering			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604441F / <i>Space Based Infrared System (SBIRS) High EMD</i>	Project (Number/Name) 653616 / <i>SBIRS High Element EMD</i>

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

	FY 2015	FY 2016	FY 2017
and Program Management, HEO host program office support, Technical Intelligence activities, Data Processing/Exploitation/ground integration activities, CTF support activities, systems integration and test studies. Block 20 adds ground processing that will exploit starrer data via auto-cues on theater launches to enhance burnout surveillance and improve impact point prediction. Continued Program Office and related support activities, technical analysis and independent verification and validation of contractor developmental efforts. Continued enterprise SE&I.			
FY 2016 Plans: Complete ground system development and consolidation (Block 10). Block 10 acceptance will significantly enhance missile warning capabilities for our nation and allies by exploiting both scanner and starrer sensor data with the improved ability for quicker detection and warning (for Combatant Commanders and the National Command Authority) against a wider-ranging number of smaller missiles that are proliferating around the globe. Complete Increment 1 operations support activities. Continue Block 20 Ground System Development, System Engineering and Program Management, HEO host program office support, Technical Intelligence activities, Data Processing/ Exploitation/ground integration activities, systems integration and test studies. Block 20 adds ground processing that will exploit starrer data via auto-cues on theater launches for enhanced burnout surveillance and improved impact point prediction. Continue Program Office and related support activities, technical analysis and independent verification and validation of the Contractor. Continue developing and fielding Command & Control, Technical Intelligence, and Battlespace Awareness operations to leverage residual capability for HEO 1/2 post-transition. Continue enterprise SE&I.			
FY 2017 Plans: The Block 10 Operational Acceptance and ITW/ AA certification (including GEO-1/2 Starrers) is scheduled for Nov 2016. Government certification is the only scheduled FY 2017 Block 10 activity. The Program Office will continue Block 20 Ground System Development, System Engineering and Program Management, HEO host program office support, Technical Intelligence activities, Data Processing/ Exploitation/ground integration activities, systems integration and test studies. Block 20 adds ground processing that will exploit starrer data via auto-cues on theater launches for enhanced burnout surveillance and improved impact point prediction. Continue Program Office and related support activities, technical analysis and independent verification and validation of the Contractor. Continue developing and fielding Command & Control, Technical Intelligence, and Battlespace Awareness operations to leverage residual capability for HEO 1/2 post-transition. Continue enterprise SE&I.			
Accomplishments/Planned Programs Subtotals	229.580	202.929	108.890

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• MPAF, BA 05, Line Item # 25, MSSBIR: <i>SBIR High (Space)</i>	444.567	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604441F / <i>Space Based Infrared System (SBIRS) High EMD</i>	Project (Number/Name) 653616 / <i>SBIRS High Element EMD</i>

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPAF, BA 03, Line Item # 43, 836720: <i>Space Based Ir Sensor Pgm Space</i>	31.293	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
• SPAF, BA 01, Line # 10, MSSBIR: <i>SBIR High (Space)</i>	0.000	542.713	362.504	0.000	362.504	933.169	118.649	110.121	112.102	0.000	2,179.258

Remarks

D. Acquisition Strategy

The pre-SDD SBIRS contracts were competed in full and open competition. Two contracts were awarded to Lockheed/Loral/Aerojet and Hughes/TRW in 1995 for the pre-SDD phase. A single contract was awarded to Lockheed Martin in 1996 for the SDD phase. This contract is still ongoing and will incrementally deliver the ground segment. Production contracts are discussed in the procurement budget exhibits.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604441F / <i>Space Based Infrared System (SBIRS) High EMD</i>	Project (Number/Name) 653616 / <i>SBIRS High Element EMD</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Pre-EMD (LMMS & Hughes)	C/CPFF	Hughes Aircraft Company : El Segundo, CA	159.600	0.000		0.000		0.000		0.000		0.000	0.000	159.600	159.600
SBIRS EMD	Various	Prime: Lockheed Martin Sunnyvale, CA; Sub: Northrop Grumman, Azusa, CA : TBD	8,592.134	195.884	Oct 2014	157.103	Oct 2015	82.368	Oct 2016	0.000		82.368	77.442	9,104.931	9,104.931
Remote Sensing Enterprise Systems Engineering and Integration	C/CPAF	The Analytical Sciences Corporation : Andover, MA	48.887	5.194	Dec 2014	6.340	Dec 2015	5.769	Dec 2016	0.000		5.769	3.329	69.519	69.519
SBIRS Pre-SDD Contract Adjustment	Various	Various : TBD	4.780	0.000		0.000		0.000		0.000		0.000	0.000	4.780	4.780
Technology	Various	Various : TBD	11.600	0.000		0.000		0.000		0.000		0.000	0.000	11.600	11.600
Phenomenology	Various	Various : TBD	17.350	0.000		0.000		0.000		0.000		0.000	0.000	17.350	17.350
Sensor Technology	Various	Sandia National Lab : Albuquerque, NM	10.000	0.000		0.000		0.000		0.000		0.000	0.000	10.000	10.000
HEO Command & Control (C2) Ground Expansion	Various	Lockheed Martin : Sunnyvale, CA	39.700	0.000		0.000		0.000		0.000		0.000	0.000	39.700	39.700
Technical Mission Analysis	RO	Aerospace Corp. : El Segundo, CA	0.000	2.163	Oct 2014	6.706	Oct 2015	5.896	Oct 2016	0.000		5.896	4.208	18.973	18.973
HEO 1/2 Residual Capability	Various	Various : TBD	0.000	0.000		14.600	Jun 2016	0.000		0.000		0.000	0.000	14.600	14.600
Subtotal			8,884.051	203.241		184.749		94.033		0.000		94.033	84.979	9,451.053	9,451.053

Remarks
Award dates represent date of first award of the funds for that fiscal year.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604441F / <i>Space Based Infrared System (SBIRS) High EMD</i>	Project (Number/Name) 653616 / <i>SBIRS High Element EMD</i>
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
WFOV Testbed Concept Study	MIPR	Millennium Space Systems : El Segundo, CA	8.000	0.000		0.000		0.000		0.000		0.000	0.000	8.000	8.000
Various Program Support	Various	Various : TBD	11.538	0.000		0.000		0.000		0.000		0.000	0.000	11.538	11.538
Subtotal			19.538	0.000		0.000		0.000		0.000		0.000	0.000	19.538	19.538

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Corp. : El Segundo, CA	442.704	9.970	Oct 2014	7.156	Oct 2015	5.265	Oct 2016	0.000		5.265	3.471	468.566	468.566
A&AS	Various	Various : Various	104.732	6.077	May 2015	5.565	Oct 2015	4.771	Oct 2016	0.000		4.771	2.775	123.920	123.920
Other Support	Various	Various : Various	150.691	10.292	Oct 2014	5.459	Oct 2015	4.821	Oct 2016	0.000		4.821	4.229	175.492	175.492
Subtotal			698.127	26.339		18.180		14.857		0.000		14.857	10.475	767.978	767.978

Remarks
Award dates represent date of first award of the fiscal year.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	9,601.716	229.580	202.929	108.890	0.000	108.890	95.454	10,238.569	10,238.569

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604441F / <i>Space Based Infrared System (SBIRS) High EMD</i>	Project (Number/Name) 653616 / <i>SBIRS High Element EMD</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Block 10 Integration & Test at MCS																												
Block 10 Integration & Test at MCSB																												
B10.3 Completed and ITW/AA Certified																												
Block 20 Integration & Test at MCS																												
Block 20 Integration & Test at MCSB																												
Block 20 Operational Utility Evaluation and Initial Operational Test & Evaluation with AFOTEC																												
B20 Completed and ITW/AA Certified																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604441F / <i>Space Based Infrared System (SBIRS) High EMD</i>	Project (Number/Name) 653616 / <i>SBIRS High Element EMD</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Block 10 Integration & Test at MCS	1	2015	3	2016
Block 10 Integration & Test at MCSB	3	2015	3	2016
B10.3 Completed and ITW/AA Certified	1	2017	1	2017
Block 20 Integration & Test at MCS	1	2017	4	2017
Block 20 Integration & Test at MCSB	1	2017	1	2018
Block 20 Operational Utility Evaluation and Initial Operational Test & Evaluation with AFOTEC	1	2018	3	2018
B20 Completed and ITW/AA Certified	3	2018	3	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604441F / <i>Space Based Infrared System (SBIRS) High EMD</i>				Project (Number/Name) 657009 / <i>Space Modernization Initiative</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
657009: <i>Space Modernization Initiative</i>	136.472	79.208	88.581	73.076	0.000	73.076	116.337	115.022	110.748	112.356	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The primary objective of SMI is to enable and inform future decisions to maintain and evolve a capable, resilient, and affordable OPIR architecture by maturing technologies and mitigating risk areas to facilitate OPIR modernization within the Department's constrained resources. SMI supports the Program of Record (PoR) by assessing future parts and material obsolescence and designing future space and ground modifications focused on affordability and capability while simultaneously maximizing the effectiveness of existing system data products. SMI funds engineering activities to reduce both production and future system costs through manufacturing and producibility enhancements and through technology insertion. SMI will also mature potential technology upgrades at the component and system level for future space and ground architecture affordability and capability enhancements. The SBIRS OPIR SMI plan includes studies and risk reduction activities to evolve the current PoR SBIRS constellation, reduce production timelines, and reduce recurring production costs. Based on the outcome of these studies, the Sensor Ground Demonstration will develop capability for current, next generation sensors, processors, and algorithms. SMI funded data exploitation efforts include OPIR mission data processing, data fusion, data dissemination, algorithm development, network connectivity, efficient interfaces and sensor performance assessments to enable greater exploitation of SBIRS PoR and other data sources. SMI exploitation efforts build upon PoR capabilities and inform the PoR decision process. The data exploitation efforts identify affordable, responsive and resilient measures to improve technical intelligence and battlespace awareness processing and data dissemination tools to enhance OPIR support to the warfighters and other data users. The SMI Hosted Payloads and Wide Field of View (WFOV) Testbed activities explore technology maturation, qualification of new components, and subsystem/component prototyping to evolve the OPIR architecture. Hosted Payloads and WFOV Testbeds support maturation of mission data processing algorithms for tactical and strategic applications which are critical demonstration efforts to enhance PoR capabilities and to reduce program risks for future OPIR systems, whether new systems or evolutions of the PoR. Collection of on-orbit WFOV data is critical to develop algorithms to process large data sets generated by emerging large format focal planes and to reduce risk for possible SBIRS follow-on architectures. SBIRS Enterprise Ground Services (EGS) infrastructure modernization efforts under SMI will introduce Telemetry, Tracking and Command systems (TT&C) and Ground Control automation, mission data processing as well as competition into SBIRS Ground with an emphasis to on-ramp to EGS as soon as practical. SMI activities are balanced and phased to enable an expanded tradespace and improve the competitive environment.

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

	FY 2015	FY 2016	FY 2017
Title: Evolved SBIRS	3.122	10.549	17.907
Description: Perform Trade and Design Studies to assess obsolescence, affordability, and capability design modifications to the PoR. Based on study outcomes, mature technologies and manufacturability to reduce cost, schedule, and technical risk for new component and subsystem designs which may be used in the next production block. Develop brassboards, breadboards, and engineering model prototypes for hardware/software integration and testing to reduce risk and mature technologies applicable to PoR and new system alternatives.			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604441F / <i>Space Based Infrared System (SBIRS) High EMD</i>	Project (Number/Name) 657009 / <i>Space Modernization Initiative</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Completed SBIRS design trade studies with the incumbent SBIRS Prime contractor and Payload Subcontractor that 1) identified obsolescence issues and corresponding hardware/software design modifications to mitigate future production risks; 2) identified payload and spacecraft modifications to improve affordability of the current satellite; and 3) identified design modifications required to simplify payload hardware, software, and functionality to enable evolution of the PoR SBIRS satellites. Extended trade study to identify a preferred Geosynchronous Inclined Orbit (GIO) and constellation architecture, determine the performance and cost of implementation, and developed a candidate transition plan. Initiated detailed design studies and component hardware/software risk reduction efforts to implement the most critical technology maturation activities required to support the most promising alternative architectures for the SBIRS Follow-on program.</p> <p><i>FY 2016 Plans:</i> Continue detailed design studies and hardware/software risk reduction efforts to implement the most critical technology maturation activities required to support the most promising alternative architectures for the SBIRS Follow-on program. Advance key technologies for spacecraft and ground system components to include resiliency features; focal planes; signal processing; algorithm development; communications upgrades, such as crosslinks and high data rate downlinks; and space-environmental qualification of new detectors, microprocessors, and memory devices.</p> <p><i>FY 2017 Plans:</i> Continue detailed design studies and hardware/software risk reduction efforts to implement the most critical technology maturation activities required to support the most promising alternative architectures for the SBIRS Follow-on program. Initiate a technology demonstration effort focused on maturing key payload technologies, including mission data processor development and validation methods, critical to the evolution of the most promising alternative architectures for the SBIRS Follow-on program. Expand fiscal year 2016 technology maturation activities to include additional vendors, reducing risk to future SBIRS Follow-on payload competition.</p>			
<p><i>Title:</i> Data Exploitation</p> <p><i>Description:</i> Exploit existing OPIR data sources (DSP, SBIRS HEO, SBIRS GEO Scanner, SBIRS GEO Starer, Commercially Hosted Infrared Payload (CHIRP), other classified sources) through data collection, processing, fusion, data dissemination, algorithm development and testing, network connectivity, and sensor performance assessments. SBIRS and other sensors provide a rich data set for exploitation. SMI data exploitation enables access to raw and processed data for data analysts and application developers to expand capabilities for battlespace awareness and other applications. SMI data exploitation efforts are complementary to, and enhance, the exploitation capabilities delivered by the PoR and inform future PoR exploitation efforts. SMI will develop tools and algorithms to enable users to apply OPIR data to support their mission needs. Data exploitation efforts are also evaluating tools for command and control, mission management, and mission data processing for risk reduction to support evolution of the SBIRS PoR ground system to an open architecture that could support PoR and other future satellites</p>	20.589	22.919	24.278

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604441F / <i>Space Based Infrared System (SBIRS) High EMD</i>	Project (Number/Name) 657009 / <i>Space Modernization Initiative</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>and payload alternatives. SMI ground system development activities seek to demonstrate the performance of an evolved ground system architecture capable of supporting multi-satellite, multi-payload, multi-mission management and data processing for any IR payload to achieve lower operating costs with enhanced net-centric and service oriented features along with a flexible expansion capability that was not designed into the current PoR ground system.</p> <p>FY 2015 Accomplishments: Awarded contracts that provided enhanced ground segment capability and tools for command and control, data collection, mission processing, and data dissemination to enhance data exploitation of SBIRS PoR and other OPIR data. Continued to collaborate with Intelligence Community (IC) and Missile Defense Agency (MDA) to enhance Joint OPIR Ground (JOG) initiatives. Initiated development of an open architecture ground command and control and Virtual Mission Management operations for expanded data exploitation of the SBIRS HEO sensors. Initiated development of a data exploitation laboratory to support experimentation, technology maturity and evolution of exploitation algorithms.</p> <p>FY 2016 Plans: Continue to provide enhanced ground segment capability and tools for command and control, data collection, mission processing, and data dissemination to enhance data exploitation of SBIRS and other OPIR data. Continue to collaborate with IC and MDA to enhance Joint OPIR Ground (JOG) initiatives. Continue development of an open architecture ground command and control and mission processing capability for the WFOV Testbed to support evolution of the SBIRS PoR ground system. Conduct space to ground system testing in preparation for the WFOV Testbed launch in fiscal year 2019. Continue development of an open architecture ground command and control and Virtual Mission Management operations for expanded data exploitation of the SBIRS HEO sensors. Continue development of data exploitation laboratory to support experimentation, technology maturity and evolution of exploitation algorithms. Continue development of a Battlespace Awareness real-time capability that will integrate applications and services matured in the data exploitation government lab.</p> <p>FY 2017 Plans: Continue to provide enhanced ground segment capability and tools for command and control, data collection, mission processing, and data dissemination to enhance data exploitation of SBIRS and other OPIR data. Continue to collaborate with IC and MDA to enhance Joint OPIR Ground (JOG) initiatives. Continue development, integration, and testing of WFOV ground command and control system and mission processing capability to support WFOV Testbed launch in fiscal year 2019. Continue development of data exploitation laboratory to support experimentation, technology maturity and evolution of exploitation algorithms. Continue development of a Battlespace Awareness real-time capability that will integrate applications and services matured in the data exploitation government lab.</p>				
Title: Hosted Payloads		29.579	11.118	3.626

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604441F / <i>Space Based Infrared System (SBIRS) High EMD</i>	Project (Number/Name) 657009 / <i>Space Modernization Initiative</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Description: Hosted Payloads mature WFOV technology and demonstrate multi-mission capabilities including the potential for a single sensor to simultaneously perform both the strategic and tactical missions. On-orbit data is required in order to develop and validate WFOV algorithms and on-board mission data processing throughput requirements for the Strategic Missile Warning Mission. These payload risk-mitigation efforts support the potential to field future Strategic Missile Warning and/or multi-mission systems and potentially increase capability of the PoR starer. WFOV payloads are a part of all evolved and new architecture alternatives.</p> <p>FY 2015 Accomplishments: Completed WFOV payload CDR, initiated procurement of long-lead parts and materials, and began payload build. Continued WFOV payload calibration and test planning.</p> <p>FY 2016 Plans: Continue build, integration, and checkout of the WFOV payload. Continue planning for the payload calibration and test campaign.</p> <p>FY 2017 Plans: Complete final payload integration and checkout. Deliver payload to the calibration and test facility. Conduct the payload calibration and test campaign. Deliver payload to bus contractor to begin space vehicle integration. Initiate post-calibration ground analysis.</p>				
<p>Title: WFOV Testbeds</p> <p>Description: WFOV Testbeds are satellite platforms offering opportunities to demonstrate mission capabilities on-orbit and mitigate development risks for employing WFOV sensors. WFOV Testbeds include contractual options to integrate, test, and launch prototype, developmental WFOV payloads with a Government-owned free-flyer spacecraft or on a host government or commercially owned satellite. The WFOV Testbed will host the WFOV payload to demonstrate on-orbit mission performance. On-orbit data from the WFOV payload hosted on the WFOV Testbed is essential to develop and validate WFOV algorithms and on-board mission data processing throughput requirements for the Strategic Missile Warning mission. These two critical risk mitigation efforts support the potential to field future Strategic Missile Warning and/or multi-mission WFOV systems.</p> <p>FY 2015 Accomplishments: Completed spacecraft primary structure build. Continued component build, integration and test. Completed payload-to-bus and space-to-ground interface control specification documents. Awarded contracts for WFOV System Engineering, Integration and Test (SEIT) effort.</p> <p>FY 2016 Plans:</p>		19.747	40.380	16.996

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604441F / <i>Space Based Infrared System (SBIRS) High EMD</i>	Project (Number/Name) 657009 / <i>Space Modernization Initiative</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Complete bus integration and test. Continue SEIT activities, including completion of system-level requirements review and critical design review, system test plan, and information assurance (IA) accreditation plan. Award contract for launch opportunity in fiscal year 2019.</p> <p>FY 2017 Plans: Begin payload-to-bus integration. Continue coordination with launch vehicle provider to complete coupled-loads analysis and launch integration design. Procure launch vehicle rocket. Continue SEIT activities, including inter-segment testing and IA accreditation approvals.</p>				
<p>Title: Sensor Ground Demonstration</p> <p>Description: Based on previous study outcomes, design and build test capability for next generation sensors, processors and algorithms. Develop modeling and simulation software (M&S), breadboards/brassboards, test equipment, and data reduction software. Perform ground demonstration of candidate focal plane arrays, on-board processors, and other payload components for future SBIRS satellites.</p> <p>FY 2017 Plans: Complete detailed design of sensor demonstration experiments, including requirements for M&S and test equipment. Initiate M&S development work, such as threat/scene generation capability and predictive effects for threat engagement. Develop an experimental optical breadboard, leveraging focal plane maturation efforts to create a focal plane interface. Procure test equipment, such as thermal control system and dewar. Initiate ground sensor demonstration integration and test.</p>		-	-	3.798
<p>Title: System Engineering and Integration</p> <p>Description: System of Systems engineering and integration (SE&I) activities to evolve to future architectures.</p> <p>FY 2017 Plans: Provide SE&I support for OPIR Enterprise analysis and integration of potential mission capabilities with existing OPIR Architecture.</p>		-	-	1.035
<p>Title: Management Services</p> <p>Description: Conduct Systems Engineering and Program Management to include but not limited to Program Office support such as Federally Funded Research and Development Center (FFRDC) analyses and System Engineering Technical Assistance (SETA).</p> <p>FY 2015 Accomplishments:</p>		6.171	3.615	2.336

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604441F / <i>Space Based Infrared System (SBIRS) High EMD</i>	Project (Number/Name) 657009 / <i>Space Modernization Initiative</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Provided Program Office and Space and Missile Systems Center support for SMI projects. Completed the AoA and provide findings to Senior AF and OSD leadership to determine way ahead for the SBIRS Follow-on.</p> <p>FY 2016 Plans: Provide Program Office and Space and Missile Systems Center support for SMI projects.</p> <p>FY 2017 Plans: Provide Program Office and Space and Missile Systems Center support for SMI projects.</p>			
<p>Title: Enterprise Ground Services (EGS)</p> <p>Description: EGS is envisioned to provide a robust enterprise ground architecture for Air Force space systems, which leverages mission commonality and automation to reduce sustainment costs and re-focus manpower on warfighting capabilities. In addition, EGS will enable a near-real-time common operating picture of enterprise-wide tactical health, status, indications, and warnings for Air Force satellites. The end-state will be a modern technical infrastructure which is cyber-secure and resilient against the Advanced Persistent Threat and employs streamlined architecting, acquisition, and operational processes. Through early architecture studies and prototyping, the government will establish clear ownership of the technical baseline to meet Better Buying Power principles as the EGS effort evolves through development. This effort provides focus and expertise for the development, test, certification and enforcement of standards and interfaces for all AFSPC satellite ground systems to enable transition planning for legacy ground systems, new capability demonstrations, and systems acquisition leading to an enterprise ground architecture for Air Force space systems.</p> <p>FY 2017 Plans: Conduct developmental planning, mature technologies, and develop initial small-scale prototype capability for the enterprise ground architecture. Efforts in 2017 will include, but not be limited to, systems engineering, special studies, cybersecurity planning and implementation, standards and interface development and codification, integration and test efforts in support of demonstrations, and operational architecture planning. In addition, this effort will build the technical and programmatic roadmap to enable a phased enterprise transition in the future.</p>	-	-	3.100
Accomplishments/Planned Programs Subtotals	79.208	88.581	73.076

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
Remarks											

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
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D. Acquisition Strategy

The program office will use a variety of acquisition approaches to execute various concept studies, technology maturation efforts, testbed/prototype demonstrations, and data exploitation initiatives and projects. The program office will collaborate with appropriate contracting agencies to support each individual effort. Activities, such as SBIRS obsolescence and affordability enhancements to the existing satellite design, will leverage existing Program of Record contracts. Technology maturation and component prototyping and/or qualification could leverage existing contracts; in fact many are planned in collaboration with AFRL and other government agencies. Where practical, other efforts could be competed. FFRDC and SETA contractors will also be used to conduct and support studies. New technology, replacement components, and system designs will be acquired with government data rights to the maximum extent to allow their incorporation into any future OPIR satellite production or system development. Contracting partnerships with other agencies will also be used to study, develop, demonstrate and prove emerging capabilities. For example, the Wide Area Six-Degree Payload (WASP) was awarded through an Army Research Laboratory (ARL) Broad Agency Announcement (BAA). The BAA awarded in 2013 for 6 PDR-phase contracts to the following vendors: Ball Aerospace, Leidos, L3 Communications, Lockheed Martin, Northrop Grumman, and Raytheon. L3 was awarded contracts for the CDR and Build phases in 2014 and 2015 respectively. The Wide Field of View (WFOV) Testbed Aquila II bus contract, which will host the WASP, was awarded in 2012 to Millennium Space Systems through NASA's Ames Research Center. The WFOV ground station will be located at the Naval Research Laboratory's (NRL's) Blossom Point Tracking Facility (BPTF), and the WASP calibration campaign and mission data calibration will be conducted through Utah State University Research Facility's (USURF's) Space Dynamics Laboratory (SDL) through contracts awarded in 2013 and 2015 respectively.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604441F / <i>Space Based Infrared System (SBIRS) High EMD</i>	Project (Number/Name) 657009 / <i>Space Modernization Initiative</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
Evolved SBIRS	C/CPFF	Lockheed Martin : Sunnyvale, CA	3.187	3.122	Aug 2015	10.550	Jan 2016	17.907	Dec 2016	0.000		17.907	Continuing	Continuing	-
Data Exploitation	Various	Various : TBD	40.215	20.589	Jan 2015	22.918	Nov 2015	24.278	Dec 2016	0.000		24.278	Continuing	Continuing	-
Hosted Payloads	C/CPFF	L3 Communications : Wilmington, MA	44.449	29.579	Dec 2014	11.118	Nov 2015	3.626	Nov 2016	0.000		3.626	Continuing	Continuing	-
WFOV Testbeds	C/CPFF	Millenium Space Systems : El Segundo, CA	36.884	19.747	Nov 2014	40.380	Nov 2015	16.996	Nov 2016	0.000		16.996	Continuing	Continuing	-
Sensor Ground Demonstration	TBD	Not specified. : TBD	0.000	0.000		0.000		3.798	Apr 2017	0.000		3.798	Continuing	Continuing	-
Remote Sensing Enterprise Systems Engineering and Integration	TBD	Not specified. : TBD	0.000	0.000		0.000		1.035	Oct 2016	0.000		1.035	Continuing	Continuing	-
Enterprise Ground Services (EGS)	Various	Various : Various	0.000	0.000		0.000		3.100	Jan 2017	0.000		3.100	Continuing	Continuing	-
Subtotal			124.735	73.037		84.966		70.740		0.000		70.740	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604441F / <i>Space Based Infrared System (SBIRS) High EMD</i>	Project (Number/Name) 657009 / <i>Space Modernization Initiative</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Evolved SBIRS	[REDACTED]																											
Data Exploitation	[REDACTED]																											
WFOV Starer Payload	[REDACTED]																											
WFOV Testbed	[REDACTED]																											
Sensor Ground Demonstration	[REDACTED]																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604441F / <i>Space Based Infrared System (SBIRS) High EMD</i>	Project (Number/Name) 657009 / <i>Space Modernization Initiative</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Evolved SBIRS	1	2015	4	2021
Data Exploitation	1	2015	4	2021
WFOV Starer Payload	1	2015	4	2017
WFOV Testbed	1	2015	2	2021
Sensor Ground Demonstration	3	2017	4	2020

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604441F / <i>Space Based Infrared System (SBIRS) High EMD</i>	Project (Number/Name) 657106 / <i>EVOLVED SBIRS</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
657106: <i>EVOLVED SBIRS</i>	0.000	0.000	0.000	0.000	0.000	0.000	232.386	683.322	539.744	798.907	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The SBIRS Follow-On Analysis of Alternatives (AoA) and knowledge gained from the SBIRS SMI projects will inform a future Defense Acquisition Board (DAB) decision for the Evolved SBIRS effort. DAB alternatives are expected to include: 1) continued production of SBIRS PoR design with modernization changes; 2) an evolved satellite and ground system derived from the SBIRS POR designs; 3) an evolved satellite and ground system that includes a combination of PoR derivatives and new systems; or 4) an alternative architecture (potentially disaggregated). The Evolved SBIRS effort will implement the DAB directed program alternative. The SBIRS Follow-on AoA will consider the requirement for global coverage in the post-GEO-6 and post-HEO-4 timeframe.

The "cost to complete" and "total cost" fields above will be populated after completion of the formal cost estimate in support of the DAB decision.

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

	FY 2015	FY 2016	FY 2017
Title: Evolved SBIRS	0.000	0.000	0.000
Description: New FY18 development effort for the Follow-on System after SBIRS GEO-6 and HEO-4. Evolved SBIRS will also include development of ground system modifications to accommodate evolved SBIRS satellite design changes. The specific system requirements and program definition are pending the outcome of the SBIRS Follow-on AoA, post-AoA deliberations, DAB approvals and milestone decisions, and the new Capability Development Document (CDD).			
FY 2015 Accomplishments: N/A, no funding in FY15.			
FY 2016 Plans: N/A, no funding in FY16.			
FY 2017 Plans: N/A, no funding in FY17.			
Accomplishments/Planned Programs Subtotals	0.000	0.000	0.000

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

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604441F / <i>Space Based Infrared System (SBIRS) High EMD</i>	Project (Number/Name) 657106 / <i>EVOLVED SBIRS</i>

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks

D. Acquisition Strategy

TBD until Milestone Decision in the FY16-17 timeframe.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604441F / <i>Space Based Infrared System (SBIRS) High EMD</i>	Project (Number/Name) 657106 / <i>EVOLVED SBIRS</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Evolved SBIRS	TBD	Not specified. : TBD	0.000	0.000		0.000		0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			0.000	0.000		0.000		0.000		0.000		0.000	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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	TBD	TBD : TBD	0.000	0.000		0.000		0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			0.000	0.000		0.000		0.000		0.000		0.000	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	0.000	0.000	0.000	0.000	0.000	-	-	-

Remarks

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604441F / <i>Space Based Infrared System (SBIRS) High EMD</i>	Project (Number/Name) 657106 / <i>EVOLVED SBIRS</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Evolved SBIRS Development/Production	2	2018	4	2021
SBIRS Future Ground Evolution/Development	2	2018	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	28.667	37.654	20.312	0.000	20.312	6.551	6.018	6.128	6.237	Continuing	Continuing
653133: <i>Bombs & Fuzes</i>	-	7.850	18.219	11.066	0.000	11.066	1.064	1.085	1.104	1.124	Continuing	Continuing
653134: <i>BLU-109 and BLU-113 Upgrade</i>	-	14.027	13.936	4.496	0.000	4.496	0.645	0.000	0.000	0.000	Continuing	Continuing
655361: <i>Stores-Aircraft Interface</i>	-	6.790	5.499	4.750	0.000	4.750	4.842	4.933	5.024	5.113	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Armament/Ordnance Development program provides for initial and continuing development of weapons/munitions (kinetic and non-kinetic) and munitions equipment for support and operational use. This program develops and improves the following weapons and weapons subsystems: bombs, bomb fuzes (to include the FMU-152 and FMU-139 general purpose, commodity fuzes), BLU-109 and BLU-113 legacy penetrator development, insensitive munitions (IM) characteristics, aircraft ammunition, stores-aircraft interface upgrades to include the Universal Armament Interface (UAI), munitions materiel handling equipment (MMHE), munitions containers, and other weapon subsystems.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

B. Program Change Summary (\$ in Millions)

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	29.112	40.154	20.412	0.000	20.412
Current President's Budget	28.667	37.654	20.312	0.000	20.312
Total Adjustments	-0.445	-2.500	-0.100	0.000	-0.100
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-2.500			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.445	0.000			
• Other Adjustments	0.000	0.000	-0.100	0.000	-0.100

Change Summary Explanation

FY2016 - Congressional direction reduced the program by \$2.5M for "Slow Execution".

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 653133 / <i>Bombs & Fuzes</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
653133: <i>Bombs & Fuzes</i>	-	7.850	18.219	11.066	0.000	11.066	1.064	1.085	1.104	1.124	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Bombs & Fuzes (Armament Subsystems) Project develops and improves conventional weapons/munitions (kinetic and non-kinetic) and fuzes. The project also provides an opportunity to quickly insert emerging technologies into existing and developing aircraft munitions and fuzes. Bombs and fuzes provides research, development and testing of conventional warhead and fuzing modifications to improve lethality against area targets, to include anti-personnel anti-materiel (APAM) targets. This project provides for the development and testing necessary to provide a suitable manufacturing base of conventional warheads and fuzes.

In addition, the project contains a variety of other work:

Bombs/munitions and fuzes:

- Medium Caliber Ammunition project assesses, refines, and develops medium caliber ammunition, to include, but not limited to, conducting 25mm (F-35) qualification testing.
- Follow-on development activities for legacy fuzes, including reliability enhancements and producibility improvements.
- Improved Lethality (IL): IL continues and expands development planning and legacy warhead efforts to improve lethality against area targets, to include anti-personnel anti-material (APAM) targets. This effort studies, designs, develops and tests warhead and fuzing modifications which improve lethality against APAM while meeting current DoD policy on cluster munitions and unintended harm to civilians. These improvements may be synergistic with maintaining a suitable manufacturing base. This effort was a new start effort in Project 653133, Bombs & Fuzes, in FY15.
- Insensitive Munitions (IM): IM develops less sensitive explosive fills and bomb case modifications to improve the response of conventional weapons to unplanned stimuli. The project also supports AF IM strategic planning to achieve IM compliance IAW U.S. Code, Title 10, Subtitle A, Part N, Chapter 141, Section 2389, Ensuring safety regarding insensitive munitions.
- Munitions Materiel Handling Equipment (MMHE): MMHE is a continuing project to develop and improve the standardization and commonality of munitions handling and armament equipment to preclude duplication. Efforts are primarily the study, design, and development of MMHE and armament control systems; however, support may be provided to other functional areas as requested. Procurement will be performed and funded by the applicable weapons system project.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Munitions Materiel Handling Equipment (MMHE)	0.738	0.748	0.674	0.000	0.674
Description: MMHE. Armament Standardization/Control/Munitions Materiel Handling Equipment (MMHE) is a continuing project to develop and improve the standardization and commonality of munitions handling and					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 653133 / <i>Bombs & Fuzes</i>
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B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>armament equipment to preclude duplication. Efforts are primarily the study, design, and development of MMHE and armament control systems; however, support may be provided to other functional areas as requested. Procurement will be performed and funded by the applicable weapons system project.</p> <p>FY 2015 Accomplishments: Completed 12 MMHE support equipment projects to include engineering, drafting, proof load, technical data, and safety authorizations. Fabricated 12 prototypes for test and evaluation purposes. Completed 12 first article equipment fabrications for drafting verification and delivery to Air Force units for additional test and evaluation. Provided support to all system program offices with new weapons and aircraft configuration, as needed. Continued support to the F-35 program with equipment to aid safe munitions loading and handling of various pylons and adapters. Continued support and sustainment of all previously existing items developed by the MMHE program office. Continued to provide MMHE Sustainment office at Robins AFB with engineering support.</p> <p>FY 2016 Plans: Complete 14 MMHE support equipment projects to include engineering, drafting, proof load, technical data, and safety authorizations. Fabricate 14 prototypes for test and evaluation purposes. Complete 14 first article equipment fabrications for drafting verification and delivery to Air Force units for additional test and evaluation. Provide support to all system program offices with new weapons and aircraft configurations, as needed. Continue support to the F-35 program with equipment to aid safe munitions loading and handling of various pylons and adapters. Continue support and sustain all previously existing items developed by the MMHE program office. Continue to provide MMHE Sustainment office at Robins AFB with engineering support.</p> <p>FY 2017 Base Plans: Complete 11 MMHE support equipment projects to include engineering, drafting, proof load, technical data, and safety authorizations. Fabricate 14 prototypes for test and evaluation purposes. Complete 11 first article equipment fabrications for drafting verification and delivery to Air Force units for additional test and evaluation. Provide support to all system program offices with new weapons and aircraft configurations, as needed. Continue support to the F-35 program with equipment to aid safe munitions loading and handling of various pylons and adapters. Continue support and sustain all previously existing items developed by the MMHE program office. Continue to provide MMHE Sustainment office at Robins AFB with engineering support.</p> <p>FY 2017 OCO Plans: N/A</p>					
Title: Medium Caliber Ammunition	0.100	0.100	0.100	0.000	0.100

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 653133 / <i>Bombs & Fuzes</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: Assess, refine, and develop medium caliber ammunition. The project provides enterprise management of guns, ammunition, and Munitions Materiel Handling Equipment (MMHE) systems integration.</p> <p>FY 2015 Accomplishments: Completed procurement of 25mm Frangible Armor Piercing (FAP) rounds to support DT/OT of gun system during F-35 EMD.</p> <p>FY 2016 Plans: Continue to provide engineering and technical support for DT flight testing of PGU-48/B (Frangible Armor Piercing (FAP)) rounds and integration of PGU-48/B with the F-35 25mm gun ammunition loader assembly. Continue/complete acquisition planning for initial production contract and acquisition of data rights.</p> <p>Provide engineering and test support for IM improvements of 105mm PGU-44/U ammunition.</p> <p>FY 2017 Base Plans: Continue to provide engineering and technical support for DT flight testing of PGU-48/B (Frangible Armor Piercing (FAP)) rounds and integration of PGU-48/B with F-35 25mm gun ammunition loader assembly. Continue/complete acquisition planning for initial production contract and acquisition of data rights.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Insensitive Munitions (IM)</p> <p>Description: Strategic IM planning for the AF; support Joint Service IM efforts; provide technical guidance and test expertise to AF IM programs</p> <p>FY 2015 Accomplishments: Initiated the FY17/18 AF IM Strategic Plan; supported DoD and Joint Service IM planning; provided IM planning expertise to individual AF programs.</p> <p>FY 2016 Plans: Deliver the FY17/18 AF IM Strategic Plan; support DoD and Joint Service IM planning; provide IM planning expertise to individual AF programs.</p> <p>FY 2017 Base Plans:</p>	0.400	0.350	0.300	0.000	0.300

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force			Date: February 2016		
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 653133 / <i>Bombs & Fuzes</i>			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Initiate the FY19/20 AF IM Strategic Plan; support DoD and Joint Service IM planning; provide IM planning expertise to individual AF programs. FY 2017 OCO Plans: N/A					
Title: Improved Lethality (IL) Description: Improve lethality against area targets, to include anti-personnel anti-materiel (APAM) targets. Improvements must meet current DoD policy on cluster munitions and unintended harm to civilians and may be synergistic with maintaining a suitable manufacturing base while also providing a possible solution for the Next Generation Area Attack Weapon (NGAAW). FY 2015 Accomplishments: Expanded previous development planning efforts to study options and demonstrate technologies for improved lethality in future scenarios which meet DoD policy on cluster munitions and unintended harm to civilians. Began BLU-134/B Improved Lethality Warhead (ILW) (formerly called BLU-111D/B)source selection for an area attack employed, near-term, 500lb warhead for improved APAM target lethality which meets DoD policy. Began a second phase (Phase II) to address other aspects of a Next Generation Area Attack Weapon (NGAAW). FY 2016 Plans: Expand previous development planning efforts to study options and demonstrate technologies for improved lethality in future scenarios while meeting DoD policy on cluster munitions and unintended harm to civilians. Start manufacturing development of BLU-134/B Improved Lethality Warhead (ILW) formerly called BLU-111D/B of an area attack employed, near-term, 500lb warhead for improved APAM target lethality which meets DoD policy. In addition to meeting current DoD policy on cluster munition and unintended harm to civilians, improvements may be synergistic with maintaining a suitable manufacturing base. Continue a second phase (Phase II) to address other aspects of a Next Generation Area Attack Weapon (NGAAW). FY 2017 Base Plans: Expand previous development planning efforts to study options and demonstrate technologies for improved lethality in future scenarios while meeting DoD policy on cluster munitions and unintended harm to civilians. Complete manufacturing development and begin Government testing (DT/OT)of BLU-134/B Improved Lethality Warhead (ILW) (formerly called BLU-111D/B) of an area attack employed, near-term, 500lb warhead for improved APAM target lethality which meets DoD policy. In addition to meeting current DoD policy on cluster munition and unintended harm to civilians, improvements may be synergistic with maintaining a suitable	6.612	17.021	9.992	0.000	9.992

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 653133 / <i>Bombs & Fuzes</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
manufacturing base. Continue acquisition strategy and RFP development for a second phase (Phase II) to address other aspects of a Next Generation Area Attack Weapon (NGAAW).					
<i>FY 2017 OCO Plans:</i> N/A					
Accomplishments/Planned Programs Subtotals	7.850	18.219	11.066	0.000	11.066

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• PAAF: BA01: Line Item # 353020: <i>General Purpose Bombs</i>	0.000	0.000	80.000	0.000	80.000	81.573	85.000	87.000	0.000	0.000	0.000

Remarks
The Improved Lethality (IL) effort continues and expands upon pre-FY15 developmental planning work accomplished in the Requirements Analysis and Maturation PE (0604337F).

- D. Acquisition Strategy**
- Fuzes (including the FMU-152) is a continuing effort with most activities performed in-house or through contracted services (small contracts).
 - Munitions Materiel Handling Equipment (MMHE) project activities are performed in-house with limited technical and analysis contract support.
 - Medium Caliber project activities are performed in-house with technical and analysis contract support, organic government test support, and possible contracted services (small contracts).
 - The BLU-134/B Improved Lethality Warhead (ILW) (formerly called BLU-111D/B) qualification program will provide a materiel solution and possible modification packages that would precede efforts to achieve a full qualification and low rate initial production (LRIP) for an Improved Lethality Warhead (BLU-134/B).

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 653133 / <i>Bombs & Fuzes</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
IM	TBD	Air Force Research Lab RWM : Eglin AFB, FL	-	0.170	Apr 2015	0.120	Apr 2016	0.080	Apr 2017	0.000		0.080	Continuing	Continuing	TBD
MMHE -- Prototypes	PO	Prototype Fabrication Shop : Eglin AFB, FL	-	0.415	May 2015	0.300	May 2016	0.300	May 2017	0.000		0.300	Continuing	Continuing	TBD
IL Phase I/II - Concept Development	C/FPIF	TBD-KTR : Eglin AFB, FL	-	4.971	Jan 2016	15.385	Aug 2016	4.540	Aug 2017	0.000		4.540	Continuing	Continuing	TBD
IL - Mission Planning	PO	TBD : Eglin AFB, FL	-	0.250	Mar 2016	0.748	Aug 2016	0.200	Mar 2017	0.000		0.200	Continuing	Continuing	TBD
Subtotal			-	5.806		16.553		5.120		0.000		5.120	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
MMHE-- Contract support	C/CPFF	A and AS : Eglin AFB, FL	-	0.126	Oct 2014	0.300	Oct 2015	0.200	Oct 2016	0.000		0.200	Continuing	Continuing	-
MMHE -- Program Office support	Various	AFLCMC/EBD : Eglin AFB, FL	-	0.197	Nov 2014	0.148	Nov 2015	0.174	Nov 2016	0.000		0.174	Continuing	Continuing	TBD
Medium Caliber Ammunition - Program Office support	TBD	AFLCMC EBSN : Eglin AFB, FL	-	0.100	Oct 2014	0.100	Oct 2015	0.100	Oct 2016	0.000		0.100	Continuing	Continuing	TBD
IL - Logistics Support	Various	Various : Various	-	0.200	Mar 2016	0.101	Aug 2016	0.125	Aug 2017	0.000		0.125	Continuing	Continuing	TBD
Subtotal			-	0.623		0.649		0.599		0.000		0.599	-	-	-

Remarks
A&AS contractors provide support to the System Program Office (SPO) for technical and management/financial services.

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 653133 / <i>Bombs & Fuzes</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Munitions Materiel Handling Equipment (MMHE): design, prototype, test priority MMHE projects	[REDACTED]																											
Medium Caliber Ammunition: Assess, refine, and develop medium caliber ammunition	[REDACTED]																											
Submit AF FY17/18 Insensitive Munitions (IM) Strategic Plan					[REDACTED]																							
Submit AF FY19/20 Insensitive Munitions (IM) Strategic Plan													[REDACTED]															
Submit AF FY21/22 Insensitive Munitions (IM) Strategic Plan																					[REDACTED]							
IL: Contract Prep/Source Selection					[REDACTED]																							
IL: Contract Award									[REDACTED]																			
IL: Mold Design, Build, Test													[REDACTED]															
IL: Phase II, Modeling and Simulation	[REDACTED]																											
IL: Phase II, Next Generation Area Attack Weapon					[REDACTED]																							

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 653133 / <i>Bombs & Fuzes</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Munitions Materiel Handling Equipment (MMHE): design, prototype, test priority MMHE projects	1	2015	4	2021
Medium Caliber Ammunition: Assess, refine, and develop medium caliber ammunition	1	2015	4	2021
Submit AF FY17/18 Insensitive Munitions (IM) Strategic Plan	2	2016	2	2016
Submit AF FY19/20 Insensitive Munitions (IM) Strategic Plan	2	2018	2	2018
Submit AF FY21/22 Insensitive Munitions (IM) Strategic Plan	2	2020	2	2020
IL: Contract Prep/Source Selection	4	2015	4	2016
IL: Contract Award	4	2016	4	2016
IL: Mold Design, Build, Test	4	2016	3	2018
IL: Phase II, Modeling and Simulation	3	2015	3	2016
IL: Phase II, Next Generation Area Attack Weapon	2	2016	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>				Project (Number/Name) 653134 / <i>BLU-109 and BLU-113 Upgrade</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
653134: <i>BLU-109 and BLU-113 Upgrade</i>	-	14.027	13.936	4.496	0.000	4.496	0.645	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

BLU-109 and BLU-113 Upgrade [Advanced BLU-109 and BLU-113 (A2K/A5K)*A2K has been designated the BLU-137/B]: This project demonstrates advancements in capability of these two legacy penetrator warheads, enabling them to hold more targets at risk than currently achievable with legacy weapons. The initial effort will focus on demonstrating an advanced 2000 lb (A2K) warhead and an advanced 5000 lb (A5K) warhead in a relevant military environment. The follow-on effort will provide production assets as a replacement warhead for the BLU-109 warhead and at a later date the BLU-113 warhead.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Advanced 2000 lb (A2K) Penetrator and Advanced 5000 lb (A5K) Penetrator Programs	14.027	13.936	4.496	0.000	4.496
Description: Conduct A2K & A5K design analysis, warhead modifications, and testing to improve BLU-109/113 performance against increasingly hardened targets. Designs will maintain the current BLU-109/113 mold lines and will attempt to maintain current BLU-109/113 mass properties and Insensitive Munitions (IM) characteristics. Finalize new technical drawing package and manufacturing readiness for A2K warhead and replace BLU-109 warhead production with A2K warhead.					
FY 2015 Accomplishments: Completed risk reduction and demonstration testing of A2K warhead case design. Continue to modify FMU 152 FZUs and cables, JDAM hardbacks, and warhead cases employed on the threshold platforms (B-2A & F-15E). Began manufacturing and technical data package study. Began A5K design analysis and modeling and simulation.					
FY 2016 Plans: Complete manufacturing and technical data package as well as conduct risk reduction and qualification testing of A2K design to include modified FZUs and cables, modified JDAM hardbacks, and modified warhead cases employed on the threshold platforms (B-2A & F-15E). Fully qualify A2K warhead design for Production readiness. Continue developing A5K initial design and risk reduction testing.					
FY 2017 Base Plans:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 653134 / <i>BLU-109 and BLU-113 Upgrade</i>
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B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Finalize qualification testing of A2K design to include modified FZUs and cables, modified JDAM hardbacks, and modified warhead cases employed on the threshold platforms (B-2A & F-15E) and complete qualification of the A2K warhead design for Production readiness. Continue developing A5K initial design and risk reduction. <i>FY 2017 OCO Plans:</i> N/A					
Accomplishments/Planned Programs Subtotals	14.027	13.936	4.496	0.000	4.496

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE:BA04:PE 0604618F: <i>Joint Direct Attack Munition</i>	2.389	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

N/A

D. Acquisition Strategy

The A2K/A5K project will provide a BLU-109/BLU-113 modification package to enable a fielding recommendation.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force												Date: February 2016				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 5				PE 0604602F / Armament/Ordnance Development				653134 / BLU-109 and BLU-113 Upgrade								
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
Design Engineering and Test Assets	C/CPIF	Various : Various	-	8.891	Jan 2015	6.267	May 2016	2.270	Dec 2016	0.000		2.270	Continuing	Continuing	-	
Subtotal			-	8.891		6.267		2.270		0.000		2.270	-	-	-	
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
Data	PO	Various : Eglin, FL	-	0.000		0.150	Mar 2016	0.500	Mar 2017	0.000		0.500	Continuing	Continuing	-	
Subtotal			-	0.000		0.150		0.500		0.000		0.500	-	-	-	
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
System Test and Evaluation	Various	Various : Various	-	4.695	Jan 2015	6.896	May 2016	1.320	Dec 2016	0.000		1.320	Continuing	Continuing	-	
Subtotal			-	4.695		6.896		1.320		0.000		1.320	-	-	-	
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Program Management Administration/Program Support	Various	Various : Various	-	0.441	Jun 2015	0.623	Feb 2016	0.406	Oct 2016	0.000		0.406	Continuing	Continuing	-	
Subtotal			-	0.441		0.623		0.406		0.000		0.406	-	-	-	

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 653134 / <i>BLU-109 and BLU-113 Upgrade</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
A2K: Risk Reduction and Demonstration/Qualification	1	2015	2	2017
- Arming Generator Relocation Adaptor and Case Preliminary Design Review	2	2015	2	2015
- Sled Tests	1	2015	4	2015
- Mfg and Tech Data Package	4	2015	2	2016
- Insensitive Munitions Test (SCO/FCO)	4	2015	4	2016
- DOTC A2K Contract Award	4	2015	4	2015
- Build Assets	4	2015	2	2016
- OT Flight Test	3	2016	3	2017
- LRIP/Full Rate Production	3	2017	4	2019
A5K: Risk Reduction -- Modeling and Simulation	3	2015	4	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 655361 / <i>Stores-Aircraft Interface</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
655361: <i>Stores-Aircraft Interface</i>	-	6.790	5.499	4.750	0.000	4.750	4.842	4.933	5.024	5.113	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Stores-Aircraft Interface: This project conducts stores-aircraft interface upgrades and standards development to include the Universal Armament Interface (UAI). UAI is an Air Force initiative to develop standardized software interfaces in aircraft, weapons and mission planning to support integration of weapons independent of aircraft Operational Flight Program (OFP) cycles. UAI is currently being implemented on the F-15E, F-16 Block 40/50, and EAPAF(European Participating Air Forces) F-16 aircraft, Small Diameter Bomb (SDB) I and II, Joint Direct Attack Munition (JDAM), Laser JDAM, Joint Air-to-Surface Stand-off Missile (JASSM) and Precision Guided Munitions Planning Software (PGMPS). Additional aircraft and weapons, including but not limited to, Joint Strike Fighter (JSF/F-35), B-1, B-52, LRS-B, MQ-9, JASSM-ER, CWDS as well as Army UAVs and Navy F/A-18 and UAVs, have program plans to implement UAI. The UAI program office is responsible for development and enhancement of the standard (U.S. and allied), support to coalition/allied/joint interoperability efforts for weapons-platform interface efforts, provision of certification tools and implementation support to aircraft and weapons.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: UAI Development	6.790	5.499	4.750	0.000	4.750
Description: Conduct stores-aircraft interface upgrades and standards development to the Universal Armament Interface (UAI), development of and maintenance to the UAI, and facilitation of aircraft, stores and mission planning program users in the UAI process.					
FY 2015 Accomplishments: Continued development and configuration management of UAI standards in response to user needs, working group management, technical meetings and workshops, risk reduction studies, common mission planning, integration support and updates to test tools. Continued effort to update certification tools with miniature and micro munitions interface capability to meet F-35, SDB II and other future user system integration lab test certification needs. Started negotiation for multinational Memorandum of Understanding to broaden the use by coalition partners.					
FY 2016 Plans: Continue development and configuration management of UAI standards in response to new users including but not limited to F-35, JASSM-ER, CWDS, F/A-18 and Army & Navy UAVs and stores. Support working group management, technical meetings and workshops, risk reduction studies, common mission planning, and support platform specific implementation of UAI. Continue maintenance of existing certification tools and procure new					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 655361 / <i>Stores-Aircraft Interface</i>

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
certification tools with miniature and micro munitions interface capability to meet F-35, B-1, B-52, SDB II, F/A-18, and other future user system integration lab test certification needs. These tools are shared among aircraft and weapons programs to reduce time and cost for UAI integration efforts. Continue negotiation implementation for multinational Memorandum of Understanding to broaden the use by coalition partners.					
<i>FY 2017 Base Plans:</i> Continue development and configuration management of UAI standards in response to new users including but not limited to F-35, JASSM-ER, CWDS, F/A-18 and Army & Navy UAVs and stores. Support working group management, technical meetings and workshops, risk reduction studies, common mission planning, and support platform specific implementation of UAI. Continue maintenance of existing certification tools and procure new certification tools with miniature and micro munitions interface capability to meet F-35, SDB II, F/A-18, and other future user system integration lab test certification needs. These tools are shared among aircraft and weapons programs to reduce time and cost for UAI integration efforts. Continue negotiation for multinational Memorandum of Understanding to broaden the use by coalition partners.					
<i>FY 2017 OCO Plans:</i> N/A					
Accomplishments/Planned Programs Subtotals	6.790	5.499	4.750	0.000	4.750

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• None: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

N/A

D. Acquisition Strategy

In December 2004, under the authority of a class Justification and Approval (J&A), the UAI program office awarded individual Cost Plus Fixed Fee (CPFF) contracts to Boeing, Lockheed Martin, Northrop Grumman and Raytheon. Each Original Equipment Manufacturer is responsible for a different piece of the total UAI requirement based on its product-specific (platform/weapon) expertise. During FY10 these contracts expired. Under the authority of the class J&A, Cost Plus Incentive Fee (CPIF) contracts were awarded to the four UAI vendors in August 2010. Follow-on period of performance was awarded in March 2014 for 16 months to better align future contract awards with funding through the Future Years Defense Program. The current period of performance was extended to 1 November 2015 to allow immediate

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 655361 / <i>Stores-Aircraft Interface</i>

start of the effort on F-35/JSF request for changes. A new J&A was approved in January 2015 for the follow-on sole source contracts to the original equipment manufacturers. These new sole-source contracts awarded November 2015.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 655361 / <i>Stores-Aircraft Interface</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Interface Control Document (ICD) Development/Updates/Maintenance	SS/CPIF	Boeing Northrop Grumman Lockheed Martin Raytheon : Various	-	4.045	Nov 2014	2.099	Nov 2015	3.850	Nov 2016	0.000		3.850	Continuing	Continuing	TBD
UAI Common Component	SS/CPIF	Northrop Grumman : Bethpage, NY	-	1.475	Nov 2014	0.000		0.000		0.000		0.000	Continuing	Continuing	-
Certification Tool	SS/CPFF	Boeing Northrop Grumman Lockheed Martin Raytheon : Various	-	0.600	Nov 2014	2.500	May 2016	0.000		0.000		0.000	Continuing	Continuing	TBD
Subtotal			-	6.120		4.599		3.850		0.000		3.850	-	-	-

Remarks
 --UAI Common Component will be rolled into the ICD Development line in 2016.
 --Existing certification tools will be maintained. Development will begin for a prototype for updated certification tools.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FM A&AS support	WR	MCR : Riverside, OH	-	0.070	Nov 2014	0.100	Dec 2015	0.100	Dec 2016	0.000		0.100	Continuing	Continuing	-
EN A&AS support	MIPR	ATAC : Eglin, FL	-	0.100	Dec 2014	0.000		0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	0.170		0.100		0.100		0.000		0.100	-	-	-

Remarks
 MCR Contractor provided support to the Program Office for financial services beginning Aug 14.
 EN Services are discontinued a/o Jul 15.

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604602F / <i>Armament/Ordnance Development</i>	Project (Number/Name) 655361 / <i>Stores-Aircraft Interface</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
ICD Development/Governance (SJICWG), (UAI funded)	1	2015	4	2021
Certification Tools (CTs) Dev / Update, (UAI funded)	1	2015	4	2021
UAI (Msn PIng) Common Component, (UAI funded)	1	2015	4	2021
F-15E (Program funded)	1	2015	4	2021
F-16, (Program funded)	1	2015	3	2021
JDAM, (Program funded)	1	2015	4	2021
JASSM-ER, ((Program funded)	1	2015	3	2021
SDB II, (Program funded)	1	2015	4	2021
F-35, (Program funded)	3	2015	4	2021
B-1 (Program funded)	4	2015	4	2021
B-52 (Program funded)	4	2015	4	2021
BRU 61 A/A	1	2015	4	2021
BRU 57	2	2016	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604604F / <i>Submunitions</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	2.543	2.506	2.503	0.000	2.503	2.697	2.711	2.761	2.810	Continuing	Continuing
653166: <i>Joint Smart Munitions Test and Evaluation</i>	-	2.543	2.506	2.503	0.000	2.503	2.697	2.711	2.761	2.810	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project Chicken Little (PCL) continues providing superior rapid reaction signature exploitation capabilities for use on both the traditional and the asymmetrical battlefield. PCL delivers vital one-of-a-kind research, development, test and evaluation (RDT&E) expertise directly to the warfighter, capability developer, and allied/coalition forces.

From its inception in 1985, PCL constantly advances the state-of-the-art for developmental smart munitions, seekers/sensors and their platforms. PCL also focuses its capability against today's networked weapons, emerging weapon concepts, and helps develop innovative targeting technologies to be employed against a wide variety of vehicle targets, theater air defense units, and an extensive array of associated equipment.

Combat systems and support equipment exhibit physical characteristics (i.e. signatures) and present certain vulnerabilities, which can be exploited by various targeting technologies leading to the elimination or incapacitation of the threat through the application of force (e.g. smart munitions or directed energy) or application of intelligence, surveillance, reconnaissance (ISR) methods. PCL collects physical, functional, and signature attributes of real foreign threat systems and related equipment; these data feed high-fidelity models used to predict detection, classification, vulnerability and effectiveness performance for ISR sensor and weapon system design. PCL collects high resolution signature data using a variety of ground, air, and space-based sensors against both new and existing (obtained, sustained, and maintained to be signature representative) foreign targets; with and without the presence of camouflage, concealment, and deception materials; and operated using enemy tactics/CONOPS. The resulting highly reliable, realistic data directly supports munitions/targeting development programs and helps mitigate overall acquisition risk. PCL serves as a major focal point for joint signature exploitation, collection, and dissemination amongst the DoD and intelligence community (IC). PCL is a prime contributor in the time critical process to rapidly exploit, assess, and determine US and allied weapon/targeting performance against high value targets. Customers include: the major Defense and Service Intelligence Centers, all Services, the Joint Technical Coordinating Group (JTTCG) who develop the Joint Munitions Effectiveness Manuals (JMEm), Combatant Commands, AF Major Commands, US Air Force Weapons School curriculum support, and others. Current projects include, but are not limited to: target signature exploitation, target geometric modeling (for identifying vulnerabilities), improving air capabilities against protected structures (specifically hard and deeply buried targets), and the testing of multiple seekers, sensors, and targeting technologies in representative environments against COCOM/MAJCOM/IC high value targets.

The FY2017 funding request was reduced by \$.163M to account for the availability of prior year execution balances.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604604F I Submunitions
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	2.543	2.506	2.691	0.000	2.691
Current President's Budget	2.543	2.506	2.503	0.000	2.503
Total Adjustments	0.000	0.000	-0.188	0.000	-0.188
• 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	-0.188	0.000	-0.188

Change Summary Explanation

No significant changes

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: Project Chicken Little</p> <p>Description: Provide the DoD community accurate multi-spectral signatures obtained from high-value, signature representative modern threat systems using advanced collection technologies.</p> <p>Exploitations typically occur CONUS; however, Project Chicken Little is postured to support OCONUS collections as dictated by mission requirements.</p> <p>A critical underpinning of the System Exploitation major thrust area, Sensor Week, occurs in even years and provides a unique air, ground, and National Technical Means (NTM) demonstration/validation of candidate Seeker/Sensor/ISR technologies.</p> <p>Plan and conduct captive carry flight tests and signature collection for seeker/sensor technology evaluations.</p> <p>Develop, validate, and accredit improved models for target vulnerability and weapons effectiveness in support of Combatant Commands' (CoCOMs) requirements.</p> <p>FY 2015 Accomplishments:</p>	2.543	2.506	2.503	0.000	2.503

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604604F / <i>Submunitions</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Exploited high value threat systems. Provided signature data from multiple threat systems in various environments using advanced and developmental seeker/sensor technologies. Conducted planning sessions for FY16 Sensor Week (SW).</p> <p>Exploited the signatures of ISR targets; conducted rapid reaction performance analysis & evaluations in support of COCOM/MAJCOM immediate/urgent warfighter needs; optimized current project methods to support ISR testing.</p> <p>Assisted in obtaining relevant, high value, and emergent threat assets and/or decoys. Ensured the fleet foreign threat assets remain properly "signature representative" for systems development and testing.</p> <p>Developed, validated, and accredited improved computer models to determine target vulnerability and weapons effectiveness in support of warfighter requirements.</p> <p>FY 2016 Plans: Exploit high value threat systems (typically 4 per year). Provide signature data from multiple threat systems in various environments using advanced and developmental seeker/sensor technologies. Conduct Sensor Week (SW), providing a singularly unique forum for joint service demonstration of developmental and operational seekers/sensors/ISR assets against a wide array of US, coalition, and foreign national ground targets.</p> <p>Exploit the signatures of ISR targets; conduct rapid reaction performance analysis & evaluations in support of COCOM/MAJCOM immediate/urgent warfighter needs; optimize current project methods to support ISR testing</p> <p>No OCONUS requirements.</p> <p>Assist in obtaining relevant, high value, and emergent threat assets and/or decoys. Ensure the fleet foreign threat assets remain properly "signature representative" for systems development and testing.</p> <p>Develop, validate, and accredit improved computer models to determine target vulnerability and weapons effectiveness in support of warfighter requirements.</p> <p>FY 2017 Base Plans: Exploit high value threat systems (typically 4 per year). Provide signature data from multiple threat systems in various environments using advanced and developmental seeker/sensor technologies. Conduct Sensor Week</p>					

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604604F / <i>Submunitions</i>
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C. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
(SW), providing a singularly unique forum for joint service demonstration of developmental and operational seekers/sensors/ISR assets against a wide array of US, coalition, and foreign national ground targets. Exploit the signatures of ISR targets; conduct rapid reaction performance analysis & evaluations in support of COCOM/MAJCOM immediate/urgent warfighter needs; optimize current project methods to support ISR testing No OCONUS requirements. Assist in obtaining relevant, high value, and emergent threat assets and/or decoys. Ensure the fleet foreign threat assets remain properly "signature representative" for systems development and testing. Develop, validate, and accredit improved computer models to determine target vulnerability and weapons effectiveness in support of warfighter requirements. FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	2.543	2.506	2.503	0.000	2.503

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• None: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

E. Acquisition Strategy

Funds are executed organically in support of test and evaluation activities including studies, analyses, flight & ground tests, model building and simulation. Virtually all of the work is performed in-house by the 46th Test Wing.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604604F / <i>Submunitions</i>	Project (Number/Name) 653166 / <i>Joint Smart Munitions Test and Evaluation</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal				-	-	-	-	-	-	-	-	-	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Test Wing	PO	Keeping Fleet Relevant : TBD	-	0.800	Nov 2014	0.800	Nov 2015	0.800	Nov 2016	0.000		0.800	Continuing	Continuing	-
Subtotal				-	0.800	0.800		0.800		0.000		0.800	-	-	-

Remarks
Fleet relevance addresses the acquisition of new and emerging threat vehicles, acquisition of high fidelity decoys, and sustainment of fleet signature quality.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Test Wing (46 OG and 46 TW)	MIPR	Conducting Tests and Analysis : Eglin AFB, FL	-	1.688	Nov 2014	1.651	Nov 2015	1.648	Nov 2016	0.000		1.648	Continuing	Continuing	TBD
Subtotal				-	1.688	1.651		1.648		0.000		1.648	-	-	-

Remarks
46th Test Wing is the Program Office which conducts inhouse testing.

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
46 Test Wing (46 OG)	MIPR	46TS/OGEE : Eglin, FL	-	0.055	Nov 2014	0.055	Nov 2015	0.055	Nov 2016	0.000		0.055	Continuing	Continuing	TBD
Subtotal				-	0.055	0.055		0.055		0.000		0.055	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604604F / <i>Submunitions</i>	Project (Number/Name) 653166 / <i>Joint Smart Munitions Test and Evaluation</i>
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

Remarks
46th Test Wing is the Program Office which conducts inhouse testing.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	2.543	2.506	2.503	0.000	2.503	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604604F / <i>Submunitions</i>	Project (Number/Name) 653166 / <i>Joint Smart Munitions Test and Evaluation</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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

Target/warhead evaluation/analysis, signature test, captive carry flight tests.	[REDACTED]																											
FY16 Sensor Week	[REDACTED]																											
FY18 Sensor Week	[REDACTED]																											
FY20 Sensor Week	[REDACTED]																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604604F / <i>Submunitions</i>	Project (Number/Name) 653166 / <i>Joint Smart Munitions Test and Evaluation</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Target/warhead evaluation/analysis, signature test, captive carry flight tests.	1	2015	4	2021
FY16 Sensor Week	3	2016	3	2016
FY18 Sensor Week	3	2018	3	2018
FY20 Sensor Week	3	2020	3	2020

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604617F / <i>Agile Combat Support</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	41.857	56.178	53.680	0.000	53.680	28.307	17.171	17.489	17.798	Continuing	Continuing
652895: <i>CE Readiness</i>	-	40.451	54.712	52.127	0.000	52.127	26.727	15.560	15.848	16.129	Continuing	Continuing
654910: <i>Aeromedical Readiness</i>	-	1.406	1.466	1.553	0.000	1.553	1.580	1.611	1.641	1.669	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program supports the vision of Agile Combat Support (ACS), which is to provide an integrated and interoperable mission-ready total force capable of delivering responsive, persistent, effective, and affordable support across the range of military operations to achieve joint effects. To this end, ACS is challenged to provide lighter, leaner, rapidly-deployable and technologically-advanced materiel and forces; timelier planning and execution capabilities; and more agile, responsive, and efficient sustainment capabilities to the warfighter. Current projects in this program provide Civil Engineering Readiness (Project 652895) and Aeromedical Readiness (Project 654910). Civil Engineering Readiness projects enable rapid deployment, defense, and sustainment of airfield operations within established timelines anywhere in the world. Aeromedical Readiness projects provide aerospace medical systems and treatment equipment to meet unique, worldwide warfighter medical operational requirements.

The FY2017 funding request was reduced by \$10.740 million to account for the availability of prior year execution balances.

BA 5 - This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	42.840	57.678	49.955	0.000	49.955
Current President's Budget	41.857	56.178	53.680	0.000	53.680
Total Adjustments	-0.983	-1.500	3.725	0.000	3.725
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-8.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	6.500			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.983	0.000			
• Other Adjustments	0.000	0.000	3.725	0.000	3.725

Change Summary Explanation

FY16 Congressional reduction for Forward financing.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)
3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	PE 0604617F / <i>Agile Combat Support</i>

FY16 Congressional add for Basic Expeditionary Airfield Resources (BEAR): Technology Evaluation and Integration Lab (BTEIL)

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604617F / <i>Agile Combat Support</i>				Project (Number/Name) 652895 / <i>CE Readiness</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
652895: <i>CE Readiness</i>	-	40.451	54.712	52.127	0.000	52.127	26.727	15.560	15.848	16.129	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Civil Engineering (CE) Readiness project develops Airfield Damage Repair and Airfield Protection solutions for in-garrison, expeditionary, and contingency installations & airbases. This includes: technologies for airfield assessment, repair and unexploded ordnance identification & mitigation to enable rapid recovery and regeneration of airfield operations; infrastructure design criteria, construction methods, hardened shelters, evaluation tools, materials, force protection technologies, and systems for improved resiliency and rapid restoration of airbase and airfield operations following an attack.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Airfield Damage Repair	20.912	33.212	27.127	0.000	27.127
<p>Description: This effort develops, tests, and certifies equipment, materials, and Tactics, Techniques, and Procedures (TTPs) for the rapid assessment and repair of airfield damage, which includes identification, mitigation or removal of unexploded ordnance and expedient repairs for fuel and utility systems. This effort also intends to accelerate the transition of proven technologies in expedient and sustained protection of critical infrastructure, including operating surfaces, shelters, fuel storage and distribution systems, and command and control (C2) systems. Further, this effort focuses on the resiliency of airbase infrastructure as well as the timely repair and regeneration of airfield operations within established time limits in order to gain and maintain air superiority.</p> <p>FY 2015 Accomplishments: Continued developing rapid assessment tools and solutions for repair of airfield damage, which included automated identification, mitigation or removal of unexploded ordnance (UXO), and rapid setting material storage & transfer capability. Developed aircraft performance data for Minimum Airfield Operating Surface (MAOS) selection criteria. Continued integration of GeoExPT software into Immediate Visualization and Neutralization (IVAN) Robot for UXO mitigation. Completed first article testing of volumetric mixer for ADR.</p> <p>FY 2016 Plans: Develop rapid assessment, mitigation and repair tools and solutions for airfield damage repair. Rapid assessment includes the development of IT solutions for MAOS selection, ADR command and control(C2), ADR training, and interfaces to other AF C2 systems. Mitigation includes removal of UXO through a family of Multiple</p>					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support	Project (Number/Name) 652895 / CE Readiness
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B. Accomplishments/Planned Programs (\$ in Millions)

UXO Removal Systems (MURS). Repair of airfield damage focuses different techniques required to return an airfield to operational status.

FY 2017 Base Plans:

Mature the rapid assessment, mitigation and repair tools and solutions for airfield damage repair through testing and delivery. Rapid assessment includes the development of IT solutions for MAOS selection, ADR command and control(C2), ADR training, and interfaces to other AF C2 systems. Mitigation includes removal of UXO through a family of Multiple UXO Removal Systems (MURS). Repair of airfield damage focuses different techniques required to return an airfield to operational status.

FY 2017 OCO Plans:

N/A

Title: Airfield Protection

Description: Advance and transition various solutions for protecting airfield infrastructure (not associated with airfield surfaces) from ballistic and guided penetrating threats. Included within this effort are structural solutions, expeditionary and expedient hardening and protection solutions, rapid restoration of fuels distribution and storage, hardening criteria, implementation costs, and updated Tactics, Techniques and Procedures (TTPs). This effort is designed to advance solutions developed under the Hardened Installation Protection for Persistent Operations (HIPPO) Joint Capability Technology Demonstration (JCTD) and transition for implementation at fixed and expeditionary locations, providing improved resiliency and rapid restoration of airbase and airfield operations following an attack.

FY 2015 Accomplishments:

Defined and developed fully integrated solution(s) for hardening and protection identified in HIPPO JCTD. Developed retrofit of sunshades for fighter aircraft. Advanced expedient protection systems for small scale equipment and facilities.

FY 2016 Plans:

Continue Engineering and Manufacturing Development (EMD) of technology solutions for Ultra High Performance Concrete, execute research for hardening against cruise missile threats. Finalize sheltering designs for Expeditionary Large Asset Protection & Expedient Small Asset Protection and fuel distribution restoration & recovery products. Develop test plans for final sheltering designs and training TTPs

FY 2017 Base Plans:

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>UXO Removal Systems (MURS). Repair of airfield damage focuses different techniques required to return an airfield to operational status.</p> <p><i>FY 2017 Base Plans:</i> Mature the rapid assessment, mitigation and repair tools and solutions for airfield damage repair through testing and delivery. Rapid assessment includes the development of IT solutions for MAOS selection, ADR command and control(C2), ADR training, and interfaces to other AF C2 systems. Mitigation includes removal of UXO through a family of Multiple UXO Removal Systems (MURS). Repair of airfield damage focuses different techniques required to return an airfield to operational status.</p> <p><i>FY 2017 OCO Plans:</i> N/A</p> <p><i>Title:</i> Airfield Protection</p> <p><i>Description:</i> Advance and transition various solutions for protecting airfield infrastructure (not associated with airfield surfaces) from ballistic and guided penetrating threats. Included within this effort are structural solutions, expeditionary and expedient hardening and protection solutions, rapid restoration of fuels distribution and storage, hardening criteria, implementation costs, and updated Tactics, Techniques and Procedures (TTPs). This effort is designed to advance solutions developed under the Hardened Installation Protection for Persistent Operations (HIPPO) Joint Capability Technology Demonstration (JCTD) and transition for implementation at fixed and expeditionary locations, providing improved resiliency and rapid restoration of airbase and airfield operations following an attack.</p> <p><i>FY 2015 Accomplishments:</i> Defined and developed fully integrated solution(s) for hardening and protection identified in HIPPO JCTD. Developed retrofit of sunshades for fighter aircraft. Advanced expedient protection systems for small scale equipment and facilities.</p> <p><i>FY 2016 Plans:</i> Continue Engineering and Manufacturing Development (EMD) of technology solutions for Ultra High Performance Concrete, execute research for hardening against cruise missile threats. Finalize sheltering designs for Expeditionary Large Asset Protection & Expedient Small Asset Protection and fuel distribution restoration & recovery products. Develop test plans for final sheltering designs and training TTPs</p> <p><i>FY 2017 Base Plans:</i></p>	19.539	15.000	25.000	0.000	25.000

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support	Project (Number/Name) 652895 / CE Readiness
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B. Accomplishments/Planned Programs (\$ in Millions)

Complete Engineering Manufacturing Development (EMD) of expedient and expeditionary sheltering concepts. Proceed with testing and performance validation of protection components in commercially-viable formats. Test and evaluate front and back shelter expedient covering systems. Continue exploration of new concepts for protection materials for lighter, cheaper solutions for sheltering. Advance and finalize the development of models for ultrahigh velocity penetrating weapons. Advance and finalize the development of models for prediction of ultrahigh performance concrete materials (UHPC) for use in hardening and resiliency. Complete development of physical data to support all model development efforts. Execute and test the development of lighter cheaper multi-layer solutions for hardening for application against penetrating munitions. Develop, test and evaluate materials and concepts for hardening against cruise missile threats, plan for full scale sled track testing of possible concepts. Finalize EMD for Water and Fuels Expedient Repair System (WaFERS) for first article delivery of capability to Pacific Air Forces Regional Training Center (PRTC). Refine WaFERS training capability tactics, techniques and procedures (TTP) and mockup for ruggedized use, deliver and install to PRTC for training on WaFERS first article deliveries. Execute planning for procurement acquisition processes and methods to advanced products moving through EMD to deployment.

FY 2017 OCO Plans:
N/A

Title: Bear Technology and Integration Lab (Congressional Add)

Description: Support to Basic Expeditionary Airfield Resources (BEAR) Technology Evaluation and Integration Lab (BTEIL) (FY16 Congressional Add)

FY 2016 Plans:

Provide support to the Basic Expeditionary Airfield Resources (BEAR) Technology Evaluation and Integration Lab (BTEIL)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Complete Engineering Manufacturing Development (EMD) of expedient and expeditionary sheltering concepts. Proceed with testing and performance validation of protection components in commercially-viable formats. Test and evaluate front and back shelter expedient covering systems. Continue exploration of new concepts for protection materials for lighter, cheaper solutions for sheltering. Advance and finalize the development of models for ultrahigh velocity penetrating weapons. Advance and finalize the development of models for prediction of ultrahigh performance concrete materials (UHPC) for use in hardening and resiliency. Complete development of physical data to support all model development efforts. Execute and test the development of lighter cheaper multi-layer solutions for hardening for application against penetrating munitions. Develop, test and evaluate materials and concepts for hardening against cruise missile threats, plan for full scale sled track testing of possible concepts. Finalize EMD for Water and Fuels Expedient Repair System (WaFERS) for first article delivery of capability to Pacific Air Forces Regional Training Center (PRTC). Refine WaFERS training capability tactics, techniques and procedures (TTP) and mockup for ruggedized use, deliver and install to PRTC for training on WaFERS first article deliveries. Execute planning for procurement acquisition processes and methods to advanced products moving through EMD to deployment.					
FY 2017 OCO Plans: N/A					
Title: Bear Technology and Integration Lab (Congressional Add)	-	6.500	-	-	-
Description: Support to Basic Expeditionary Airfield Resources (BEAR) Technology Evaluation and Integration Lab (BTEIL) (FY16 Congressional Add)					
FY 2016 Plans: Provide support to the Basic Expeditionary Airfield Resources (BEAR) Technology Evaluation and Integration Lab (BTEIL)					
Accomplishments/Planned Programs Subtotals	40.451	54.712	52.127	0.000	52.127

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPAF:BA04:Line Item #845100A: Contingency Operations	38.728	5.412	0.379	0.000	0.379	1.393	2.137	2.079	0.000	Continuing	Continuing

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force Date: February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / <i>Agile Combat Support</i>	Project (Number/Name) 652895 / <i>CE Readiness</i>
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D. Acquisition Strategy

The majority of efforts in this project employ existing contracts established to support CE Readiness requirements. Other DoD and US Government laboratories/ engineering centers are used whenever practical and appropriate, especially where a unique technical capability or expertise exist. Established DoD and GSA contracts are considered and evaluated for scope applicability and use before a new contract effort is implemented.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support	Project (Number/Name) 652895 / CE Readiness
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Airfield Damage Repair (ADR) 1	Various	AFCEC : Tyndall AFB, FL	-	12.132	Dec 2014	25.132	Feb 2016	31.307	Feb 2017	0.000		31.307	Continuing	Continuing	-
ADR 2	MIPR	USERDC : Vicksburg, MS	-	8.700	Dec 2015	8.000	Feb 2016	7.000	Feb 2017	0.000		7.000	Continuing	Continuing	-
Airfield Protection	Various	AFCEC : Tyndall AFB, FL	-	19.539	Feb 2015	15.000	Feb 2016	13.740	Feb 2017	0.000		13.740	Continuing	Continuing	-
BEAR	TBD	AFCEC : Tyndall AFB, FL	-	0.000		6.500	Aug 2016	0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	40.371		54.632		52.047		0.000		52.047	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Supplies, Travel	Various	AFCEC : Tyndall AFB, FL	-	0.080		0.080		0.080		0.000		0.080	Continuing	Continuing	-
Subtotal			-	0.080		0.080		0.080		0.000		0.080	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / <i>Agile Combat Support</i>	Project (Number/Name) 652895 / <i>CE Readiness</i>
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	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	40.451	54.712	52.127	0.000	52.127	-	-	-

Remarks
NOTE: This is primarily a level of effort Program Element with multiple projects.

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support	Project (Number/Name) 652895 / CE Readiness

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
ADR Command and Control Simulator	[REDACTED]																											
ADR Robotic Appliques Operational Utility Evaluation (OUE)	[REDACTED]																											
ADR Material Transfer Concept Activities, and Test and Evaluation	[REDACTED]																											
RADAS / Minimum Airfield Surface OUE and Assessment	[REDACTED]																											
RADAS Production and Deployment	[REDACTED]																											
RADBO Vehicle Operational Utility Assessment	[REDACTED]																											
Airfield Protection (AP) Large/Small Sheltering Product Design, Development, Test and Evaluation	[REDACTED]																											
AP Ultra-high Performance Concrete Model/ Materials	[REDACTED]																											
AP Guided Threats Protection Concept Activities	[REDACTED]																											
AP Guided Threats Protection Design and Development	[REDACTED]																											
Initiate new civil engineering projects for sustained airbase operations	[REDACTED]																											
AP Fuel Repair Design and Development	[REDACTED]																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / <i>Agile Combat Support</i>	Project (Number/Name) 652895 / <i>CE Readiness</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
ADR Command and Control Simulator	1	2015	4	2017
ADR Robotic Appliques Operational Utility Evaluation (OUE)	3	2015	4	2018
ADR Material Transfer Concept Activities, and Test and Evaluation	1	2015	3	2017
RADAS / Minimum Airfield Surface OUE and Assessment	1	2015	4	2015
RADAS Production and Deployment	2	2015	4	2018
RADBO Vehicle Operational Utility Assessment	2	2015	4	2016
Airfield Protection (AP) Large/Small Sheltering Product Design, Development, Test and Evaluation	2	2015	1	2018
AP Ultra-high Performance Concrete Model/Materials	2	2015	1	2018
AP Guided Threats Protection Concept Activities	2	2015	4	2017
AP Guided Threats Protection Design and Development	1	2018	4	2018
Initiate new civil engineering projects for sustained airbase operations	2	2018	4	2021
AP Fuel Repair Design and Development	2	2015	1	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604617F / <i>Agile Combat Support</i>				Project (Number/Name) 654910 / <i>Aeromedical Readiness</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
654910: <i>Aeromedical Readiness</i>	-	1.406	1.466	1.553	0.000	1.553	1.580	1.611	1.641	1.669	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program provides tactical and strategic management of combat casualties by further developing and optimizing existing technologies for ground Expeditionary Medical Systems (EMEDS) and Aeromedical evacuation systems. The program also supports capabilities development in the multi-disciplinary areas for light-weight, durable, and rapidly deployable medical equipment to meet Air Force medical readiness and operational requirements.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Deployable Oxygen Generation System - Small (DOGS-S)	0.040	0.020	0.000	0.000	0.000
Description: This effort designs, develops, and engineers manufacturing capability for a portable oxygen generation system, which provides medical grade oxygen for Expeditionary Medical Systems (EMEDS) hospitals and mobile aeromedical staging facilities.					
FY 2015 Accomplishments: Completed Development and Operational Test & Evaluation. Submitted Food & Drug Administration package for clearance.					
FY 2016 Plans: Transitioning program from EMD to Production					
FY 2017 Base Plans: N/A					
FY 2017 OCO Plans: N/A					
Title: Non-Invasive Warming and Cooling Device (NIWCD)	1.366	1.446	1.553	0.000	1.553
Description: Single device to provide therapeutic temperature control during treatment and movement of patient from point of injury through the continuum of care. The mortality in combat casualties with hypothermia is double that of normothermic casualties with similar injuries. Cooling the patient is required to treat hyperthermia.					
FY 2015 Accomplishments:					

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support	Project (Number/Name) 654910 / Aeromedical Readiness
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Completed Pre-Milestone B documentation and prepared for release of Request for Proposal					
FY 2016 Plans: Complete Source Selection, enter EMD phase, conduct System Requirements Review, and Preliminary Design Review.					
FY 2017 Base Plans: Conduct Critical Design Review, Developmental Test Readiness Review and begin Developmental Test and Evaluation.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	1.406	1.466	1.553	0.000	1.553

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• NA: NA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

D. Acquisition Strategy
Programs will consider a streamlined acquisition approach. Whenever practical, commercial items are tested and evaluated as candidates for providing solutions to user needs. This normally involves characterization, verification, and qualification testing to ensure commercial off-the-shelf equipment is properly evaluated to identify any capability gaps that may require minor modifications for military use.

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support	Project (Number/Name) 654910 / Aeromedical Readiness
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Deployable Oxygen Generation System - Small (DOGS-S)	C/FFP	AirSep Corporation : Amherst, NY	-	0.000		0.000		0.000		0.000		0.000	Continuing	Continuing	TBD
Non-Invasive Warming and Cooling Device (NIWCD)	C/TBD	TBD : TBD	-	0.976	May 2016	1.331	Dec 2016	1.403	Dec 2017	0.000		1.403	Continuing	Continuing	-
Subtotal			-	0.976		1.331		1.403		0.000		1.403	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test & Evaluation	MIPR	AFMESA : Ft Detrick, MD	-	0.015	Aug 2016	0.020	Aug 2017	0.030	Aug 2018	0.000		0.030	Continuing	Continuing	-
Subtotal			-	0.015		0.020		0.030		0.000		0.030	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Various	AFLCMC : Wright-Patterson AFB, OH	-	0.415	Dec 2015	0.115	Dec 2016	0.120	Dec 2017	0.000		0.120	Continuing	Continuing	TBD
Subtotal			-	0.415		0.115		0.120		0.000		0.120	-	-	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / <i>Agile Combat Support</i>	Project (Number/Name) 654910 / <i>Aeromedical Readiness</i>
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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

Engineering and Manufacturing Development (EMD) Phase for the Deployable Oxygen Generation System (DOGS) - Small																												
Production and Fielding Phase for the DOGS - Small System																												
EMD Phase for the Non-Invasive Warming & Cooling Device (NIWCD)																												
Production and Fielding Phase for NIWCD																												
Conduct market research and initiate EMD for the Multi-Channel Wound Infusion Pump																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / <i>Agile Combat Support</i>	Project (Number/Name) 654910 / <i>Aeromedical Readiness</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Engineering and Manufacturing Development (EMD) Phase for the Deployable Oxygen Generation System (DOGS) - Small	1	2015	2	2016
Production and Fielding Phase for the DOGS - Small System	3	2016	4	2018
EMD Phase for the Non-Invasive Warming & Cooling Device (NIWCD)	2	2016	4	2018
Production and Fielding Phase for NIWCD	4	2018	4	2019
Conduct market research and initiate EMD for the Multi-Channel Wound Infusion Pump	2	2018	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604618F / <i>Joint Direct Attack Munition</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	0.000	0.000	0.000	9.901	0.000	9.901	14.856	31.199	0.000	0.000	0.000	55.956
653891: <i>M-Code Integration</i>	0.000	0.000	0.000	9.901	0.000	9.901	14.856	31.199	0.000	0.000	0.000	55.956
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 05 PE 0604618F, project 653891, M-Code, is a new start.

A. Mission Description and Budget Item Justification

M-code provides an enhanced anti-jam capability. M-Code will provide the ability to operate in increasing adversarial A2/AD jam environment. M-Code also provides increased accuracy, better signal acquisition, and advanced security.

B. Program Change Summary (\$ in Millions)

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.000	0.000	9.901	0.000	9.901
Total Adjustments	0.000	0.000	9.901	0.000	9.901
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	9.901	0.000	9.901

Change Summary Explanation

FY17 increase for M-code development

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: M-Code	0.000	0.000	9.901	0.000	9.901

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604618F <i>I Joint Direct Attack Munition</i>
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C. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: M-code provides an enhanced anti-jam capability. M-Code will provide the ability to operate in increasing adversarial A2/AD jamming environment. M-Code also provides increased accuracy, better signal acquisition, and advanced security.</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans: Development/integration of M-Code Receiver for all JDAM variants.</p> <p>FY 2017 OCO Plans: N/A</p>					
Accomplishments/Planned Programs Subtotals	0.000	0.000	9.901	0.000	9.901

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• none: <i>None</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

E. Acquisition Strategy

Effort will be sole source award under existing IDIQ contract.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604618F / Joint Direct Attack Munition	Project (Number/Name) 653891 / M-Code Integration
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
M-Code Receiver Development/Integration	SS/TBD	Boeing : St Louis, MO	0.000	0.000		0.000		8.713	Mar 2017	0.000		8.713	40.528	49.241	49.241
Subtotal			0.000	0.000		0.000		8.713		0.000		8.713	40.528	49.241	49.241

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Government Support	Various	Several Govt Labs and Test Centers : Eglin AFB, FL	0.000	0.000		0.000		0.668	Oct 2016	0.000		0.668	1.036	1.704	1.704
Subtotal			0.000	0.000		0.000		0.668		0.000		0.668	1.036	1.704	1.704

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
M-Code Test and Evaluation Activities	Various	various : Eglin AFB, FL	0.000	0.000		0.000		0.223	Jun 2017	0.000		0.223	3.109	3.332	3.332
Subtotal			0.000	0.000		0.000		0.223		0.000		0.223	3.109	3.332	3.332

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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) for M-Code	Various	AFLCMC/EBD : Eglin AFB, FL	0.000	0.000		0.000		0.297	Oct 2016	0.000		0.297	1.382	1.679	1.679
Subtotal			0.000	0.000		0.000		0.297		0.000		0.297	1.382	1.679	1.679

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force								Date: February 2016			
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0604618F / <i>Joint Direct Attack Munition</i>				Project (Number/Name) 653891 / <i>M-Code Integration</i>			
	Prior Years	FY 2015		FY 2016		FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.000		0.000		9.901	0.000	9.901	46.055	55.956	55.956

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604618F / <i>Joint Direct Attack Munition</i>	Project (Number/Name) 653891 / <i>M-Code Integration</i>
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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

M-Code Receiver Development/Integration	
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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604618F / <i>Joint Direct Attack Munition</i>	Project (Number/Name) 653891 / <i>M-Code Integration</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
M-Code Receiver Development/Integration	1	2017	4	2020

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604706F / <i>Life Support Systems</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	14.697	8.187	7.520	0.000	7.520	9.034	8.983	8.685	8.839	Continuing	Continuing
65412A: <i>Life Support Systems</i>	-	14.697	8.187	7.520	0.000	7.520	9.034	8.983	8.685	8.839	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program is human-centered providing RDT&E recapitalization of aircrew flight equipment and airman combat systems. Air Force acquisition teams lead the upgrade and fielding of new equipment/systems by assessing deficiencies in existing equipment, conducting business case analyses, evaluating existing technologies or developing new technologies, assessing commercially available products for combat use, and conducting required Safe-to-Fly (STF) tests and certifications. Program efforts include, but are not limited to, the following projects: directed energy protective equipment; flight helmets and visors; oxygen breathing systems for aircrew; radios and locator beacons; support equipment; nuclear flash blindness protection; night vision devices; noise reduction devices; anti-gravity (anti-G) suits; flame resistant, retardant and blast protective gear; aircraft seating; impact protection equipment; flotation devices; parachutes; ejection seats; and other life support systems required by the warfighter.

The FY2017 funding request was reduced by \$1.152 million to account for the availability of prior year execution balances.

BA 5 - This program is in Budget Activity 5, System Development and Demonstration (SDD), because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

<u>B. Program Change Summary (\$ in Millions)</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	14.854	8.187	8.747	0.000	8.747
Current President's Budget	14.697	8.187	7.520	0.000	7.520
Total Adjustments	-0.157	0.000	-1.227	0.000	-1.227
• 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	-0.157	0.000			
• Other Adjustments	0.000	0.000	-1.227	0.000	-1.227

Change Summary Explanation

No Significant Program Changes

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604706F / <i>Life Support Systems</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
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<p>Title: Aircrew Flight Equipment (AFE)</p> <p>Description: Air Force Life Cycle Management Center's Aircrew Performance Branch is the single USAF focal point for Aircrew Flight Equipment (AFE) Safe-to-Fly (STF) testing certification, addressing Safety Investigation Board (SIB) recommendations, along with studies and analysis. STF projects are urgent responses to real-time capability gaps identified by the warfighter which may be satisfied quickly by procuring and qualifying commercial-off-the-shelf (COTS) products and/or performing minor development efforts. In addition, previous successful STF efforts may evolve into enduring capabilities as other users / MAJCOMs seek to incorporate these STF assets into their inventory. The Cold Weather Aviation System (CWAS), Aircrew Body Armor (ABA), BA-X Low Profile Parachute (LPP) and Nuclear Flash Blindness Goggles (NFBG) are currently the active STF programs within Life Support Systems (LSS).</p> <p>FY 2015 Accomplishments: Completed purchase of CWAS Air Force Elements test assets for integration testing. Finalized STF testing of ABA and CWAS gloves. Delivered the signed STF recommendation.</p> <p>FY 2016 Plans: Begin integration testing of CWAS AF Elements. Purchase LPP test assets and begin integration testing. Partner with AFRL to mature the current industry base of nuclear flash protection.</p> <p>FY 2017 Base Plans: Perform STF testing and certification of COTS products. Address SIB recommendations. Formulate an acquisition strategy for next generation aircrew laser eye protection technology to address new and evolving threats and next generation peacetime radio technology to replace Vietnam Era PRC-90 radios.</p> <p>FY 2017 OCO Plans: N/A</p>	1.897	2.025	0.847	0.000	0.847
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<p>Title: Integrated Aircrew Ensemble (IAE)</p> <p>Description: The Integrated Aircrew Ensemble (IAE) is a multi-layer battle ready system of protective clothing, survival equipment, and anti-G protection equipment worn by aircrew members. The ensemble can layer up to seven (7) components allowing for flexible combinations depending on aircraft type, mission, and threat. Each component design is unique but engineered as a single integrated ensemble to improve mobility by reducing bulk, reducing aircrew fatigue from thermal stress using new breathable materials, and increasing overall system performance. The ensemble components are: 1) outer flight layer, 2) Environmental Protection Layer (EPL) with</p>	6.800	6.162	2.373	0.000	2.373
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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604706F / <i>Life Support Systems</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
gloves, 3) Chemical Biological Radiological Layer (CBRL) with glove inserts, 4) Life Preserver Unit (LPU), 5) Counter Chest Pressure Bladder (CCPB), 6) survival vest, and 7) G-suit. FY 2015 Accomplishments: Finished Design Verification Testing of the IAE and conducted System Verification Review FY 2016 Plans: Begin First Article Testing of the finalized design of IAE and prove out the maturity of the production line. FY 2017 Base Plans: Start Low Rate Initial Production (LRIP) and begin Operational Testing FY 2017 OCO Plans: N/A					
Title: Ejection Seat Safety/Sustainability Improvement Program for Qualification of B-2 Seat Mod Description: Ejection Seat upgrade for B-2 FY 2015 Accomplishments: Conducted market research to inform appropriate acquisition strategy. FY 2016 Plans: Begin qualification testing of the ACES II SSIP. FY 2017 Base Plans: Complete Qualification testing of the ACES II SSIP for B-2. FY 2017 OCO Plans: N/A	6.000	0.000	4.300	0.000	4.300
Accomplishments/Planned Programs Subtotals	14.697	8.187	7.520	0.000	7.520

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604706F / <i>Life Support Systems</i>
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D. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF:BA04: Line Item # 842990: <i>Items Less Than \$5 Million</i> <i>(Safety and Rescue Equipment)</i>	7.035	67.699	20.603	0.000	20.603	21.268	20.343	20.704	21.077	Continuing	Continuing

Remarks

E. Acquisition Strategy

The majority of efforts funded in this project employ a streamlined acquisition approach. Whenever practical, Government-Off-The-Shelf/Commercial-Off-The-Shelf (GOTS/COTS) items are tested and evaluated as candidates for solutions to user needs. This normally involves characterization, verification, and qualification testing to ensure GOTS/COTS equipment is properly certified and adapted for military purposes. However, acquisition strategies may be carried out at the project level for traditional Engineering and Manufacturing Development (EMD), e.g., Integrated Aircrew Ensemble (IAE) and Aircrew Laser Eye Protection (ALEP) Block III.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604706F / Life Support Systems	Project (Number/Name) 65412A / Life Support Systems
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Aircrew Flight Equipment (AFE)	Various	Multiple Contractors : TBD	-	0.825		0.975		0.500		0.000		0.500	Continuing	Continuing	TBD
Integrated Aircrew Ensemble (IAE)	C/FPIF	Tiax : Lexington, MA	-	5.627	Jan 2016	4.299	Aug 2016	2.100	Oct 2016	0.000		2.100	Continuing	Continuing	TBD
Advanced Concept Ejection Seat (ACES)	SS/TBD	TBD : TBD	-	6.000	Nov 2015	0.000		0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	12.452		5.274		2.600		0.000		2.600	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Tests (IAE, ACES, CWAS, etc.)	Various	Various : Various	-	1.000	Jul 2015	1.045	Jul 2016	3.570	Jul 2017	0.000		3.570	Continuing	Continuing	-
Subtotal			-	1.000		1.045		3.570		0.000		3.570	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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	AFLCMC : Wright-Patterson AFB, OH	-	1.000		1.613		1.100		0.000		1.100	Continuing	Continuing	-
Travel	Various	Various : Various	-	0.245		0.255		0.250		0.000		0.250	Continuing	Continuing	-
Subtotal			-	1.245		1.868		1.350		0.000		1.350	-	-	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604706F / <i>Life Support Systems</i>	Project (Number/Name) 65412A / <i>Life Support Systems</i>
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
IAE [Milestone C]																												
IAE [Low Rate Initial Production]																												
IAE [Engineering and Manufacturing Development]																												
IAE [Initial Operational Test & Evaluation]																												
Advanced Concept Ejection Seat (ACES) Qualification Testing																												
Continue projects in support of Aircrew Performance																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604706F / <i>Life Support Systems</i>	Project (Number/Name) 65412A / <i>Life Support Systems</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
IAE [Milestone C]	3	2017	3	2017
IAE [Low Rate Initial Production]	3	2017	2	2018
IAE [Engineering and Manufacturing Development]	1	2015	3	2017
IAE [Initial Operational Test & Evaluation]	2	2018	4	2018
Advanced Concept Ejection Seat (ACES) Qualification Testing	3	2016	4	2017
Continue projects in support of Aircrew Performance	2	2017	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604735F / <i>Combat Training Ranges</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	9.812	11.795	77.409	0.000	77.409	53.485	35.032	10.721	10.912	Continuing	Continuing
652286: <i>Combat Training Range Equipment</i>	-	9.812	11.795	77.409	0.000	77.409	53.485	35.032	10.721	10.912	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
 This program, BA 05 PE 0604735F, project 652286, Digital Threat Relevancy, is a new start.

A. Mission Description and Budget Item Justification

The Combat Training Range (CTR) program provides equipment and support to Air Force units and combat training ranges for mission testing, training, and evaluation of aircrews, as well as operational testing of weapon systems and tactics under simulated combat conditions. This program provides funding for the development and integration of electronic warfare training capabilities to include P5 Combat Training Systems (P5CTS), threat emitters, advanced radar threat systems, communication jammers, instrumentation equipment/systems, and evolutionary upgrades to facilitate standardization and integration across all platforms to include coalition and 5th Generation aircraft. The CTR program also includes the development of advanced threat emitters. The Joint Threat Emitter (JTE) program continues the development of a comprehensive suite of threat signals for aircrew tactics and electronic combat training for simulated penetrations of hostile airspace with nonproprietary software and removal of obsolete components. The Advanced Radar Threat System (ARTS) programs will develop, design, build and test threat system simulators based on advanced foreign fielded surface-to-air missile (SAM) radar threat systems. ARTS is designed to be used at Department of Defense (DoD) training ranges for 4th and 5th generation aircrew training and tactics development to increase combat effectiveness and aircrew survivability by training aircrews to engage or defend against an advanced SAM threat before encountering it in actual combat. The ARTS-Variant 1 (ARTS-V1) is focused on long-range, re-locatable radar threat systems while ARTS-Variant 2 (ARTS-V2) is focused on mobile, short/medium-range radar threat systems. The ARTS program will also support early research, studies, and planning for next-generation long-range threat systems. The ARTS programs also fund development of high fidelity surrogate targets matching the ARTS-V1 and ARTS-V2 threat systems necessary for 5th generation aircrew training. The CTR program funds development of modifications for Legacy Range Threat Systems to extend the systems' service life through threat relevancy and enhanced systems capabilities. Legacy Systems include the Multiple Threat Emitter System (MUTES), the Miniature Multiple Threat Emitter System (Mini-MUTES), the Modular Threat Emitter (MTE) system, the Tactical Radar Threat Generator (TRTG) system, the Band Simulator, and the Unmanned Modular Threat Emitter (UMTE) system. Enhancements focus on upgrading threat systems to match the latest fielded modifications for foreign threat systems faced by combat aircrews. The Double Digit Threat Emitter (DDTE) effort will leverage existing COTS and technology developed under this funding to provide this advanced threat capability. Lastly, this program funds ongoing analyses, studies, risk reduction efforts, and technology development to enhance range systems, such as combat training range equipment integration into a blended training (Live, Virtual, Constructive) architecture, communication and GPS jammers, weapon drop scoring systems and infrastructure networks. These enhancements add a critical dimension to exercises and optimize warfighter training.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604735F / <i>Combat Training Ranges</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	10.129	15.795	34.338	0.000	34.338
Current President's Budget	9.812	11.795	77.409	0.000	77.409
Total Adjustments	-0.317	-4.000	43.071	0.000	43.071
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-4.000			
• 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	-0.317	0.000			
• Other Adjustments	0.000	0.000	43.071	0.000	43.071

Change Summary Explanation

FY2017 funding request was increased \$34.87 million to initiate development of an strategic advanced radar threat system training simulator and to restructure the tactical advanced radar threat system to be consistent with the current development schedule. Additionally, \$8.2 million was added to initiate development of upgrades of legacy threat simulators to replace analog sub-systems with digital systems to increase performance and enable them to be logistically supportable.

FY2016 funding was reduced \$4M "Improving funding management: forward financing"

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: P5 Combat Training System (CTS)	7.777	8.803	5.221	0.000	5.221
Description: P5 CTS funding supports Air Combat Training Systems (ACTS) capabilities and includes the development, integration and testing of future software/hardware upgrades, aircraft/pod integration, upgrades for range applications, and pod service life extension analysis and studies. Additionally, funding supports efforts to enable an initial training capability with 5th Generation aircraft via Ground Subsystem (GS) decryption of secure (encrypted, single-level security) Time, Space Position Information (TSPI) data.					
FY 2015 Accomplishments: P5 CTS funding supported ACTS capabilities and included the development, integration and testing of software/hardware upgrades, aircraft/pod integration, and upgrades for range applications. Additionally, funding supported initial efforts to enable a training capability with 5th Generation aircraft including relay of secure (encrypted, single-level security) TSPI data to the GS.					
FY 2016 Plans:					

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force				Date: February 2016	
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0604735F / <i>Combat Training Ranges</i>			
C. Accomplishments/Planned Programs (\$ in Millions)					
Funding will support development, integration and testing of future software/hardware upgrades, aircraft/pod integration, and upgrades for range applications, and pod service life extension analysis and studies.					
FY 2017 Base Plans: P5 CTS funding will support development, integration and testing of future software/hardware upgrades, aircraft/pod integration, and upgrades for range applications.					
FY 2017 OCO Plans: N/A					
Title: Joint Threat Emitter (JTE)					
Description: The Joint Threat Emitter (JTE) is designed to train aircrews to survive in a combat environment against Surface-to-Air Missile (SAM) and Anti-Aircraft Artillery (AAA) threats. The JTE simulates SA-2, SA-3, SA-6, SA-13 and AAA threat signals which interact with the aircraft Radar Warning Receiver and Electronic Countermeasure system to provide realistic Electronic Warfare training environments for pilots and crewmembers. The JTE is intended to reduce range manpower and resource requirements by replacing legacy systems as they face increasing supportability issues. The JTE leverages Commercial-Off-The-Shelf (COTS) where possible. The JTE system consists of a Threat Emitter Unit (TEU) and either a mobile command and control unit (MC2U) or a Fixed Command and Control Unit (FC2U).					
FY 2015 Accomplishments: Continued development and testing of a new software baseline to eliminate proprietary issues and to create an organic software sustainment capability. Additionally, continued studies to identify system capability modifications to simulate new threat signals.					
FY 2016 Plans: N/A					
FY 2017 Base Plans: N/A					
FY 2017 OCO Plans: N/A					
Title: Legacy Range Threat Systems					
	0.150	0.000	0.000	0.000	0.000
	0.000	0.000	8.789	0.000	8.789

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604735F / <i>Combat Training Ranges</i>
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C. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: The Legacy Systems program develops, integrates, and tests modifications for radar threat simulators such as the Joint Threat Emitter, Unmanned Modular Threat Emitter (UMTE) and the Mini- Multiple Threat Emitter (mini-MUTES). The Common Electronic Attack Receiver (CEAR) modification enables radar threat simulators to realistically react to electronic counter measures, expendable counter measures, maneuvers, and terrain masking initiated by aircrew during electronic combat training for simulated penetrations of hostile airspace. CEAR also enables the recording of aircrew reactions for playback and debriefing.</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans: Funding will be used to integrate the current CEAR design onto the Mini-MUTES system while maintaining commonality across all three platforms (JTE, UMTE, Mini-MUTES). Funding will be used to study enhancements to legacy systems capable of providing advanced SAM threats through integration of COTS or previously developed technology into existing systems.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Advanced Radar Threat Systems (ARTS V1) Development</p> <p>Description: The Advanced Radar Threat System Variant 1 (ARTS-V1) program will develop, design, build and test threat system simulators based on advanced strategic, long-range, re-locatable foreign fielded surface-to-air missile (SAM) radar threat systems. ARTS-V1 is designed to be used at Department of Defense (DoD) training ranges for aircrew training and tactics development to increase combat effectiveness and aircrew survivability by training aircrews to engage or defend against an advanced SAM threat before encountering it in actual combat. Various aircraft platforms may train against ARTS-V1, but the most stringent requirements placed on ARTS-V1 design come from fifth generation aircraft capabilities. Additionally, development of a high-fidelity surrogate target, ongoing analyses, studies, and risk reduction efforts will focus on integrating ARTS and other systems into a Live Virtual Constructive architecture.</p> <p>FY 2015 Accomplishments:</p>	0.000	0.000	9.000	0.000	9.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604735F / <i>Combat Training Ranges</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
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<p>N/A</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans: ARTS V1 and V2 were is the same Major Thrust in the FY16 PB; but are being broken out separately now to provide additional visibility. ARTS-V1 funding supports risk reduction, pre-solicitation, and all acquisition efforts required for development, integration, and testing of ARTS-V1. Market research will be performed in preparation for the Draft Request for Proposal (RFP) and associated documentation will be developed for release to industry in order to validate industry capability. Additionally, funding supports ongoing analyses and studies focused on integrating ARTS-V1 and other systems into a Live Virtual Constructive architecture.</p> <p>FY 2017 OCO Plans: N/A</p>					
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<p>Title: Advanced Radar Threat System (ARTS V2) Development</p> <p>Description: The Advanced Radar Threat System-Variant 2 (ARTS-V2) Program will develop, design, build and test a threat system simulator based on an advanced tactical, mobile, short/medium range foreign fielded surface-to-air missile (SAM) radar threat system. ARTS-V2 is designed to be used at Department of Defense (DoD) training ranges for aircrew training and tactics development to increase combat effectiveness and aircrew survivability by training aircrews to engage or defend against an advanced SAM threat before encountering it in actual combat. Various aircraft platforms may train against ARTS-V2, but the most stringent requirements placed on ARTS-V2 design come from fifth generation aircraft capabilities. Additionally, ongoing analyses, studies, and risk reduction efforts will focus on integrating ARTS-V2 and other systems into a Live Virtual Constructive architecture.</p> <p>FY 2015 Accomplishments: ARTS-V2 funding supported risk reduction, pre-solicitation, and source selection activities for the development, integration, and testing of ARTS-V2. Risk reduction efforts have included the completion of an extensive intelligence study and report that ensures the accurate development of a high fidelity threat and technical studies on electronically-scanned-array design approaches. Draft Request for Proposal (RFP) was released. Funding</p>	1.885	2.992	46.099	0.000	46.099
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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604735F / <i>Combat Training Ranges</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>supported ongoing analyses and studies focused on integrating ARTS-V2 and other systems into a Live Virtual Constructive architecture.</p> <p>FY 2016 Plans: ARTS-V2 funding will support preparation for Milestone B, solicitation, and source selection through pre-contract award. Additionally, funding will support ongoing analyses and studies focused on integrating ARTS into a Live Virtual Constructive architecture.</p> <p>FY 2017 Base Plans: ARTS-V2 funding will support Milestone B and contract award. The contract will be awarded for Engineering and Manufacturing Development (EMD), to include development, integration and testing. Additionally funding will support ongoing analyses and studies focused on integrating ARTS into a Live Virtual Constructive architecture.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Digital Threat Relevancy</p> <p>Description: Digital Threat Relevancy will conduct RDT&E to modernize the Range Threat family of systems. Foreign fielded surface to air (SAM) threat systems have undergone major modernization programs to replace aging analog technology with modern digital electronics. This program requires the development of digital electronics upgrades to provide realistic electronic warfare training to combat aircrews. This effort will improve threat fidelity (ensuring threat faithful RF emissions), increase reliability, maintainability, supportability, system mobility, and support remote operations with Digital Integrated Air Defense Systems (DIADS). This effort supports warfighter development of new tactics, techniques, and procedures in a relevant, realistic combat environment.</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Base Plans: Digital Threat Relevancy funding will be used to design and build a prototype of a Mobile MPS-T1 threat system, as a first step in upgrading aging threat systems to replicate modernized foreign threat systems. Efforts will focus on replacing analog technology with digital electronics in both the control and emitter subsystems of the MPS-T1</p>	0.000	0.000	8.300	0.000	8.300

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604735F / <i>Combat Training Ranges</i>
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C. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
threat system. This will allow for local or remote operation, operations for two pedestals simultaneously, control from DIADS, and passing video and parametric data to the Command Operations Center for aircrew debriefing of tactics, techniques, and procedures. FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	9.812	11.795	77.409	0.000	77.409

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPAF: BA03: Line Item # 834190: <i>Combat Training Ranges</i>	56.580	33.606	34.850	0.000	34.850	130.677	150.192	192.678	152.259	Continuing	Continuing
• OPAF: BA05: Line Item # 861900: <i>Spares and Repair Parts</i>	0.900	0.101	5.930	0.000	5.930	6.868	0.674	0.686	0.698	Continuing	Continuing
• APAF: BA07: Line Item # 000075: <i>Other Production Charges</i>	0.000	0.000	1.662	0.000	1.662	1.200	0.000	9.043	22.637	Continuing	Continuing
• APAF: BA06: Line Item # 000999: <i>Initial Spares/Repair Parts</i>	0.000	1.995	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing

Remarks

E. Acquisition Strategy

The acquisition strategy is competition focused, with both cost plus and fixed price contracts.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604735F / <i>Combat Training Ranges</i>	Project (Number/Name) 652286 / <i>Combat Training Range Equipment</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
JTE Increment II - Advanced Radar Threat System (JI2-ARTS) - Pre-Milestone A Activities	MIPR	Various : Various	-	0.560	May 2015	0.000		0.000		0.000		0.000	Continuing	Continuing	-
Advanced Radar Threat System-Variant 1 (ARTS-V1) Development	Various	Not specified. : Hill AFB, UT	-	0.000		0.000		7.500	Mar 2017	0.000		7.500	Continuing	Continuing	-
Advanced Radar Threat System-Variant 2 (ARTS-V2) Development	C/Various	Not specified. : HILL AFB, UT	-	0.000		2.017	Sep 2016	45.818	Dec 2016	0.000		45.818	Continuing	Continuing	-
JTE Increment I Development	Various	Not specified. : Hill AFB, UT	-	0.000		0.000		0.000		0.000		0.000	Continuing	Continuing	-
Legacy System Improvements	Various	Not specified. : TBD	-	0.000		0.000		7.370	Apr 2017	0.000		7.370	Continuing	Continuing	-
JSF Encrypted Pass-Through Development (P5CTS)	Various	Various : Various	-	6.508	Sep 2015	0.000		0.000		0.000		0.000	Continuing	Continuing	-
Block 5 Upgrades (P5CTS)	Various	Various : Various	-	0.000		6.152	Jul 2016	0.000		0.000		0.000	Continuing	Continuing	-
Future Block Upgrades (P5CTS)	Various	Various : Various	-	0.000		0.000		3.502	Jun 2017	0.000		3.502	Continuing	Continuing	-
Digital Threat Relevancy Development (Legacy & RTS Systems)	PO	NTTR : Nellis AFB, NV	-	0.000		0.000		8.300	Mar 2017	0.000		8.300	Continuing	Continuing	-
Subtotal			-	7.068		8.169		72.490		0.000		72.490	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AFLCMC/HBZC, Hill AFB (Direct Msn Support)	Various	Various : Various	-	0.820	Jul 2015	0.350	Jul 2016	1.250	May 2017	0.000		1.250	0.000	2.420	0.000

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 5				PE 0604735F / Combat Training Ranges				652286 / Combat Training Range Equipment							
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
AFLCMC/EBYC, Eglin AFB - Direct Msn Spt	Various	TBD : TBD	-	0.151	Dec 2015	0.587	Oct 2015	0.021	Mar 2017	0.000		0.021	Continuing	Continuing	-
Subtotal			-	0.971		0.937		1.271		0.000		1.271	-	-	-
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
Block I/II Flight Test, 46 Test Wing	Various	Eglin AFB : FL	-	0.000		0.075	Sep 2016	0.226	Mar 2017	0.000		0.226	Continuing	Continuing	-
Subtotal			-	0.000		0.075		0.226		0.000		0.226	-	-	-
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
AFLCMC/HBZC, Hill AFB (PMA)	Various	Not specified : TBD	-	0.655	Sep 2015	0.625	Sep 2016	1.950	May 2017	0.000		1.950	Continuing	Continuing	-
AFLCMC/EBYC (PMA/ A&AS)	C/FFP	Jacobs/Oasis/ Odyssey : Eglin AFB, FL	-	1.118	Mar 2015	1.989	Mar 2016	1.472	Mar 2017	0.000		1.472	Continuing	Continuing	-
Subtotal			-	1.773		2.614		3.422		0.000		3.422	-	-	-
Project Cost Totals			-	9.812		11.795		77.409		0.000		77.409	-	-	-
Remarks															

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604735F / <i>Combat Training Ranges</i>	Project (Number/Name) 652286 / <i>Combat Training Range Equipment</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
P5CTS Development	2	2015	4	2020
-- JSF Encrypted Pass-Through	4	2015	4	2017
-- Block 5 Upgrades	4	2016	4	2018
-- Future Block Upgrades	3	2017	4	2020
JTE S/W Development	1	2015	3	2016
ARTS-V1	1	2017	4	2019
-- Develop PRA and Test	2	2017	1	2019
-- High-Fidelity Surrogate Target Development	2	2017	1	2019
-- RFP Prep	2	2018	2	2019
--Production Contract Award	1	2020	1	2020
ARTS-V2	1	2015	4	2020
-- Advanced Radar Threat System-Variant 2 (ARTS-V2) RFP Prep	1	2015	1	2016
-- Advanced Radar Threat System-Variant 2 (ARTS-V2) Development Contract	1	2017	2	2020
-- Advanced Radar Threat System-Variant 2 (ARTS-V2) PDR	3	2017	3	2017
-- Advanced Radar Threat System-Variant 2 (ARTS-V2) CDR	2	2018	2	2018
-- Advanced Radar Threat System-Variant 2 (ARTS-V2) Production Contract Award	3	2020	2	2021
-- Advanced Radar Threat System-Variant 2 (ARTS-V2) DT-E and OT-E	1	2018	2	2020
Legacy RTS CEAR Development	1	2015	4	2019
-- CEAR Mini-MUTES Development and Integration	3	2017	3	2019
-- CEAR UMTE Test Article Development and Integration	2	2015	1	2017
Legacy RTS Digital Threat Relevance	2	2017	2	2020
-- Pre-Development Analysis	3	2015	1	2017

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604735F / <i>Combat Training Ranges</i>	Project (Number/Name) 652286 / <i>Combat Training Range Equipment</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
-- Control System Development	2	2017	2	2019
-- Emitter System Development	2	2018	2	2020

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	20,534.486	566.937	586.953	450.467	0.000	450.467	137.362	5.327	5.392	5.497	0.000	22,292.421
653831: <i>Joint Strike Fighter</i>	20,504.119	534.344	515.492	403.505	0.000	403.505	113.567	5.327	5.392	5.497	0.000	22,087.243
653832: <i>JSF DEPLOYABILITY AND SUITABILITY ENHANCEMENT</i>	30.367	32.593	71.461	46.962	0.000	46.962	23.795	0.000	0.000	0.000	0.000	205.178

Program MDAP/MAIS Code: 198

A. Mission Description and Budget Item Justification

The F-35 Joint Strike Fighter (JSF) Program will develop and field an affordable, highly common family of next generation strike aircraft for the USN, USAF, USMC and allies. The three variants are the F-35A conventional takeoff and landing; F-35B short takeoff and vertical landing; and the F-35C Aircraft Carrier suitable variant. The F-35A will be a stealthy multi-role aircraft, primary air-to-ground for the Air Force to replace the F-16 and A-10 and complement the F-22. The F-35B variant will be a multi-role strike fighter aircraft to replace the AV-8B and F/A-18 for the Marine Corps, replace the Sea Harrier and GR 7 for the United Kingdom, and replace the AV-8 currently employed by the Italian Navy. The F-35C will provide the Department of the Navy a multi-role, stealthy strike fighter aircraft to complement the F/A-18E/F.

The United Kingdom, Italy, Netherlands, Turkey, Canada, Australia, Denmark, Norway, and Foreign Military Sales customers are also participants in the JSF program. The program shown here reflects USN, USMC, USAF, and International Partner funding.

Funding at the accomplishment/planned program level is reported as the total of all services and partners as these activities support all aircraft variants.

The System Development and Demonstration (SDD) budget funds a total quantity of 20 RDT&E test articles to include 6 ground test articles and 14 flight test articles for USN, USAF, and USMC use.

- FY07: 1 F-35A flight test article
- FY08: 1 F-35B flight test article; 1 F-35B ground test article
- FY09: 1 F-35B flight test article; 2 F-35A ground test articles
- FY10: 6 flight test articles: 3 F-35A, 2 F-35B, 1 F-35C; 3 ground test articles: 1 F-35B, 2 F-35C
- FY11: 4 flight test articles: 1 F-35A, 1 F-35B, 2 F-35C
- FY13: 1 F-35C flight test article

BA05: This program is Budget Activity 5, System Development and Demonstration (SDD) because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	567.889	589.441	323.446	0.000	323.446
Current President's Budget	566.937	586.953	450.467	0.000	450.467
Total Adjustments	-0.952	-2.488	127.021	0.000	127.021
• Congressional General Reductions	0.000	-2.488			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	9.999	0.000			
• SBIR/STTR Transfer	-10.951	0.000			
• Other Adjustments	0.000	0.000	127.021	0.000	127.021

Change Summary Explanation

FY2015 increase: +\$9.999M was for Deployability & Suitability (D&S) enhancements.

FY2017 increase: +\$84.000M was for the modification of F-35A operational test aircraft. +\$47.430M was for D&S enhancements. -\$4.409M was for funding for higher AF priorities.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD				Project (Number/Name) 653831 / Joint Strike Fighter			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
653831: <i>Joint Strike Fighter</i>	20,504.119	534.344	515.492	403.505	0.000	403.505	113.567	5.327	5.392	5.497	0.000	22,087.243
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note

Total cost including USN, USMC, International partner contributions and USAF funding are: FY2015 \$1,496.239M, FY2016 \$1,506.200M, and FY2017 \$1,436.879M. R-2 data reflects variant unique funding only.

R-2A (section B)/R-3 displays total combined program (i.e. not Service specific), including International partners.

F-35 EMD Includes:

- USAF PE 0604800F BPAC 653831
- USN PE 0604800N Project Unit 2261
- USMC PE 0604800M Project Unit 2262

D&S Includes:

- USAF PE 0604800F BPAC 653832
- USN PE 0604800N Project Unit 3352
- USMC PE 0604800M Project Unit 3350

A. Mission Description and Budget Item Justification

The F-35 Joint Strike Fighter (JSF) Program will develop and field an affordable, highly common family of next generation strike aircraft for the USN, USAF, USMC and allies. The three variants are the F-35A conventional takeoff and landing; F-35B short takeoff and vertical landing; and the F-35C Aircraft Carrier suitable variant. The F-35A will be a stealthy multi-role aircraft, primary air-to-ground for the Air Force to replace the F-16 and A-10 and complement the F-22. The F-35B variant will be a multi-role strike fighter aircraft to replace the AV-8B and F/A-18 for the Marine Corps, replace the Sea Harrier and GR 7 for the United Kingdom, and replace the AV-8 currently employed by the Italian Navy. The F-35C will provide the Department of the Navy a multi-role, stealthy strike fighter aircraft to complement the F/A-18E/F.

The United Kingdom, Italy, Netherlands, Turkey, Canada, Australia, Denmark, Norway, and Foreign Military Sales customers are also participants in the JSF program. The program shown here reflects USN, USMC, USAF, and International Partner funding.

Funding at the accomplishment/planned program level is reported as the total of all services and partners as these activities support all aircraft variants.

The System Development and Demonstration (SDD) budget funds a total quantity of 20 RDT&E test articles to include 6 ground test articles and 14 flight test articles for USN, USAF, and USMC use.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
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FY07: 1 F-35A flight test article
 FY08: 1 F-35B flight test article; 1 F-35B ground test article
 FY09: 1 F-35B flight test article; 2 F-35A ground test articles
 FY10: 6 flight test articles: 3 F-35A, 2 F-35B, 1 F-35C; 3 ground test articles: 1 F-35B, 2 F-35C
 FY11: 4 flight test articles: 1 F-35A, 1 F-35B, 2 F-35C
 FY13: 1 F-35C flight test article

BA05: This program is Budget Activity 5, System Development and Demonstration (SDD) because it includes those projects that have passed Milestone B approval and are conducting engineering and manufacturing development tasks aimed at meeting validated requirement prior to full-rate production decision.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Title: System Development and Demonstration (SDD) (F-35 JSF)</p> <p>Description: SDD execution of the Air System (Lockheed Martin) including International Commonality Effort; includes airframe, vehicle and mission systems, autonomic logistics, systems engineering & test efforts.</p> <p>FY 2015 Accomplishments: Continued SDD execution of the Air System with Lockheed Martin, including International Commonality Effort which includes airframe, vehicle systems, mission systems, autonomic logistics, systems engineering, and integrated test efforts. Activity aligned to IMS in accordance with variant IOC.</p> <p>FY 2016 Plans: Continue SDD execution of the Air System with Lockheed Martin, including International Commonality Effort which includes airframe, vehicle systems, mission systems, autonomic logistics, systems engineering, and integrated test efforts including modifications to Operational Testing. Activity aligned to IMS in accordance with variant IOC.</p> <p>FY 2017 Base Plans: Continue SDD execution of Air System Lockheed Martin, including International Commonality Effort which include, airframe, vehicle systems, mission systems, autonomic logistics, systems engineering, and integrated test efforts. Activity aligned to IMS in accordance with variant IOC.</p> <p>FY 2017 OCO Plans: N/A</p>	798.385	766.918	988.703	0.000	988.703
<p>Title: F135 Propulsion System (F-35 JSF)</p> <p>Description: SDD execution of the F135 Propulsion System (Pratt & Whitney) including International Commonality Effort; includes testing, autonomic logistics, integration & performing technology maturation efforts.</p>	200.220	174.733	55.381	0.000	55.381

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p><i>FY 2015 Accomplishments:</i> Continued SDD execution of the F135 Propulsion System with Pratt & Whitney that includes engine testing, autonomic logistics, integration and performing technology maturation efforts.</p> <p><i>FY 2016 Plans:</i> Continue SDD execution of the F135 Propulsion System with Pratt & Whitney that includes engine testing, autonomic logistics, integration and performing technology maturation efforts.</p> <p><i>FY 2017 Base Plans:</i> Continue SDD execution of the F135 Propulsion System with Pratt & Whitney that includes engine testing, autonomic logistics, integration and performing technology maturation efforts.</p> <p><i>FY 2017 OCO Plans:</i> N/A</p>					
<p><i>Title:</i> Systems Engineering (SE) (F-35 JSF)</p> <p><i>Description:</i> SDD SE including systems operations requirements analysis, program integration, requirements integration, and interoperability support.</p> <p><i>FY 2015 Accomplishments:</i> Continued SDD SE, including systems operations requirements analysis, program integration, requirements integration, and interoperability support.</p> <p><i>FY 2016 Plans:</i> Continue SDD SE, including systems operations requirements analysis, program integration, requirements integration, and interoperability support.</p> <p><i>FY 2017 Base Plans:</i> Continue SDD SE, including systems operations requirements analysis, program integration, requirements integration, and interoperability support.</p> <p><i>FY 2017 OCO Plans:</i> N/A</p>	27.628	25.383	10.198	0.000	10.198
<p><i>Title:</i> Development Test and Evaluation (DT&E) (F-35 JSF)</p> <p><i>Description:</i> Execution of government DT&E/Operational Testing (OT). Elements of DT&E include flight testing and weapons integration testing.</p>	303.555	390.040	301.176	0.000	301.176

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p><i>FY 2015 Accomplishments:</i> Continued execution of government DT&E and OT activities in support of test aircraft. Continue flight sciences testing of F-35A, F-35B, and F-35C variants to expand air vehicle envelope and support mission systems testing. Elements of DT&E include flight testing, weapons integration testing, and component capabilities testing.</p> <p><i>FY 2016 Plans:</i> Continue execution of government DT&E and OT activities in support of test aircraft. Continue flight sciences testing of F-35A, F-35B, and F-35C variants to expand air vehicle envelope and support mission systems testing. Elements of DT&E include flight testing, weapons integration testing, and component capabilities testing.</p> <p><i>FY 2017 Base Plans:</i> Continue execution of government DT&E and OT activities in support of test aircraft. Continue flight sciences testing of F-35A, F-35B, and F-35C variants to expand air vehicle envelope and support mission systems testing. Elements of DT&E include flight testing, weapons integration testing, and component capabilities testing.</p> <p><i>FY 2017 OCO Plans:</i> N/A</p>					
<p><i>Title:</i> Development Support (F-35 JSF)</p> <p><i>Description:</i> SDD Support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities.</p> <p><i>FY 2015 Accomplishments:</i> Continued SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities. Development Support decrease is due to across the board reduction between both services.</p> <p><i>FY 2016 Plans:</i> Continued SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities. Development Support decrease is due to across the board reduction between both services.</p> <p><i>FY 2017 Base Plans:</i></p>	130.710	116.360	50.415	0.000	50.415

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Continue SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities. Development Support decrease is due to across the board reduction between both services. FY 2017 OCO Plans: N/A					
Title: Autonomic Logistics Information System (ALIS) Description: SDD execution of Autonomic Logistics Information System (ALIS) develops the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users. This is not a New Start. Funding has been broken out for transparency. FY 2015 Accomplishments: Continue SDD execution of ALIS to develop the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users. FY 2016 Plans: Continue SDD execution ALIS develops the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users. FY 2017 Base Plans: Continue SDD execution of ALIS to develop the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users. FY 2017 OCO Plans: N/A	35.741	32.766	31.006	0.000	31.006
Accomplishments/Planned Programs Subtotals	1,496.239	1,506.200	1,436.879	0.000	1,436.879
Other Service Funding Adjustment	961.895	990.708	1,033.374	-	1,033.374
Air Force Subtotals	534.344	515.492	403.505	0.000	403.505

C. Other Program Funding Summary (\$ in Millions)										
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete Total Cost
• RDTE: BA05: PE 0604800F 3832: JSF Deployability and Suitability Enhancements, BPAC 653832	32.593	71.461	46.962	0.000	46.962	23.795	0.000	0.000	0.000	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• RDTE: BA07: PE 0207142F 5346: JSF Follow-on Development (FoD), BPAC 675346	23.660	48.954	127.302	0.000	127.302	321.658	340.950	339.209	345.223	Continuing	Continuing
• RDTE: BA07: PE 0207142F 6011: Dual Capable Aircraft (DCA), BPAC 676011	15.615	4.967	25.743	0.000	25.743	27.731	37.637	49.554	50.433	Continuing	Continuing
• APAF: BA01: Line Item # ATA000 AP: JSF CTOL Advance Procurement, PE 0207142F, BP10 AP	418.880	460.260	404.500	0.000	404.500	671.263	406.750	424.230	424.230	17,450.241	23,150.407
• APAF: BA01: Line Item # ATA000: JSF CTOL, PE 0207142F, BP10	3,625.841	5,259.812	4,401.894	0.000	4,401.894	4,708.701	4,712.526	4,838.591	5,801.997	139,530.995	190,282.125
• APAF: BA06: Line Item # F03500 BP16: JSF Initial Spares, PE 0207142F, BP16	231.847	229.582	267.792	0.000	267.792	315.478	353.602	354.622	355.591	10,311.851	13,420.134
• APAF: BA05: Line Item # F03500 BP11: JSF Modifications, PE 0207142F, BP11	187.646	70.167	175.811	0.000	175.811	385.931	237.349	232.017	237.273	Continuing	Continuing
• USAF OM: Operations and Maintenance	217.556	302.952	360.107	0.000	360.107	452.906	555.687	858.671	0.000	Continuing	Continuing
• OPAF: BA01: Line Item # 821800: Joint Strike Fighter, PE 0207142F	4.463	3.858	2.333	0.000	2.333	2.374	2.415	0.000	0.000	Continuing	Continuing
• MILCON: BA01: PE 0207142F: USAF JSF Military Construction Operations	66.700	132.850	305.700	0.000	305.700	80.000	27.500	0.000	0.000	1,312.100	2,511.350
• MILCON: BA01: PE 0207597F: USAF JSF Military Construction Training	0.000	65.400	20.000	0.000	20.000	21.000	34.000	15.900	0.000	-	-
• MILCON: BA01: PE 0502635F: USAF JSF Military Construction Air National Guard	0.000	0.000	15.100	0.000	15.100	0.000	0.000	0.000	0.000	-	-
• RDTEN: BA05: PE 0604800N 2261: JSF SDD (CV)	470.545	467.759	504.296	0.000	504.296	43.816	0.000	0.000	0.000	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RD TEN: BA05: PE 0604800N 3352: F-35C Sustainment/ Capability Enhancements (CV)	16.433	36.977	24.420	0.000	24.420	11.802	0.000	0.000	0.000	-	-
• RD TEN: BA05: PE 0604810N 2936: F-35C Follow-on Development (CV), BPAC 2936	10.302	21.200	63.387	0.000	63.387	133.686	144.003	147.646	150.902	Continuing	Continuing
• APN: BA01: Line Item # 0147C: JSF Advance Procurement (CV), PE 0204146N	29.400	48.630	80.908	0.000	80.908	258.898	144.003	242.002	262.004	3,189.815	5,643.037
• APN: BA01: Line Item # 0147: JSF (CV), PE 0204146N	848.552	1,033.142	890.650	0.000	890.650	951.052	1,598.247	2,150.860	2,680.120	27,872.824	49,136.792
• APN: BA06: Line Item # 0605 USN: Initial Spares (CV), PE 0204146N	28.768	59.914	26.076	0.000	26.076	76.886	41.847	52.858	303.608	1,706.626	2,815.461
• APN: BA05: Line Item # 0593: Modifications (CV), PE 0204146N	18.371	48.527	26.004	0.000	26.004	49.848	20.721	12.929	13.192	Continuing	Continuing
• OPN: BA03: Line Item # 4268: JSF Aviation Support Equipment ALIS Ship Alts	1.539	1.969	1.811	0.000	1.811	1.866	1.868	1.910	1.947	Continuing	Continuing
• OPN BA03:: ALIS Ship ALTS Installs	3.977	1.924	0.329	0.000	0.329	2.024	1.890	1.933	1.972	-	-
• OPN: BA03: Optical Landing System Investments	0.000	0.000	1.800	0.000	1.800	1.800	1.800	3.300	0.000	-	-
• OPN BA03: Spares for Aviation Support Equipment	0.730	2.946	0.881	0.000	0.881	2.297	2.321	1.939	1.977	Continuing	Continuing
• USN OM: Operations and Maintenance	35.468	75.651	138.933	0.000	138.933	96.354	135.712	115.743	216.600	Continuing	Continuing
• USN MILCON: USN JSF Military Construction	60.200	72.460	11.800	0.000	11.800	0.000	0.000	0.000	0.000	-	-
• RD TEN: BA05: PE 0604800M 2262: JSF SDD (STOVL)	476.350	505.949	507.078	0.000	507.078	88.414	9.649	5.842	3.858	-	-
• RD TEN: BA05: PE 0604800M 3350: F-35B Sustainment/	11.589	31.952	24.348	0.000	24.348	11.427	0.000	0.000	0.000	-	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
<i>Capability Enhancements (STOVL), BPAC 3350</i>											
• RDTEN: BA05: PE 0604810M 2935: F-35B Follow-on	10.086	20.798	74.227	0.000	74.227	154.047	164.276	168.433	172.040	Continuing	Continuing
<i>Development (STOVL), BPAC 2935</i>											
• APN: BA01: Line Item # 0152C: JSF Advance Procurement (STOVL), PE 0204146M	143.885	203.060	233.648	0.000	233.648	370.472	227.562	231.003	220.000	2,638.098	4,870.881
• APN: BA01: Line Item # 0152: JSF (STOVL), PE 0204146M	1,178.488	2,147.714	2,037.768	0.000	2,037.768	2,620.324	2,481.778	2,514.127	2,558.802	20,571.510	40,035.833
• APN: BA06: Line Item # 0605 USMC: Initial Spares (STOVL), PE 0204146M	64.285	111.569	123.252	0.000	123.252	26.159	88.434	160.150	140.989	1,466.285	2,508.244
• APN: BA05: Line Item # 0592: Modifications (STOVL), PE 0204146M	157.905	204.464	34.928	0.000	34.928	158.277	89.352	64.963	79.077	Continuing	Continuing
• USMC OM: Operations and Maintenance	133.550	188.391	174.580	0.000	174.580	162.927	165.068	168.212	167.636	Continuing	Continuing
• USMC MILCON: USMC JSF Military Construction	71.704	21.960	219.100	0.000	219.100	64.660	121.990	119.800	0.000	642.400	1,966.114
• International 1: International SDD	15.000	17.000	22.000	0.000	22.000	27.450	0.000	0.000	0.000	-	-
• International 2: International Production	3,350.860	4,211.698	5,377.274	0.000	5,377.274	7,420.782	7,893.177	9,050.299	8,092.207	Continuing	Continuing
• International 3: International FoD	21.086	79.318	128.965	0.000	128.965	157.602	169.315	171.636	68.599	Continuing	Continuing
• International 4: International Unique (SDD/PSFD)	81.681	39.852	39.608	0.000	39.608	11.474	22.812	29.409	5.357	-	-

Remarks

This is a joint program with no executive service. Service Acquisition Executive (SAE) authority alternates between the Department of the Navy and the Department of the Air Force and currently resides with the Navy. Program Element 0604800N/0604800M continues USN development efforts budgeted in 0603800N prior to FY2002. The United Kingdom, Italy, Netherlands, Turkey, Canada, Australia, Denmark, and Norway are participants in the SDD phase of JSF.

Note: The USAF/USN/USMC procurement lines include Aircraft Procurement and Advanced Procurement only. Initial Spares and Repair Parts for all Services are reflected in separate lines. International Partner Funding also includes funds provided under the Italy and Netherlands Bilateral agreements.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
RELATED RDT&E: Funding prior to JSF SDD (FY94-FY01): USN PE 0603800N \$1,950,617; USAF PE 0603800F \$1,907,352; DARPA PE 0603800E \$118,056; and International Partner contributions of \$253,921 for a total of \$4,229,946.											

D. Acquisition Strategy

The SDD program consists of a cost-reimbursement contract awarded to Lockheed Martin Aeronautics Company to develop the F-35 Air System, consisting of three aircraft variants and its associated logistics support system, for the U.S. Services and international participants. Similarly, a cost-reimbursement contract was awarded to Pratt & Whitney to develop the F135 propulsion system. Ground and flight testing will be conducted during development to accomplish validation and verification, with the extensive use of modeling and simulation to offset the risk of this large, complex, and concurrent lifecycle program. A comprehensive logistics support environment, including an integrated training system for aircrew, maintenance, and support personnel, is also being developed.

On 25 April 2011, the Department of Defense terminated the development of the General Electric Rolls-Royce Fighter Engine Team F136 propulsion system.

The F-35 Program has made international involvement a key element of the acquisition strategy. This includes international partnership in the development, production, and sustainment phases of the lifecycle. Additional international participation includes Foreign Military Sales arrangements.

In Fiscal Year (FY) 2007, separate cost-type contracts were awarded to Lockheed Martin Aeronautics Company and Pratt & Whitney to begin low rate initial production for F-35 air vehicles, propulsion systems, and sustainment for the fielded systems. Transition to fixed-price-type contracts occurred with the fourth low rate lot. To provide logistics support for delivered aircraft, Performance-Based Logistics cost-type contracts will be awarded to Lockheed Martin Aeronautics Company and Pratt & Whitney.

At the completion of Low Rate Initial Production, a Defense Acquisition Board review, and Milestone Decision Authority approval, the F-35 Program will enter Full Rate Production. Fixed-price procurement contracts will be awarded for F-35 air vehicles and propulsion systems for the U.S. Services and international participants. Multiyear procurement authority for the F-35 Air System will be requested for Full Rate Production. Concurrently, multiple-year, fixed-price-type Performance Based Logistics contracts for sustainment will be executed to support multi-Service and multi-national requirements.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Lockheed Martin - SDD	C/CPAF	Lockheed Martin : Ft. Worth, TX	31,462.738	734.559	Dec 2014	647.660	Dec 2015	963.757	Dec 2016	0.000		963.757	144.343	33,953.057	33,953.057
Lockheed Martin - IDIQ D0022	SS/ Various	Lockheed Martin : Ft. Worth, TX	27.216	0.000		0.000		0.000		0.000		0.000	0.000	27.216	27.216
Lockheed Martin - IDIQ 0005	SS/ Various	Lockheed Martin : Ft. Worth, TX	3.289	0.509	Dec 2014	0.000		0.000		0.000		0.000	0.000	3.798	3.798
Lockheed Martin - IDIQ D0009	SS/ Various	Lockheed Martin : Ft. Worth, TX	16.759	0.000		0.000		0.000		0.000		0.000	0.000	16.759	16.759
Lockheed Martin - BOA	SS/ Various	Lockheed Martin : Ft. Worth, TX	3.511	0.000		0.000		0.000		0.000		0.000	0.000	3.511	3.511
Lockheed Martin - LRIP 6 0083	SS/CPFF	Lockheed Martin : Ft. Worth, TX	0.000	1.027	Dec 2014	0.000		0.000		0.000		0.000	0.000	1.027	1.027
Lockheed Martin - LRIP 8 0031	SS/CPFF	Lockheed Martin : Ft. Worth, TX	0.000	0.337	Dec 2014	0.000		0.000		0.000		0.000	0.000	0.337	0.337
Lockheed Martin - BOA 0020	SS/ Various	Lockheed Martin : Ft. Worth, TX	0.022	46.908	Dec 2014	119.258	Dec 2015	24.946	Dec 2016	0.000		24.946	15.273	206.407	206.407
Lockheed Martin - BOA 0016	SS/ Various	Lockheed Martin : Ft. Worth, TX	0.000	15.045	Dec 2014	0.000		0.000		0.000		0.000	0.000	15.045	15.045
Pratt & Whitney - SDD	SS/CPAF	Pratt & Whitney : Hartford, CT	7,653.870	196.623	Dec 2014	174.733	Dec 2015	55.381	Dec 2016	0.000		55.381	0.000	8,080.607	8,080.607
Pratt & Whitney - Close Out Contract C0132	SS/CPFF	Pratt & Whitney : Hartford, CT	1.364	0.000		0.000		0.000		0.000		0.000	0.000	1.364	1.364
Pratt & Whitney - CDP Close Out Contract C0050	SS/CPAF	Pratt & Whitney : Hartford, CT	2.211	0.000		0.000		0.000		0.000		0.000	0.000	2.211	2.211
Pratt & Whitney - BOA	SS/CPFF	Pratt & Whitney : Hartford, CT	35.983	0.000		0.000		0.000		0.000		0.000	0.000	35.983	35.983
Pratt & Whitney - IDIQ	SS/ Various	Pratt & Whitney : Hartford, CT	10.925	0.000		0.000		0.000		0.000		0.000	0.000	10.925	10.925
Pratt & Whitney - LRIP 7 C0026	SS/CPAF	Pratt & Whitney : Hartford, CT	0.000	3.597	Dec 2014	0.000		0.000		0.000		0.000	0.000	3.597	3.597
General Electric - SDD	SS/ Various	FET : Cincinnati, OH	2,160.573	0.000		0.000		0.000		0.000		0.000	0.000	2,160.573	2,160.573

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Electric - IDIQ D0009	SS/ Various	FET : Cincinnati, OH	0.264	0.000		0.000		0.000		0.000		0.000	0.000	0.264	0.264
General Electric - IDIQ D0074	SS/ Various	FET : Cincinnati, OH	4.175	0.000		0.000		0.000		0.000		0.000	0.000	4.175	4.175
General Electric - F136 Transition	SS/CPFF	FET : Cincinnati, OH	100.400	0.000		0.000		0.000		0.000		0.000	0.000	100.400	100.400
General Electric - BOA	SS/ Various	FET : Cincinnati, OH	5.548	0.000		0.000		0.000		0.000		0.000	0.000	5.548	5.548
General Electric - Phase IIIb	SS/CPAF	FET : Cincinnati, OH	382.753	0.000		0.000		0.000		0.000		0.000	0.000	382.753	382.753
Systems Engineering	Various	Various : Various	396.332	22.984	Nov 2014	29.919	Nov 2015	8.490	Nov 2016	0.000		8.490	7.063	464.788	464.788
Prime LM 02-C-3002 ALIS	SS/CPAF	LM : Ft Worth, TX	460.979	35.459	Dec 2014	32.512	Dec 2015	31.006	Dec 2016	0.000		31.006	0.000	559.956	559.956
Prime LM Eng P&W 02-C-3003 ALIS	C/CPAF	Pratt &Whitney : Hartford, CT	14.115	0.282	Dec 2014	0.254	Dec 2015	0.000		0.000		0.000	0.000	14.651	14.651
Subtotal			42,743.027	1,057.330		1,004.336		1,083.580		0.000		1,083.580	166.679	46,054.952	46,054.952

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AFFTC/Eglin	Various	Various : Various	121.714	12.231	Nov 2014	6.446	Nov 2015	3.347	Nov 2016	0.000		3.347	0.064	143.802	-
AFLCMC/AFRL	Various	AFLCMC/AFRL : Various	62.865	2.247	Nov 2014	8.325	Nov 2015	0.897	Nov 2016	0.000		0.897	0.020	74.354	-
Bolling AFB	Various	Bolling AFB : Washington, DC	6.775	0.000		0.000		0.000		0.000		0.000	0.000	6.775	-
DMEA	Various	DMEA : Wright Patterson, AFB, OH	5.630	0.000		0.000		0.000		0.000		0.000	0.000	5.630	-
AFLCMC	Various	AFLCMC : Various	7.103	0.000		0.000		0.000		0.000		0.000	0.000	7.103	-
AFTOC/Fuel	Various	Various : Various	170.046	22.242	Nov 2014	17.701	Nov 2015	0.075	Nov 2016	0.000		0.075	0.000	210.064	-
NADEP Jacksonville	Various	NADEP : Jacksonville, FL	9.525	0.000		0.000		0.000		0.000		0.000	0.000	9.525	-
Miscellaneous	Various	Various : Various	97.242	14.946	Nov 2014	18.387	Nov 2015	8.692	Nov 2016	0.000		8.692	1.346	140.613	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
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Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NAWC China Lake	Various	NAWC WD : China Lake, CA	137.888	15.614	Nov 2014	12.305	Nov 2015	9.436	Nov 2016	0.000		9.436	0.000	175.243	-
NAWC TSD	Various	NAWC TSD : Orlando, FL	11.609	0.000		0.000		0.000		0.000		0.000	0.000	11.609	-
NAWC Patuxent River	Various	NAWC AD : Patuxent River, MD	368.385	41.758	Nov 2013	31.299	Nov 2015	19.998	Nov 2016	0.000		19.998	0.235	461.675	-
NSWC	Various	Various : Various	3.813	0.000		0.000		0.000		0.000		0.000	0.000	3.813	-
SPAWAR	Various	Various : Various	8.434	0.000		0.000		0.000		0.000		0.000	0.000	8.434	-
SBIR Technology Insertion Congressional Add	Various	Various : Various	24.187	0.000		0.000		0.000		0.000		0.000	0.000	24.187	-
DFAS	Various	Various : Various	0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000	-
Subtotal			1,035.216	109.038		94.463		42.445		0.000		42.445	1.665	1,282.827	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NAWC Patuxent River	Various	NAWC AD : Patuxent River, MD	581.256	83.797	Nov 2014	120.284	Nov 2015	65.847	Nov 2016	0.000		65.847	0.000	851.184	-
NAWC China Lake	Various	NAWC WD : China Lake, CA	37.253	1.923	Nov 2014	2.173	Nov 2015	2.173	Nov 2016	0.000		2.173	0.000	43.522	-
Edwards AFB	Various	Edwards AFB : Edwards AFB, CA	548.835	69.774	Nov 2014	71.235	Nov 2015	53.426	Nov 2016	0.000		53.426	0.000	743.270	-
Other (including Classified PIDs)	Various	Various : Various	158.522	53.548	Nov 2014	56.526	Dec 2015	18.132	Nov 2016	0.000		18.132	2.500	289.228	-
JITC	Various	JITC : Various	0.000	0.000		0.000		0.000		0.000		0.000	0.000	0.000	-
WEPS/Eglin	Various	WEPS : Eglin AFB, FL	27.829	0.000		0.000		0.000		0.000		0.000	0.000	27.829	-
OT - AFOTEC/AFFTC	Various	OT AFOTEC/ AFFTC : Various	156.615	23.079	Nov 2014	32.243	Nov 2015	78.792	Nov 2016	0.000		78.792	95.940	386.669	-
OT - JITC/OPTEV	Various	OT JITC/OPTEV : Various	16.329	20.350	Nov 2014	32.966	Nov 2015	35.554	Nov 2016	0.000		35.554	29.461	134.660	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
OT CHLK	Various	NAWC WD : China Lake, CA	0.000	0.000		10.874	Dec 2015	0.000		0.000		0.000	0.000	10.874	-
Subtotal			1,526.639	252.471		326.301		253.924		0.000		253.924	127.901	2,487.236	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Business Integration - Cost - ACT I	SS/CPFF	ACT I : Arlington, VA	11.902	0.000		0.000		0.000		0.000		0.000	0.000	11.902	11.902
Security - Mantech	C/FP	Mantech : Arlington, VA	74.899	8.300	Dec 2014	8.400	Dec 2015	0.000		0.000		0.000	0.000	91.599	91.599
Autolog - SEIT - DRC	C/CPFF	DRC : Arlington, VA	2.573	0.000		0.000		0.000		0.000		0.000	0.000	2.573	2.573
Chief Engineer - First Principles	C/CPFF	First Principles : Arlington, VA	8.759	1.900	Dec 2014	0.000		0.000		0.000		0.000	0.000	10.659	10.659
AFLCMC Civilian Pay	Various	AFLCMC : Wright Patterson AFB, OH	62.834	32.310	Oct 2014	32.500	Oct 2015	12.225	Oct 2016	0.000		12.225	0.000	139.869	139.869
OPS - Wyle	C/CPAF	Not specified : TBD	127.480	0.000		0.000		0.000		0.000		0.000	0.000	127.480	127.480
Operations - SAFTAS	C/CPAF	SAFTAS : Arlington, VA	142.970	0.000		0.000		0.000		0.000		0.000	0.000	142.970	142.970
OPS- CGI BOSS	C/CPAF	TBD : Arlington, VA	216.086	0.000		0.000		0.000		0.000		0.000	0.000	216.086	216.086
OPS-Jacobs BOSS	Various	TBD : Arlington, VA	6.208	19.695	Dec 2014	20.489	Dec 2015	25.000	Dec 2016	0.000		25.000	0.000	71.392	71.392
OPS- Allutiq/E3	C/CPAF	TBD : Arlington, VA	1.417	0.518	Nov 2014	0.536	Dec 2015	0.552	Dec 2016	0.000		0.552	1.153	4.176	4.176
OPS - Cost/FM/EV	Various	TBD : Arlington, VA	2.000	1.494	Nov 2014	3.375	Dec 2015	3.284	Dec 2016	0.000		3.284	0.000	10.153	10.153
Andrews AFB	Various	TBD : Camp Springs, MD	0.135	0.135	Dec 2014	0.135	Dec 2015	0.135	Dec 2016	0.000		0.135	0.270	0.810	0.810
GE F136 Congressional Studies	Various	Various : Various	0.800	0.000		0.000		0.000		0.000		0.000	0.000	0.800	0.800
Facilities BOSS	C/CPAF	Various : Various	17.751	8.356	Dec 2014	9.091	Dec 2015	7.736	Dec 2016	0.000		7.736	8.340	51.274	51.274
CIO ODCs	C/CPAF	Various : Various	6.702	2.677	Dec 2014	4.743	Dec 2015	6.050	Dec 2016	0.000		6.050	1.401	21.573	21.573
Travel	C/CPAF	Various : Various	18.834	2.015	Oct 2014	1.831	Oct 2015	1.948	Oct 2016	0.000		1.948	1.403	26.031	26.031

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			701.350	77.400		81.100		56.930		0.000		56.930	12.567	929.347	929.347
Cost Category Subtotals			46,006.232	1,496.239		1,506.200		1,436.879		0.000		1,436.879	308.812	50,754.362	-
Other Service Funding Adjustment			25,502.113	961.895		990.708		1,033.374		-		1,033.374	179.029	28,667.119	-
Project Cost Totals			20,504.119	534.344		515.492		403.505		0.000		403.505	129.783	50,754.362	-

Remarks
 The project information shown here reflects USN, USMC, USAF and International Partner funding total for each contract. By agreement USN and USMC funding shares are approximately equal and when combined are equal to the USAF share.

NOTE 1: Prior Years reflect \$20,504.119 USAF/\$18,387.781M USN/\$2,195.032M USMC /\$4,919.300M International/Total \$46,006.232M

FY 2015 reflects \$534.344M USAF/\$470.545M USN/\$476.350M USMC/\$15.000M International/Total \$1,496.239M

FY 2016 reflects \$515.492M USAF/\$467.759M USN/\$505.949M USMC/\$17.000M International/Total \$1,506.200M

FY 2017 reflects \$403.505M USAF/\$504.296M USN/\$507.078M USMC/\$22.000M International/Total \$1,436.879M

JSF EMD Includes:
 USAF PE 0604800F BPAC 653831
 USN PE 0604800N Project Unit 2261
 USMC PE 0604800M Project Unit 2262

D&S Includes:
 USAF PE 0604800F BPAC 653832
 USN PE 0604800N Project Unit 3352
 USMC PE 0604800M Project Unit 3350

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force	Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD
Project (Number/Name) 653831 / Joint Strike Fighter	

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Acquisition Milestones: F-35A Initial Operational Capability								■																				
Acquisition Milestones: F-35C Initial Operational Capability																■												
Test & Evaluation: Test and Evaluation: Block 3i DT&E/Cert	■	■	■	■																								
Test & Evaluation: Test and Evaluation: Block 3F DT&E/Cert	■	■	■	■	■	■	■	■	■	■	■	■																
Test & Evaluation: Test and Evaluation: Initial Operational Test and Evaluation (IOT&E)	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■												
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY16								■																				
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY17												■																
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY18																■												
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY19																				■								
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY20																								■				
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY21																												■

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 8 Full Funding / Production / Delivery																												
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 9 Full Funding / Production / Delivery																												
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 10 Full Funding / Production / Delivery																												
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 11 Full Funding / Production / Delivery																												
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 12 Full Funding / Production / Delivery																												
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 13 Full Funding / Production / Delivery																												
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 14 Full Funding / Production / Delivery																												
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 15 Full Funding / Production / Delivery																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Acquisition Milestones: F-35A Initial Operational Capability	4	2016	4	2016
Acquisition Milestones: F-35C Initial Operational Capability	4	2018	4	2018
Test & Evaluation: Test and Evaluation: Block 3i DT&E/Cert	1	2015	4	2015
Test & Evaluation: Test and Evaluation: Block 3F DT&E/Cert	1	2015	4	2017
Test & Evaluation: Test and Evaluation: Initial Operational Test and Evaluation (IOT&E)	2	2015	4	2018
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY16	4	2016	4	2016
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY17	4	2017	4	2017
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY18	4	2018	4	2018
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY19	4	2019	4	2019
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY20	4	2020	4	2020
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY21	4	2021	4	2021
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 8 Full Funding / Production / Delivery	1	2015	4	2017
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 9 Full Funding / Production / Delivery	2	2016	3	2018
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 10 Full Funding / Production / Delivery	2	2016	4	2019
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 11 Full Funding / Production / Delivery	2	2017	2	2020

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
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Events	Start		End	
	Quarter	Year	Quarter	Year
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 12 Full Funding / Production / Delivery	2	2018	2	2021
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 13 Full Funding / Production / Delivery	2	2019	4	2021
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 14 Full Funding / Production / Delivery	2	2020	4	2021
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 15 Full Funding / Production / Delivery	2	2021	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD				Project (Number/Name) 653832 / JSF DEPLOYABILITY AND SUITABILITY ENHANCEMENT			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
653832: JSF DEPLOYABILITY AND SUITABILITY ENHANCEMENT	30.367	32.593	71.461	46.962	0.000	46.962	23.795	0.000	0.000	0.000	0.000	205.178
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Note

Total cost including United States Navy (USN), United States Marine Corps (USMC), United States Air Force (USAF) funding and International Partner contributions is: FY2015 \$66.704M, FY2016 \$189.726M, and FY2017 \$115.140M

R-2A (section B)/R-3 displays total combined program (i.e. not Service-specific), including International partners.

D&S Includes:

- USAF PE 0604800F BPAC 653832
- USN PE 0604800N Project Unit 3352
- USMC PE 0604800M Project Unit 3350

A. Mission Description and Budget Item Justification

Funds enhancements to the deployability and suitability of the air system such as low observable (LO) maintenance enhancements, security architecture updates, redesign of obsolete items and integrated training simulators. These enhancements will provide vital on-demand support to the warfighter within a deployed environment and are not funded via the existing SDD program or tied to Block 4 Operational Flight Program (OFP) development. Funding will result in achieving targeted suitability, maintainability, and affordability returns employing the F-35 in deployed or austere locations and incorporates provisions for future EW Sensor Capability.

Funding at the accomplishment/planned program level is reported as the total of all services as these activities support all aircraft variants. By agreement, USN and USMC funding shares are approximately equal and when combined are equal to the USAF share.

BA5 - This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Sustainment and Capability Enhancements (F-35 JSF)	15.590	118.070	64.064	0.000	64.064

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653832 / JSF DEPLOYABILITY AND SUITABILITY ENHANCEMENT

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: Apply disciplined systems engineering, refinement of requirements, develop and acquire suitability and maintainability of the air system such as decentralized maintenance capabilities, LO maintenance enhancements, security architecture updates, redesign of obsolete items and integrated training simulators.</p> <p>FY 2015 Accomplishments: Continued to conduct systems engineering, technical maturation, integration and test planning for suitability and deployability enhancements.</p> <p>FY 2016 Plans: Continue to conduct systems engineering, technical maturation, integration and test planning for suitability and deployability enhancements. Increase is to perform sustaining engineering, development and test activities necessary to gain capacity, compatibility, and expansion in wiring, power, wing conduits, etc. in support of electronic warfare.</p> <p>FY 2017 Base Plans: Continue to conduct systems engineering, technical maturation, integration and test planning for suitability and deployability enhancements. Increase is to perform sustaining engineering, development and test activities necessary to gain capacity, compatibility, and expansion in wiring, power, wing conduits, etc. in support of electronic warfare. This includes funding for suitability enhancements such as Standard Operating Unit Version 2 and Band 2/5 efforts.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Development Support (F-35 JSF)</p> <p>Description: SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities.</p> <p>FY 2015 Accomplishments: Continued development enhancement support for Deployable Autonomic Logistics Information System, decentralized maintenance capabilities, Low Observable maintenance enhancements, security architecture updates, redesign of obsolete items, and integrated training simulators.</p> <p>FY 2016 Plans:</p>	20.650	7.909	3.556	0.000	3.556

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force			Date: February 2016		
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653832 / JSF DEPLOYABILITY AND SUITABILITY ENHANCEMENT			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Continue to initiate development enhancement support for Deployable Autonomic Logistics Information System, decentralized maintenance capabilities, Low Observable maintenance enhancements, security architecture updates, redesign of obsolete items, and integrated training simulators. FY 2017 Base Plans: Continue SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities. Development Support decrease is due to across the board reduction between both services. FY 2017 OCO Plans: N/A					
Title: Development Test and Evaluation Description: Verification and testing for deployability and suitability enhancements. FY 2015 Accomplishments: Continued to initiate government test and evaluation of capability enhancements for Deployable Autonomic Logistics Information System, and LO maintenance enhancements. FY 2016 Plans: Continue to initiate government test and evaluation of capability enhancements for Deployable Autonomic Logistics Information System, and LO maintenance enhancements. FY 2017 Base Plans: Continue to initiate government test and evaluation of capability enhancements for Deployable Autonomic Logistics Information System, and LO maintenance enhancements. FY 2017 OCO Plans: N/A	0.636	1.841	1.440	0.000	1.440
Title: Autonomic Logistics Information System Description: SDD execution of Autonomic Logistics Information System (ALIS) develops the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users. FY 2015 Accomplishments:	29.828	61.906	46.080	0.000	46.080

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653832 / JSF DEPLOYABILITY AND SUITABILITY ENHANCEMENT

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
SDD execution of Autonomic Logistics Information System (ALIS) develops the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users.					
FY 2016 Plans: SDD execution of Autonomic Logistics Information System (ALIS) develops the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users.					
FY 2017 Base Plans: SDD execution of Autonomic Logistics Information System (ALIS) develops the information infrastructure used to transmit health and maintenance action information for the aircraft to the appropriate users.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	66.704	189.726	115.140	0.000	115.140
Other Service Funding Adjustment	34.111	118.265	68.178	-	68.178
Air Force Subtotals	32.593	71.461	46.962	0.000	46.962

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• RDTE: BA05: PE 0604800F 3831: JSF SDD, BPAC 653831	534.344	515.492	403.505	0.000	403.505	113.567	5.327	5.392	5.497	-	-
• RDTE: BA07: PE 0207142F 5346: JSF Follow-on Development (FoD), BPAC 675346	23.660	48.954	127.302	0.000	127.302	321.658	340.950	339.209	345.223	Continuing	Continuing
• RDTE: BA07: PE 0207142F 6011: Dual Capable Aircraft (DCA), BPAC 676011	15.615	4.967	25.743	0.000	25.743	27.731	37.637	49.554	50.433	Continuing	Continuing
• APAF: BA01: Line Item # ATA000 AP: JSF CTOL Advance Procurement, PE 0207142F, BP10 AP	418.880	460.260	404.500	0.000	404.500	671.263	406.750	424.230	424.230	17,450.241	23,150.407
• APAF: BA01: Line Item # ATA000: JSF CTOL, PE 0207142F, BP10	3,625.841	5,259.812	4,401.894	0.000	4,401.894	4,708.701	4,712.526	4,838.591	5,801.997	139,530.995	190,282.125

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016	
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD				Project (Number/Name) 653832 / JSF DEPLOYABILITY AND SUITABILITY ENHANCEMENT			

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

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• APAF: BA06: Line Item # F03500 BP16: JSF Initial Spares, PE 0207142F, BP16	231.847	229.582	267.792	0.000	267.792	315.478	353.602	354.622	355.591	10,311.851	13,420.134
• APAF: BA05: Line Item # F03500 BP11: JSF Modifications, PE 0207142F, BP11	187.646	70.167	175.811	0.000	175.811	385.931	237.349	232.017	237.273	Continuing	Continuing
• USAF OM: Operations and Maintenance	217.556	302.952	360.107	0.000	360.107	452.906	555.687	858.671	0.000	Continuing	Continuing
• OPAF: BA01: Line Item # 821800: Joint Strike Fighter, PE 0207142F	4.463	3.858	2.333	0.000	2.333	2.374	2.415	0.000	0.000	Continuing	Continuing
• MILCON: BA01: PE 0207142F: USAF JSF Military Construction Operations	66.700	132.850	305.700	0.000	305.700	80.000	27.500	0.000	0.000	1,312.100	2,511.350
• MILCON: BA01: PE 0207597F: USAF JSF Military Construction Training	0.000	65.400	20.000	0.000	20.000	21.000	34.000	15.900	0.000	-	-
• MILCON: BA01: PE 0502635F: USAF JSF Military Construction Air National Guard	0.000	0.000	15.100	0.000	15.100	0.000	0.000	0.000	0.000	-	-
• RDTE: BA05: PE 0604800N 2261: JSF SDD (CV)	470.545	467.759	504.296	0.000	504.296	43.816	0.000	0.000	0.000	-	-
• RDTE: BA05: PE 0604800N 3352: F-35C Sustainment/ Capability Enhancements (CV)	16.433	36.977	24.420	0.000	24.420	11.802	0.000	0.000	0.000	-	-
• RDTE: BA05: PE 0604810N 2936: F-35C Follow-on Development (CV), BPAC 2936	10.302	21.200	63.387	0.000	63.387	133.686	144.003	147.646	150.902	Continuing	Continuing
• APN: BA01: Line Item # 0147C: JSF Advance Procurement (CV), PE 0204146N	29.400	48.630	80.908	0.000	80.908	258.898	144.003	242.002	262.004	3,189.815	5,643.037
• APN: BA01: Line Item # 0147: JSF (CV), PE 0204146N	848.552	1,033.142	890.650	0.000	890.650	951.052	1,598.247	2,150.860	2,680.120	27,872.824	49,136.792

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653832 / JSF DEPLOYABILITY AND SUITABILITY ENHANCEMENT
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APN: BA06: Line Item # 0605 USN: <i>Initial Spares (CV), PE 0204146N</i>	28.768	59.914	26.076	0.000	26.076	76.886	41.847	52.858	303.608	1,706.626	2,815.461
• APN: BA05: Line Item # 0593: <i>Modifications (CV), PE 0204146N</i>	18.371	48.527	26.004	0.000	26.004	49.848	20.721	12.929	13.192	Continuing	Continuing
• OPN: BA03: Line Item # 4268: <i>JSF Aviation Support Equipment ALIS Ship Alts</i>	1.539	1.969	1.811	0.000	1.811	1.866	1.868	1.910	1.947	Continuing	Continuing
• OPN: BA03: <i>ALIS Ship ALTS Installs</i>	3.977	1.924	0.329	0.000	0.329	2.024	1.890	1.933	1.972	Continuing	Continuing
• OPN BA03: <i>Optical Landing System Investment</i>	0.000	0.000	1.800	0.000	1.800	1.800	1.800	3.300	0.000	Continuing	Continuing
• OPN BA03:: <i>Spares for Aviation Support Equipment</i>	0.730	2.946	0.881	0.000	0.881	2.297	2.321	1.939	1.977	Continuing	Continuing
• USN OM: <i>Operations and Maintenance</i>	35.468	75.651	138.933	0.000	138.933	96.354	135.712	115.743	216.600	Continuing	Continuing
• USN MILCON: <i>USN JSF Military Construction</i>	60.200	72.460	11.800	0.000	11.800	0.000	0.000	0.000	0.000	-	-
• RDTEN: BA05: PE 0604800M 2262: <i>JSF SDD (STOVL)</i>	476.350	505.949	507.078	0.000	507.078	88.414	9.649	5.842	3.858	-	-
• RDTEN: BA05: PE 0604800M 3350: <i>F-35B Sustainment/ Capability Enhancements (STOVL), BPAC 3350</i>	11.589	31.952	24.348	0.000	24.348	11.427	0.000	0.000	0.000	-	-
• RDTEN: BA05: PE 0604810M 2935: <i>F-35B Follow-on Development (STOVL), BPAC 2935</i>	10.086	20.798	74.227	0.000	74.227	154.047	164.276	168.433	172.040	Continuing	Continuing
• APN: BA01: Line Item # 0152C: <i>JSF Advance Procurement (STOVL), PE 0204146M</i>	143.885	203.060	233.648	0.000	233.648	370.472	227.562	231.003	220.000	2,638.098	4,870.881
• APN: BA01: Line Item # 0152: <i>JSF (STOVL), PE 0204146M</i>	1,178.488	2,147.714	2,037.768	0.000	2,037.768	2,620.324	2,481.778	2,514.127	2,558.802	20,571.510	40,035.833

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653832 / JSF DEPLOYABILITY AND SUITABILITY ENHANCEMENT

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

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• APN: BA06: Line Item # 0605 USMC: <i>Initial Spares (STOVL), PE 0204146M</i>	64.285	111.569	123.252	0.000	123.252	26.159	88.434	160.150	140.989	1,466.285	2,508.244
• APN: BA05: Line Item # 0592: <i>Modifications (STOVL), PE 0204146M</i>	157.905	204.464	34.928	0.000	34.928	158.277	89.352	64.963	79.077	Continuing	Continuing
• USMC OM: <i>Operations and Maintenance</i>	133.550	188.391	174.580	0.000	174.580	162.927	165.068	168.212	167.636	Continuing	Continuing
• USMC MILCON: <i>USMC JSF Military Construction</i>	71.704	21.960	219.100	0.000	219.100	64.660	121.990	119.800	0.000	642.400	1,966.114
• International 1: <i>International SDD</i>	15.000	17.000	22.000	0.000	22.000	27.450	0.000	0.000	0.000	-	-
• International 2: <i>International Production</i>	3,350.860	4,211.698	5,377.274	0.000	5,377.274	7,420.782	7,893.177	9,050.299	8,092.207	Continuing	Continuing
• International 3: <i>International FoD</i>	21.086	79.318	128.965	0.000	128.965	157.602	169.315	171.636	68.599	Continuing	Continuing
• International 4: <i>International Unique (SDD/PSFD)</i>	81.681	39.852	39.608	0.000	39.608	11.474	22.812	29.409	5.357	-	-

Remarks

This is a joint program with no executive service. Service Acquisition Executive (SAE) authority alternates between the Department of the Navy and the Department of the Air Force and currently resides with the Navy. Program Element 0604800N/0604800M continues USN development efforts budgeted in 0603800N prior to FY2002. The United Kingdom, Italy, Netherlands, Turkey, Canada, Australia, Denmark, and Norway are participants in the SDD phase of JSF.

Note: The USAF/USN/USMC procurement lines include Aircraft Procurement and Advanced Procurement only. Initial Spares and Repair Parts for all Services are reflected in separate lines. International Partner Funding also includes funds provided under the Italy and Netherlands Bilateral agreements.

RELATED RDT&E: Funding prior to JSF SDD (FY94-FY01): USN PE 0603800N \$1,950,617; USAF PE 0603800F \$1,907,352; DARPA PE 0603800E \$118,056; and International Partner contributions of \$253,921 for a total of \$4,229,946.

D. Acquisition Strategy

Implement JSF Joint Executive Steering Board (JESB)/Configuration Steering Board (CSB) approved enhancements to existing capabilities through existing contracts using the engineering change proposal process. When appropriate, new cost type contracts may be established.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653832 / JSF DEPLOYABILITY AND SUITABILITY ENHANCEMENT

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653832 / JSF DEPLOYABILITY AND SUITABILITY ENHANCEMENT
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Primary Hardware Development - 3002 SDD	SS/CPFF	Lockheed Martin : Fort Worth, TX	0.000	0.000		41.330	Mar 2016	35.844	Mar 2017	0.000		35.844	21.213	98.387	98.387
Primary Hardware Development - 3002 ALIS	SS/CPFF	Lockheed Martin : Fort Worth, TX	51.410	29.828	Mar 2015	61.906	Mar 2016	46.080	Mar 2017	0.000		46.080	33.740	222.964	222.964
Primary Hardware Development - 14-C-0002 Band 2/5	SS/CPFF	Lockheed Martin : Fort Worth, TX	0.000	15.590	Mar 2015	76.740	Mar 2016	28.220	Mar 2017	0.000		28.220	0.000	120.550	120.550
Subtotal			51.410	45.418		179.976		110.144		0.000		110.144	54.953	441.901	441.901

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development Support	Various	AFLCMC : Eglin AFB, FL	4.040	15.680	Mar 2015	2.910	Mar 2016	0.000		0.000		0.000	0.000	22.630	-
Various	Various	Various : Various	7.668	4.000	Mar 2015	3.120	Mar 2016	2.410	Mar 2017	0.000		2.410	0.000	17.198	-
Subtotal			11.708	19.680		6.030		2.410		0.000		2.410	0.000	39.828	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Developmental Test & Evaluation	WR	Various : Various	0.000	0.606	Jun 2015	1.404	Jun 2016	0.976	Jun 2017	0.000		0.976	0.000	2.986	-
Subtotal			0.000	0.606		1.404		0.976		0.000		0.976	0.000	2.986	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Various	Various : Various	0.000	1.000	Dec 2014	2.316	Dec 2015	1.610	Dec 2016	0.000		1.610	0.000	4.926	4.926

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force										Date: February 2016				
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD					Project (Number/Name) 653832 / JSF DEPLOYABILITY AND SUITABILITY ENHANCEMENT				

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			0.000	1.000		2.316		1.610		0.000		1.610	0.000	4.926	4.926
Cost Category Subtotals			63.118	66.704		189.726		115.140		0.000		115.140	54.953	489.641	-
Other Service Funding Adjustment			32.751	34.111		118.265		68.178		-		68.178	31.158	284.463	-
Project Cost Totals			30.367	32.593		71.461		46.962		0.000		46.962	23.795	205.178	-

Remarks

NOTE: Prior Years reflect \$30.367M USAF/\$16.419M USN/\$16.332M USMC/Total \$63.118M

FY 2015 reflects \$32.593M USAF/\$16.433M USN/\$11.589M USMC/\$6.089M International/Total \$66.704M

FY 2016 reflects \$71.461M USAF/\$36.977M USN/\$31.952M USMC/\$49.336M International/Total \$189.726M

FY 2017 reflects \$46.962M USAF/\$24.420M USN/\$24.348M USMC/\$19.410M International/Total \$115.140M

R-2A (section B)/R-3 displays total combined program (i.e. not Service-specific), including International partners.

JSF EMD Includes:
 USAF PE 0604800F BPAC 653831
 USN PE 0604800N Project Unit 2261
 USMC PE 0604800M Project Unit 2262

D&S Includes:
 USAF PE 0604800F BPAC 653832
 USN PE 0604800N Project Unit 3352
 USMC PE 0604800M Project Unit 3350

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653832 / JSF DEPLOYABILITY AND SUITABILITY ENHANCEMENT

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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

D&S: Standard Operating Unit (SOUv2)	[REDACTED]																											
D&S: Band 2/5	[REDACTED]																											
D&S: Security Architecture	[REDACTED]																											
D&S: Offboard Mission Support (OMS) Redesign	[REDACTED]																											
D&S: Distributed Mission Training/Distributed Mission Operations (DMT/DMO)	[REDACTED]																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653832 / JSF DEPLOYABILITY AND SUITABILITY ENHANCEMENT

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
D&S: Standard Operating Unit (SOUv2)	1	2015	1	2017
D&S: Band 2/5	3	2015	3	2018
D&S: Security Architecture	1	2016	3	2018
D&S: Offboard Mission Support (OMS) Redesign	1	2016	4	2018
D&S: Distributed Mission Training/Distributed Mission Operations (DMT/DMO)	1	2016	4	2018

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604853F / <i>Evolved Expendable Launch Vehicle Program (SPACE) - EMD</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	1,632.493	225.600	227.784	296.572	0.000	296.572	296.715	247.195	197.796	198.629	0.000	3,322.784
650004: <i>Evolved Expendable Launch Vehicle</i>	1,632.493	6.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1,638.493
650006: <i>Next Generation Launch System Investment</i>	0.000	219.600	227.784	296.572	0.000	296.572	296.715	247.195	197.796	198.629	0.000	1,684.291

Program MDAP/MAIS Code: 176

Note
This program, BA 05 PE 0604853F, project 650006, Launch System Investment, is a new start.

A. Mission Description and Budget Item Justification

The Evolved Expendable Launch Vehicle (EELV) program is a space launch system that satisfies the government's National Launch Forecast (NLF) requirements to place National Security Space (NSS) space vehicles on orbit. EELV is a launch service, not a weapon system, which is primarily funded with production funds.

Prior to FY2015 EELV funded product improvements, replacement components, system enhancements and special studies to allow EELV to meet NLF requirements through 2030. The Air Force developed an acquisition strategy to initiate Public Private Partnerships by sharing the investment in industry's launch systems with the end goal of two or more domestic, commercially-viable launch providers that also meet all national security launch needs, including launching to all orbits required for NSS missions.

In FY2015, the Air Force initiated this program using the \$220M added by the FY2015 National Defense Authorization Act and the FY2015 DoD Appropriations Act with an intermediate step that invested in the Rocket Propulsion Systems (RPS) development required for industry's launch systems. In addition, the Air Force continued a Technical Maturation program to address the highest risks for RPS. In FY2016, the Air Force continues the investment in RPS using the \$227M provided in the FY2016 Omnibus Appropriations Act, which was restricted to rocket engine development. In FY2017, the EELV Program plan is to invest through a Public Private Partnership in the development of new or upgraded domestic launch systems with domestic launch providers. The end goal of these investments are two or more domestic, commercially-viable launch providers that also meet all NSS requirements, including placing all NSS satellites into their required orbits.

The EELV program has been designated as an Acquisition Category ID (ACAT ID) program. This program element is in Budget Activity 5, System Development and Demonstration, because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604853F / <i>Evolved Expendable Launch Vehicle Program (SPACE) - EMD</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	225.600	84.438	59.528	0.000	59.528
Current President's Budget	225.600	227.784	296.572	0.000	296.572
Total Adjustments	0.000	143.346	237.044	0.000	237.044
• Congressional General Reductions	0.000	-0.254			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	143.600			
• 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	237.044	0.000	237.044

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

Project: 650004: *Evolved Expendable Launch Vehicle*

Congressional Add: *Space Launch Range Services and Capability*

Congressional Add Subtotals for Project: 650004

Project: 650006: *Next Generation Launch System Investment*

Congressional Add: *Rocket Propulsion System Technical Maturation and Risk Reduction*

Congressional Add: *Rocket engine development*

Congressional Add Subtotals for Project: 650006

Congressional Add Totals for all Projects

	FY 2015	FY 2016
Congressional Add Subtotals for Project: 650004	6.000	-
Congressional Add Subtotals for Project: 650006	219.600	-
	-	143.346
Congressional Add Subtotals for Project: 650006	219.600	143.346
Congressional Add Totals for all Projects	225.600	143.346

Change Summary Explanation

FY16: \$143.346M Congressional Add for rocket engine development

FY17: \$237.044M added for new or upgraded launch systems investment

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604853F / Evolved Expendable Launch Vehicle Program (SPACE) - EMD	Project (Number/Name) 650004 / Evolved Expendable Launch Vehicle
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
650004: <i>Evolved Expendable Launch Vehicle</i>	1,632.493	6.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1,638.493
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Evolved Expendable Launch Vehicle (EELV) is a Major Defense Acquisition Program (MDAP) Acquisition Category (ACAT) 1D program that procures launch services to deliver National Security Space (NSS) space vehicles (SVs) on orbit.

This program funded the research to develop new rocket propulsion system possibilities, propulsion development, completion of the EELV Secondary Payload Adapter (ESPA), and special studies (to include but not limited to RD-180 engine replacement, alternative manufacturing process, industrial base studies and other related support activities).

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

	FY 2015	FY 2016	FY 2017
Title: EELV Pre-Planned Product Improvement (P3I) and Special Studies	0.000	0.000	-
Description: Funded EELV product improvements, replacement components, system enhancements, and special studies to allow EELV to meet National Launch Forecast requirements through 2030.			
FY 2015 Accomplishments: Space Launch Range services and capability			
FY 2016 Plans: N/A			
Accomplishments/Planned Programs Subtotals	0.000	0.000	-

	FY 2015	FY 2016
Congressional Add: Space Launch Range Services and Capability	6.000	-
FY 2015 Accomplishments: Developed the capacity to provide mid-to-low inclination orbits or polar-to-high inclination orbits in support of the national security space program at spaceports or launch and range complexes that are commercially-licensed by the Federal Aviation Administration (FAA).		
Congressional Adds Subtotals	6.000	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604853F / Evolved Expendable Launch Vehicle Program (SPACE) - EMD	Project (Number/Name) 650004 / Evolved Expendable Launch Vehicle
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• SPAF: BA01: Line Item # MSEELV: Evolved Expendable Launch Veh (Space)	0.000	679.851	737.854	0.000	737.854	668.270	1,318.702	1,233.523	1,158.844	9,118.272	14,915.316
• SPAF: BA01: Line Item # MSEELC: Evolved Expendable Launch Veh (Infrast.)	0.000	571.276	768.586	0.000	768.586	758.357	507.467	516.541	525.838	8,656.741	12,304.806
• MPAF: BA05: Line Item # # MSEELV: Evolved Expendable Launch Vehicle	732.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11,727.435
• MPAF: BA05: Line Item # MSEELC: Evolved Expendable Launch Veh (Infrast)	687.753	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

D. Acquisition Strategy

The Air Force structured EELV with a new cost savings acquisition strategy that stabilizes the industrial base through a quantity and rate commitment to the current provider, provides predictability to maintain mission success, and enables on-ramps for other launch vehicle companies referred to as New Entrants. The Air Force, National Reconnaissance Office (NRO), and the National Aeronautics and Space Administration (NASA) agreed to a coordinated strategy for certification of New Entrants to launch payloads in support of NSS requirements. The FY2015 Congressional Add funding was executed through a NASA contract at Wallops Island.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604853F / Evolved Expendable Launch Vehicle Program (SPACE) - EMD	Project (Number/Name) 650004 / Evolved Expendable Launch Vehicle
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Delta IV development	C/FFP	Boeing : Huntington Beach, CA	710.182	0.000		0.000		0.000		0.000		0.000	0.000	710.182	-
Atlas V development	C/FFP	Lockheed Martin : Denver, CO	583.511	0.000		0.000		0.000		0.000		0.000	0.000	583.511	-
Launch Service Development	SS/CPIF	United Launch Services : Denver, CO	185.673	0.000		0.000		0.000		0.000		0.000	0.000	185.673	-
Space Launch Range Service	Various	NASA Wallops Island : TBD	0.000	6.000	May 2015	0.000		0.000		0.000		0.000	0.000	6.000	-
Special studies	Various	Various : TBD	1.826	0.000		0.000		0.000		0.000		0.000	0.000	1.826	-
Subtotal			1,481.192	6.000		0.000		0.000		0.000		0.000	0.000	1,487.192	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Organic Civilian Range Mission Spt	Various	Space and Missile Center : Los Angeles AFB, CA	43.617	0.000		0.000		0.000		0.000		0.000	0.000	43.617	-
Subtotal			43.617	0.000		0.000		0.000		0.000		0.000	0.000	43.617	-

Remarks
Note: FFRDC Mission Assurance & Special Studies moved from Support Category

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604853F / Evolved Expendable Launch Vehicle Program (SPACE) - EMD	Project (Number/Name) 650004 / Evolved Expendable Launch Vehicle
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FFRDC	SS/CPAF	Aerospace : El Segundo, CA	82.858	0.000		0.000		0.000		0.000		0.000	0.000	82.858	-
Other Support	Various	Various : Various	24.826	0.000		0.000		0.000		0.000		0.000	0.000	24.826	-
Subtotal			107.684	0.000		0.000		0.000		0.000		0.000	0.000	107.684	-
Project Cost Totals			1,632.493	6.000		0.000		0.000		0.000		0.000	0.000	1,638.493	-

Remarks
N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604853F / <i>Evolved Expendable Launch Vehicle Program (SPACE) - EMD</i>	Project (Number/Name) 650004 / <i>Evolved Expendable Launch Vehicle</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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

Space Launch Range Services and Capability	[REDACTED]																											
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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604853F / <i>Evolved Expendable Launch Vehicle Program (SPACE) - EMD</i>	Project (Number/Name) 650004 / <i>Evolved Expendable Launch Vehicle</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Space Launch Range Services and Capability	3	2015	1	2017

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604853F / Evolved Expendable Launch Vehicle Program (SPACE) - EMD				Project (Number/Name) 650006 / Next Generation Launch System Investment			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
650006: Next Generation Launch System Investment	0.000	219.600	227.784	296.572	0.000	296.572	296.715	247.195	197.796	198.629	0.000	1,684.291
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
This program, BA 05 PE 0604853F, project 650006, Launch System Investment, is a new start.

A. Mission Description and Budget Item Justification

This program funds research and development activities and related studies support to invest to invest in new or upgraded launch systems to meet NSS launch needs with two or more domestic commercially viable providers.

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

	FY 2015	FY 2016	FY 2017
Title: Rocket Propulsion System Development	-	84.438	-
Description: Continue to invest in providers of domestic rocket propulsion systems. This investment enables the transition from the use of non-Allied space launch engines to providers of domestic rocket propulsion systems. Continue to execute Other Transaction Authority (OTA) agreements and various industry solutions utilizing public private partnerships, continue technical maturation and risk reduction activities started in FY15.			
FY 2016 Plans: Execute investments with providers of domestic rocket propulsion systems. This investment enables the transition from the use of non-Allied space launch engines to domestic rocket propulsion systems. Execute four Other Transaction Authority agreements and various industry solutions utilizing public private partnerships, allowing the continued technical maturation and risk reduction activities started in FY15.			
Title: Launch System Investment	0.000	0.000	296.572
Description: Invest in two or more launch service providers' new launch system development and/or upgrades to existing launch systems to provide two or more domestic, commercially-viable launch providers that also meet all NSS requirements, available by the end of FY2022. This investment utilizes Public Private Partnerships to enable the development of new/upgraded launch systems, including domestic Rocket Propulsion Systems (RPS), upper stages, main stages and launch infrastructure. These systems are required to sustain competition while ending the reliance on the Russian RD-180.			
FY 2015 Accomplishments:			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604853F / <i>Evolved Expendable Launch Vehicle Program (SPACE) - EMD</i>	Project (Number/Name) 650006 / <i>Next Generation Launch System Investment</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
N/A			
FY 2016 Plans: N/A			
FY 2017 Plans: Invest in domestic launch providers' launch systems. This investment is for the providers' development of new launch systems or upgrades to existing launch systems with the goal of two or more domestic, commercially-viable launch providers that also meet NSS requirements. Conduct technical maturation and risk reduction activities.			
Accomplishments/Planned Programs Subtotals	0.000	84.438	296.572

	FY 2015	FY 2016
Congressional Add: Rocket Propulsion System Technical Maturation and Risk Reduction	219.600	-
FY 2015 Accomplishments: Continue Rocket Propulsion System development by executing Other Transaction Authority (OTA) agreements and various industry solutions utilizing public private partnerships for Rocket Propulsion System (RPS) prototypes. Conducted special studies (to include, but not limited to, alternate manufacturing processes, launch system architecture, and other related activities). Continued efforts to provide robust modeling and design tools, reduced the risk of key propulsion system components, invested in material and manufacturing development, and advanced propulsion technologies.		
Congressional Add: Rocket engine development	-	143.346
FY 2016 Plans: Execute investments with providers of domestic rocket propulsion systems for rocket engine development. This investment enables the transition from the use of non-allied space launch engines to domestic rocket propulsion systems. Execute four Other Transaction Authority agreements and various industry solutions utilizing public private partnerships.		
Congressional Adds Subtotals	219.600	143.346

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• SPAF BA01: Line Item #	0.000	679.851	737.854	0.000	737.854	668.270	1,318.702	1,233.523	1,158.844	9,118.272	14,915.316
MSEELV: <i>Evolved Expendable Launch Veh (Space)</i>											

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604853F / Evolved Expendable Launch Vehicle Program (SPACE) - EMD	Project (Number/Name) 650006 / Next Generation Launch System Investment
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• SPAF: BA01: Line Item # MSEELC: Evolved Expendable Launch Veh (Infrast)	0.000	571.276	768.586	0.000	768.586	758.357	507.467	516.541	525.838	8,656.741	12,304.806
• MPAF: BA05: Line Item # MSEELV: Evolved Expendable Launch Veh (Space)	732.003	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	11,727.435
• MPAF: BA05: Line Item # MSEELC: Evolved Expendable Launch Veh (infrast)	687.735	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

D. Acquisition Strategy

The Department intends to pursue a strategy to competitively invest in two or more domestic launch providers' development of new launch systems or upgrades to existing systems. This shared investment approach may also leverage commitments to a portion of the planned phase 2 launch services (planned for launch between FY2020 and FY2024) to decrease the required up front Government investment.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604853F / Evolved Expendable Launch Vehicle Program (SPACE) - EMD	Project (Number/Name) 650006 / Next Generation Launch System Investment
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Rocket Propulsion System Development	C/TBD	Various : TBD	0.000	159.223	Jan 2016	213.709	Mar 2016	0.000		0.000		0.000	0.000	372.932	-
Booster Propulsion Technology Maturation	Various	Various : TBD	0.000	55.296	Mar 2015	0.040	Dec 2015	3.300	Dec 2016	0.000		3.300	0.000	58.636	-
FFRDC Mission Assurance	SS/CPAF	Aerospace : El Segundo, CA	0.000	3.294	Oct 2015	1.098	Oct 2015	5.262	Oct 2016	0.000		5.262	4.204	13.858	-
Launch Enterprise System Engineering and Integration	C/FP	Various : TBD	0.000	0.000		1.813	Mar 2016	3.423	Mar 2017	0.000		3.423	16.938	22.174	-
Launch System Investment	C/TBD	Various : TBD	0.000	0.000		0.000		270.351	Dec 2016	0.000		270.351	885.681	1,156.032	-
Subtotal			0.000	217.813		216.660		282.336		0.000		282.336	906.823	1,623.632	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Organic Civilian Support	Reqn	DOD : TBD	0.000	0.000		0.995	Apr 2016	1.848	Oct 2016	0.000		1.848	5.754	8.597	9.723
Subtotal			0.000	0.000		0.995		1.848		0.000		1.848	5.754	8.597	9.723

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FFRDC	SS/CPAF	Aerospace : El Segundo, CA	0.000	0.000		1.830	Oct 2015	2.164	Oct 2016	0.000		2.164	1.270	5.264	5.263

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604853F / <i>Evolved Expendable Launch Vehicle Program (SPACE) - EMD</i>	Project (Number/Name) 650006 / <i>Next Generation Launch System Investment</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Next Generation Rocket Engine Risk Reduction	1	2015	2	2018
Rocket Propulsion System Development	1	2016	2	2017
Launch System Investment	1	2017	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604932F / Long Range Standoff Weapon
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	6.836	3.438	16.143	95.604	0.000	95.604	419.817	649.113	539.101	481.604	Continuing	Continuing
657011: LONG RANGE STAND-OFF	6.836	3.438	16.143	95.604	0.000	95.604	419.817	649.113	539.101	481.604	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Program MDAP/MAIS Code: 489

A. Mission Description and Budget Item Justification

The Long Range Stand-Off (LRSO) effort will develop a weapon system to replace the Air Force's Air Launched Cruise Missile (ALCM), operational since 1986. The LRSO weapon system will be capable of penetrating and surviving advanced Integrated Air Defense Systems (IADS) from significant stand-off range to prosecute strategic targets in support of the Air Force's global attack capability and strategic deterrence core function.

This program is in Budget Activity 5, System Development and Demonstration (SDD), because it is conducting technology maturation and risk reduction (TMRR) development tasks aimed at meeting validated requirements prior to the engineering & manufacturing phase.

B. Program Change Summary (\$ in Millions)

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	3.438	36.643	133.740	0.000	133.740
Current President's Budget	3.438	16.143	95.604	0.000	95.604
Total Adjustments	0.000	-20.500	-38.136	0.000	-38.136
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-20.500			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-38.136	0.000	-38.136

Change Summary Explanation

FY16: Congressional mark of \$20.5M for TMRR contract delay
 FY17: Adjusted \$38.1M for TMRR contract delay from FY16 to FY17

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0604932F / <i>Long Range Standoff Weapon</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Title: LRSO Materiel Solution Analysis (MSA)</p> <p>Description: Conduct LRSO Weapon Milestone A and pre-TMRR activities</p> <p>FY 2015 Accomplishments: Continued LRSO MS A preparation. Activities included: Pre-TMRR activities with industry (concept/component refinement and technology analyses), modeling and simulation support, engineering studies, program cost and schedule estimation, program security plan development and implementation, acquisition strategy refinement, risk reduction efforts, initial requirements definition, developing MS A exit/TMRR entrance documentation. Continued to support the Department of Defense (DoD)/ Department of Energy (DOE) Interagency warhead life extension program 6.X process.</p> <p>FY 2016 Plans: Complete LRSO MS A and TMRR preparation/support. Activities include: Pre-TMRR efforts with industry (concept/component refinement and technology analyses), modeling and simulation support, engineering studies, test support, program cost and schedule estimation, program security plan implementation (to include secure connectivity and communication between Department of Defense (DoD), Department of Energy (DOE) and industry), acquisition strategy refinement, risk reduction efforts, continued requirements definition/refinement, completing MS A documentation, RFP release and preparation for/initiation of source selection activities. Expand program office staff, facilities and security infrastructure upgrades in preparation for TMRR. Establish and implement practices that ensure the following are met: requirements flow down, requirement allocation to hardware and software, requirements compliance matrix, system performance, reliability, maintainability, product assurance, testability, and supportability. Perform planning activities necessary to integrate LRSO with aircraft. Perform test activities and support for LRSO design validation, verification, and nuclear certification. Develop and refine LRSO Interface Control Documents (ICD) to include missile to warhead ICD. Continue to support the DoD/DOE Interagency warhead life extension program 6.X process.</p> <p>FY 2017 Plans: Execute TMRR source selection. Continue expanding program office staff, facilities and security infrastructure upgrades in preparation for TMRR. Continue aircraft integration planning activities with aircraft SPO. Continue refining missile-to-warhead interface control document. Perform test planning activities and support for LRSO design validation, verification, and nuclear certification. Continue supporting DOE warhead life extension program.</p>		3.438	16.143	36.104
<p>Title: LRSO Weapon Development</p> <p>Description: Conduct LRSO Weapon Development activities</p> <p>FY 2015 Accomplishments:</p>		0.000	0.000	59.500

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604932F / <i>Long Range Standoff Weapon</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
N/A			
FY 2016 Plans: N/A			
FY 2017 Plans: This program is reported in accordance with Title 10, United State Code, Section 119(a)(1) in the Special Access Program Annual Report to Congress. For further information, please contact the Director of Special Programs, OUSD(AT&L)/DSP.			
Accomplishments/Planned Programs Subtotals	3.438	16.143	95.604

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

N/A

Remarks

E. Acquisition Strategy

LRSO acquisition/contract strategy continues to be refined to support a MS A decision.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force												Date: February 2016				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 5				PE 0604932F / Long Range Standoff Weapon				657011 / LONG RANGE STAND-OFF								
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
Long Range Standoff Weapon Development	TBD	TBD : TBD	0.000	0.000		0.000		59.500	Jun 2017	0.000		59.500	Continuing	Continuing	-	
Subtotal			0.000	0.000		0.000		59.500		0.000		59.500	-	-	-	
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
Material Solution Analysis Support	Various	Various : TBD	3.721	0.369	Sep 2015	4.746	May 2016	26.104	Jan 2017	0.000		26.104	Continuing	Continuing	-	
Aircraft Integration Planning	Various	Various : TBD	0.000	0.218	Sep 2015	3.000	Apr 2016	0.000		0.000		0.000	0.000	3.218	-	
Subtotal			3.721	0.587		7.746		26.104		0.000		26.104	-	-	-	
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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 Support	Various	Various : TBD	0.000	0.000		0.200	Aug 2016	0.000		0.000		0.000	0.000	0.200	-	
Subtotal			0.000	0.000		0.200		0.000		0.000		0.000	0.000	0.200	-	
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Program Management Administration	Various	Various : TBD	3.115	2.851	Oct 2014	8.197	Oct 2015	10.000	Oct 2016	0.000		10.000	Continuing	Continuing	-	
Subtotal			3.115	2.851		8.197		10.000		0.000		10.000	-	-	-	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force							Date: February 2016			
Appropriation/Budget Activity 3600 / 5			R-1 Program Element (Number/Name) PE 0604932F / Long Range Standoff Weapon			Project (Number/Name) 657011 / LONG RANGE STAND-OFF				
	Prior Years	FY 2015	FY 2016		FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	6.836	3.438	16.143		95.604	0.000	95.604	-	-	-

Remarks

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604932F / <i>Long Range Standoff Weapon</i>	Project (Number/Name) 657011 / <i>LONG RANGE STAND-OFF</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Material Solution Analysis Phase	1	2015	3	2017
Milestone A Decision	2	2016	2	2016
Technology Maturation and Risk Reduction Phase	3	2017	4	2021
Technology Maturation and Risk Reduction Contract Award	3	2017	3	2017

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604933F / ICBM Fuze Modernization
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	147.745	57.893	142.551	189.751	0.000	189.751	178.475	168.035	157.738	123.617	30.858	1,196.663
655082: <i>ICBM FUZE SUPPORT</i>	147.745	57.893	142.551	189.751	0.000	189.751	178.475	168.035	157.738	123.617	30.858	1,196.663
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Program MDAP/MAIS Code: 0498

A. Mission Description and Budget Item Justification

The ICBM Fuze Modernization Program is designing and developing a form, fit and functionally equivalent replacement for the Mk21 fuze. The legacy Mk21 fuze is three times past its design life and ongoing Mk21 fuze refurbishment does not meet Nuclear Weapon Stockpile Plan requirements. The Mk21 Reentry Vehicle and fuze will be deployed on the current Minuteman III (MM III) and future Ground Based Strategic Deterrent (GBSD). Previous plans to integrate and test the Mk21 replacement fuze with the National Nuclear Security Administration (NNSA) W78/88-1 Life Extension Program warhead were deferred.

The US Air Force (USAF) will develop the Mk21 fuze utilizing the NNSA complex consisting of Sandia National Labs-California (SNL-CA), Sandia National Labs-New Mexico (SNL-NM), and National Security Campus (NSC), formerly Kansas City Plant; as well as a USAF weapons system integration contractor. The ICBM Fuze Modernization program will leverage technologies, parts, components and development/production capabilities resulting from extensive fuze work performed by the US Navy (USN) and NNSA on the Mk5 Alt 370 Fuze program. Common USN & USAF fuze components include the Radar Module (RM), Thermal Battery Assembly (TBA) and Path Length Module (PLM). USN & USAF fuze components that are partially common and use common technologies include the Missile Interface and Controller Module (MICM), Launch Safety Device (LSD), Firing Set Integration Module (FSIM) and Terminal Protection Device (TPD).

The ICBM Fuze Modernization Program will integrate the replacement fuze into MM III weapon system hardware, support equipment, data, flight test hardware, and training materials. The program will also conduct required system testing (including ground and flight tests). The program is coordinating Mk21 fuze replacement development efforts with the Department of Energy (DOE) to synchronize USAF arming and fuze development activities with DOE warhead requirements. When prudent, the program will conduct trade studies and initiate conceptual designs to address operational system issues and meet future requirements.

As a cooperative USAF, USN and NNSA acquisition, the USAF is using Department of Defense (DoD)-DOE Instruction 5030.55 Joint Nuclear Weapons Life Cycle Activities (known as the Phase 6.X process) for program documentation and milestones. The program, designated as a Major Defense Acquisition Program (MDAP) is executing a tailored acquisition using the 6.X process while meeting MDAP statutory requirements.

The FY17 budget request continues cooperative efforts with the USN to leverage common components; continues design efforts for AF unique components; and continues development of lab, ground and flight test assets.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604933F / ICBM Fuze Modernization
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This program is in Budget Activity 5, System Development and Demonstration (SDD), and continues to execute Phase 6.3 "Development Engineering" of the 6.X process. The program is conducting engineering development tasks aimed at meeting validated requirements prior to Phase 6.4 "Production Engineering", scheduled for FY19 (Objective).

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	59.826	142.551	190.973	0.000	190.973
Current President's Budget	57.893	142.551	189.751	0.000	189.751
Total Adjustments	-1.933	0.000	-1.222	0.000	-1.222
• 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	-1.933	0.000			
• Other Adjustments	0.000	0.000	-1.222	0.000	-1.222

Change Summary Explanation

FY 2017 funding reflects a \$1.222M adjustment for revised inflation indices.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Fuze Design and Development	43.523	111.080	151.935	0.000	151.935
Description: Design and develop the Mk21 fuze required to support the ICBM W87 warhead. Coordinate design and development efforts with the ICBM weapon system integrator and support flight testing.					
FY 2015 Accomplishments:					
<ul style="list-style-type: none"> •Matured development of common parts, components, and technology for application to the Mk21 replacement fuze. •Continued component conceptual design development of common and unique parts. •Conducted Component Conceptual Design Review and Integrated Baseline Review. •Implemented nuclear surety themes informed by trades as directed by NNSA. •SNL-NM continued to test common components in conjunction with group builds supporting production planning for the Radar, Thermal Battery Assembly, and Path Length Module to verify that the current Navy/AF 					

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force</i> / BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604933F / <i>ICBM Fuze Modernization</i>
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C. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>design continues to meet the AF functional requirements and unique applicable environments at the component level.</p> <ul style="list-style-type: none"> •SNL completed more concentrated detail design analysis and tests on the remaining components with AF unique sub-components (MICM, LSD, TPD and FSIM). SNL-CA will begin detailed Arming and Fuzing Assembly (AFA) qualification plans and the efforts to prepare and develop the Flight Test Vehicle for meeting the established objectives of Flight Test 1. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> •Finalize development of common parts, components, and technology for application to Mk21 replacement fuze. •Finalize component conceptual design development of common components to include Arming and Fuzing Assembly (AFA) prototype builds. •Ramp-up conceptual design development of AF unique components. •Ramp up Re-entry Vehicle (RV) integration, systems engineering at SNL-CA, system qualification and flight test planning and flight test vehicle (Joint Test Assembly or JTA) development. •SNL-NM will begin testing of common components in conjunction with the group builds supporting production planning for the Radar, Battery, and Path Length Module. •SNL will continue to analyze the design and perform tests on the remaining four components with AF unique sub-components (MICM, LSD, TPD and FSIM). SNL-CA will continue to solidify the detailed AFA qualification plans and the efforts to prepare and develop the Flight Test Vehicle for meeting the established objectives of Flight Test 1. <p>FY 2017 Base Plans:</p> <ul style="list-style-type: none"> •Continue assessing, testing and qualifying the common components (RM, PLM, TBA) with the unique AF environments to ensure compliance to AF requirements. •Establish a solid design baseline for the AF unique components (MICM, TPD, LSD, FSIM) and push the design envelope towards meeting the Entrance and Exit criteria of the Baseline Design Review (BDR) scheduled for May 2017. •Finalize the Ground Test Unit for ground testing and integration testing with the Integrated Test Bed (ITB) in preparation for Flight Test 1 scheduled for Oct 2018. •Develop surveillance strategy plan in order to finalize the requirements for assessing the aging trends, reliability and service life estimate during fuze operational and sustainment phase. •Integrate updated MM Operational Targeting Program (MOTP) software to be utilized in Flight Test 2. 					

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force				Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0604933F / <i>ICBM Fuze Modernization</i>				
C. Accomplishments/Planned Programs (\$ in Millions)						
	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	
•Establish a baseline design for the Joint Test Assembly (JTA) used on Flight Test 3 and Flight Test 4.						
FY 2017 OCO Plans: N/A						
Title: Weapon System Integration/Systems Engineering						
Description: Integrate Mk21 fuze into the MMIII weapon system. Validate designs through ground tests on an Integrated Test Bed (ITB). Plan and conduct required ground and flight testing. Coordinate design, development and test efforts.						
FY 2015 Accomplishments:						
•Provided Systems Engineering, Integration, and Management expertise in support of USAF and SNL development of the Mk21 replacement fuze.						
•Integrated AFA with the MM III weapon system for partially and fully completed components during the development build.						
•Tested and verified SNL developed Lab Test Units (LTU) and corresponding Ground Test Units (GTU) using the MM III ITB to confirm the functionality of the fuze through simulated missions for signal performance, data accuracy and the required fuzing options.						
FY 2016 Plans:						
•Ramp-up Systems Engineering, Integration, and Management expertise in support of USAF and SNL development of the Mk21 replacement fuze.						
•Continue to integrate AFA with the MM III weapon system during the development build.						
•Continue test and verification of SNL developed LTUs and corresponding GTUs via the MM III ITB. Assess the program's impact on MM III system-level effectiveness.						
FY 2017 Base Plans:						
•Finalize the results of the LTU to verify the functionality and performance of multiple fuze HW components during the Integration testing with the MM III weapon system which will provide the catalyst for starting the integration testing of the GTU to perform Flight Profiles and environmental unit tests (shock, vibe, temp).						
FY 2017 OCO Plans: N/A						
Accomplishments/Planned Programs Subtotals		57.893	142.551	189.751	0.000	189.751

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0604933F / <i>ICBM Fuze Modernization</i>
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D. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• MPAF: BA05: Line Item # M30MLG: <i>Minuteman III Modifications</i>	4.700	13.700	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	18.400
• MPAF: BA03: Line Item # M30FLH: <i>ICBM Fuze Mod</i>	0.000	0.000	17.095	0.000	17.095	6.321	9.841	12.094	34.145	731.963	811.459

Remarks

Other Program Funding Summary reflects equipment buys in FY15-19 as part of life of program buys, enabling the ICBM Fuze Modernization program to continue leveraging the USN design, development and production activities.

E. Acquisition Strategy

The USAF ICBM Fuze Modernization program is a collaborative effort with the USN reducing total program cost and development time by leveraging commonality between the ICBM and Submarine Launched Ballistic Missile fuze components. The USN Mk5 Alt 370 fuze is being developed first, with the USAF Mk21 fuze effort following. The USN Mk5 Alt 370 fuze entered Phase 6.3 Development Engineering in October 2012. USAF Mk21 fuze entered Phase 6.3 in August 2013. Both services participate in all design and development efforts to ensure maximum use of common components, subassemblies and technologies. Both services are using NNSA/SNL to perform fuze design and development. The USAF, as lead systems integrator for the Mk21 fuze, competed a separate Weapon System Integration Contract (WSIC) for integration support to assist the government with MM III unique modifications and fuze integration efforts. Both services are using NSC to produce fuzes.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604933F / ICBM Fuze Modernization	Project (Number/Name) 655082 / ICBM FUZE SUPPORT
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Fuze Preliminary Design Development	MIPR	Sandia National Labs : Albuquerque, NM	90.823	41.773	Feb 2015	96.516	Nov 2015	129.850	Nov 2016	0.000		129.850	367.820	726.782	-
Fuze EMD	Various	Various : TBD	0.441	0.326	Dec 2014	0.359	Dec 2015	0.000		0.000		0.000	0.000	1.126	-
Fuze Engineering Change Orders	Various	Various : TBD	0.000	0.000		0.000		2.785	May 2017	0.000		2.785	18.103	20.888	-
Fuze National Security Campus (formerly Kansas City Plant)	MIPR	National Security Campus : Kansas City, MO	4.000	1.750	Apr 2015	14.564	Nov 2015	19.300	Nov 2016	0.000		19.300	88.277	127.891	-
Fuze Weapon System Integration - ICBM Prime	C/CPAF	Northrop Grumman : Clearfield, UT	25.937	0.000		0.000		0.000		0.000		0.000	0.000	25.937	25.937
Fuze Weapon System Integration - RS/RV Sub-System Contract (SSC)	SS/CPAF	Lockheed Martin : Valley Forge, PA	2.563	8.706	Jan 2015	24.103	Jan 2016	22.800	Jan 2017	0.000		22.800	38.038	96.210	96.210
Fuze Nuclear Safety Cross-Check Analysis (NSCCA)	TBD	TBD : TBD	0.000	0.000		0.000		0.000		0.000		0.000	9.509	9.509	-
Subtotal			123.764	52.555		135.542		174.735		0.000		174.735	521.747	1,008.343	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Fuze Engineering Support - BAH	C/FP	Booz Allen Hamilton : Clearfield, UT	2.757	0.000		0.000		0.000		0.000		0.000	0.000	2.757	-
Fuze Engineering Support - BAE	C/FFP	BAE : Clearfield, UT	3.705	0.675	Jul 2015	2.512	Jul 2016	3.216	Jul 2017	0.000		3.216	37.398	47.506	47.506
Subtotal			6.462	0.675		2.512		3.216		0.000		3.216	37.398	50.263	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604933F / ICBM Fuze Modernization	Project (Number/Name) 655082 / ICBM FUZE SUPPORT
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Fuze Lead Project Office Support	MIPR	AFNWC : Albuquerque, NM	10.480	0.000		0.000		0.000		0.000		0.000	0.000	10.480	10.480
Fuze Finite Element Model Validation	C/CPFF	LMTF : Little Mountain, UT	1.843	0.000		0.000		0.000		0.000		0.000	0.000	1.843	1.843
Fuze Flight Test Hardware	TBD	TBD : TBD	0.000	0.000		0.000		0.000		0.000		0.000	16.800	16.800	-
Fuze Flight Test	TBD	TBD : TBD	0.000	0.000		0.000		0.000		0.000		0.000	28.201	28.201	-
Subtotal			12.323	0.000		0.000		0.000		0.000		0.000	45.001	57.324	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Fuze Cost and Financial Management	C/FFP	Tecolote : Salt Lake City, UT	1.285	0.892	Dec 2014	1.125	Dec 2015	1.762	Dec 2016	0.000		1.762	2.370	7.434	-
Fuze FFRDC Support	MIPR	Aerospace : Los Angeles, CA	0.815	2.302	Dec 2014	0.473	Dec 2015	2.284	Dec 2016	0.000		2.284	5.936	11.810	-
Fuze Program Support	C/FFP	BAE : Clearfield, UT	0.000	0.000		0.618	Feb 2016	2.472	Feb 2017	0.000		2.472	28.876	31.966	-
Fuze Program Management Administration	Various	Various : Various, UT	3.096	1.469	Dec 2014	2.281	Mar 2016	5.282	Mar 2017	0.000		5.282	17.395	29.523	-
Subtotal			5.196	4.663		4.497		11.800		0.000		11.800	54.577	80.733	-

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		147.745	57.893	142.551	189.751	0.000	189.751	658.723	1,196.663	-

Remarks

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604933F / ICBM Fuze Modernization	Project (Number/Name) 655082 / ICBM FUZE SUPPORT
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Phase 6.3 Developmental Engineering	1	2015	1	2019
Phase 6.4 Production Engineering Mk21	2	2019	4	2021
Component - Conceptual Design Review (C-CDR) (Oct 2014)	1	2015	1	2015
Integrated Baseline Design Review (IBR) (May 2015)	3	2015	3	2015
Baseline Design Review (BDR) (Mar 2017)	2	2017	2	2017
Final Design Review (FDR) (Dec 2019)	1	2020	1	2020
Complete Engineering Release (Jun 2020)	3	2020	3	2020
Flight Test 1 (Oct 2018)	1	2019	1	2019
Flight Test 2 (Oct 2019)	1	2020	1	2020
Flight Test 3 (Jul 2021)	4	2021	4	2021
Life of Program Buy (LOPB)	2	2015	4	2019

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605030F / <i>Joint Tactical Network Center (JTNC)</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.000	1.131	0.000	1.131	7.106	8.089	8.095	8.243	Continuing	Continuing
655068: <i>Joint Tactical Radio System (JTRS)</i>	-	0.000	0.000	1.131	0.000	1.131	7.106	8.089	8.095	8.243	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Funding prior to FY15 was located in PE 0604280F. The Joint Tactical Radio System (JTRS) development program is a joint program managed through the Navy's PEO for Joint Tactical Networks (PEO JTN). The JTN was formed upon the descoping of the Joint Tactical Radio System development program (PE 0604280F). JTN will provide interoperable, secure Joint Tactical Networking applications capable of operating in a variety of radio solutions to maintain and sustain an affordable, government-controlled open architecture, in support of Combatant Commanders', Services' and Coalition mission network requirements. JTN is responsible for the continuous development, delivery, and maintenance of networking waveforms and modified legacy radio waveforms that are Software Communications Architecture (SCA) compliant. SCA compliant waveforms enable interoperability and support Net-Centric operational warfare at sea, in the air and on the ground. Networking waveforms extend the Global Information Grid (GIG) to the first tactical mile and to the warfighter.

The JTN team is responsible for (1) the overall management and oversight of the Waveforms contained in the JTN repository; (2) development, validation, and evolution of a common JTN SCA; (3) development and evolution of waveform software applications for tactical radios; (4) development of software cryptographic algorithms and equipment applications (Information Assurance); (5) development and evolution of the JTN networking and network management software components, Joint Enterprise Network Manager (JENM); (6) testing and certification of JTN waveforms, network services, and network management; and, (7) full lifecycle support of waveforms and networking applications in order to maintain a robust industry base of radio vendors.

The individual services provide 1/3 each of funding to support activities of the JTNC.

This program is in Budget Activity 5, System Development and Demonstration (SDD), because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605030F <i>I Joint Tactical Network Center (JTNC)</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.000	0.000	11.941	0.000	11.941
Current President's Budget	0.000	0.000	1.131	0.000	1.131
Total Adjustments	0.000	0.000	-10.810	0.000	-10.810
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-10.810	0.000	-10.810

Change Summary Explanation

The JTRS development program is a joint program managed through the JTRS JPEO. Each of the joint services, including the Air Force, transfers its funding to the Navy's budget under Joint Tactical Radio System Program (PE 0605031N, BA 5). This annual transfer of funds to the Navy PE is the cause of the seemingly drastic change from current to future fiscal years. The predicted reduction in RDT&E funding is based on reduced program development.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Title: JTRS	0.000	0.000	1.131
Description: Funding provided by the Air Force will be used to support activities of the Joint Tactical Networking Center (JTNC).			
FY 2015 Accomplishments: Funds provided by the Air Force transferred supported activities of the Joint Tactical Networking Center (JTNC).			
FY 2016 Plans: Funding provided by the Air Force will be used to support activities of the Joint Tactical Networking Center (JTNC).			
FY 2017 Plans: FY17 funding provided by the Air Force will be used to support activities of the Joint Tactical Networking Center (JTNC).			
Accomplishments/Planned Programs Subtotals	0.000	0.000	1.131

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605030F / <i>Joint Tactical Network Center (JTNC)</i>
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D. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• OPAF: BA03: Line item #837100: <i>Tactical C-E Equipment</i>	0.000	9.933	10.397	0.000	10.397	6.425	5.898	6.281	6.395	Continuing	Continuing
• APAF: BA05: Line item #OTHACF: <i>Other Aircraft</i>	4.502	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

E. Acquisition Strategy

The JTRS Budget Item Justification is located in the Navy's FY 2017 President's Budget under Joint Tactical Radio System Program (PE 0605030N, BA 5). The JTRS development program is a joint program managed through the Navy's PEO for Joint Tactical Networks (PEO JTN). The JTN was formed upon the descoping of the Joint Tactical Radio System development program (PE 0604280F).

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605030F / Joint Tactical Network Center (JTNC)	Project (Number/Name) 655068 / Joint Tactical Radio System (JTRS)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Navy JTRS Development	C/CPAF	TBD : TBD	-	0.000		0.000		1.131	Nov 2016	0.000		1.131	Continuing	Continuing	-
Subtotal			-	0.000		0.000		1.131		0.000		1.131	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.000	0.000	1.131	0.000	1.131	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605030F / <i>Joint Tactical Network Center (JTNC)</i>	Project (Number/Name) 655068 / <i>Joint Tactical Radio System (JTRS)</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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

TBD Navy JTRS Development																												
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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605030F / <i>Joint Tactical Network Center (JTNC)</i>	Project (Number/Name) 655068 / <i>Joint Tactical Radio System (JTRS)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
TBD Navy JTRS Development	1	2017	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605213F / <i>F-22 Modernization Increment 3.2B</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	198.700	163.877	140.640	70.290	0.000	70.290	0.000	0.000	0.000	0.000	0.000	573.507
654785: <i>F-22 INCREMENT 3.2B</i>	198.700	163.877	140.640	70.290	0.000	70.290	0.000	0.000	0.000	0.000	0.000	573.507
Quantity of RDT&E Articles	9	-	-	-	-	-	-	-	-	-	-	

Program MDAP/MAIS Code: 474

Note

All Increment 3.2B efforts and associated funding prior to FY13 are included in the F-22A Squadrons budget documentation, PE 0207138F and other outside funding PEs. Prior year funding:
 PE 0207138F (FY04-FY12): \$422.4M
 PE 0207163F (FY10-FY13): \$39.8M
 PE 0207445F (FY07-FY10): \$39.6M
 PE 0200001F (FY07): \$32.9M

A. Mission Description and Budget Item Justification

Increment 3.2B will integrate the newest air-to-air intercept missiles (i.e., AIM-9X and AIM-120D), further improve the Electronic Protection (EP) capability over Increment 3.2A, and enhance the F-22's geolocation capability from the Increment 3.1 baseline with the addition of Geolocation 2. Increment 3.2B will include the Enhanced Stores Management System (ESMS), as well as Common Weapon Engagement Zone (WEZ), and an Intra-Flight Datalink (IFDL) improvement to increase IFDL bandwidth and enable cooperative functions required to realize Increment 3.2B capabilities.

Increment 3.2B will develop, certify and integrate a new platform operational flight program to ensure the system interoperability and performance of all increment-level developments.

The development program includes development, studies, and analysis to enhance the air vehicle and training system to improve/enhance F-22 weapons, communications, Electronic Warfare, and Intelligence Surveillance Reconnaissance (ISR) capabilities.

BA5 - This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0605213F I F-22 Modernization Increment 3.2B
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	173.647	140.640	72.467	0.000	72.467
Current President's Budget	163.877	140.640	70.290	0.000	70.290
Total Adjustments	-9.770	0.000	-2.177	0.000	-2.177
• 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	-9.770	0.000			
• Other Adjustments	0.000	0.000	-2.177	0.000	-2.177

Change Summary Explanation

No Significant Program Changes

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: F-22 Increment 3.2B	120.177	79.640	41.280	0.000	41.280
<p>Description: The F-22 Increment 3.2B Modernization Program consists of the studies, analysis, demonstrations, and hardware/software development necessary to provide Intra-Flight Data Link improvements, Electronic Protection, AIM-9X and AIM-120D integration with Common Weapon Engagement Zone, Geolocate 2.0 and Stores Management System Common Split Bus. The Enhanced Stores Management System (ESMS) program is a hardware development program required to integrate any new weapons on the F-22 beyond Increment 3.1. Includes mission support of the F-22 Program Office: travel, computer costs, and other miscellaneous contract support.</p> <p>FY 2015 Accomplishments: F-22 Increment 3.2B software development, coding, integration, and testing significantly matured seven software iterations into a software build that integrates all key program functionality, consisting of 400K lines of code. Increment 3.2B hardware testing was completed. Install upon award of Low Rate Initial Production (LRIP).</p> <p>FY 2016 Plans:</p>					

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force				Date: February 2016	
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0605213F / <i>F-22 Modernization Increment 3.2B</i>			
C. Accomplishments/Planned Programs (\$ in Millions)					
	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>F-22 Increment 3.2B software development, coding, integration, and testing will continue in preparation for 3QFY16 Milestone C. In addition, will conduct management and infrastructure activities in support of F-22 Program Office.</p> <p>FY 2017 Base Plans: F-22 Increment 3.2B will complete work in the Development, Code, Integration, and Test Phase. In addition, will conduct management and infrastructure activities in support of the F-22 Program Office.</p> <p>FY 2017 OCO Plans: N/A</p>					
<p>Title: Combined Test Force (CTF)</p> <p>Description: The F-22 Combined Test Force (CTF), located at Edwards Air Force Base, conducts testing to assess performance and military utility of Increment 3.2B. The CTF uses operationally relevant ground and flight test scenarios to identify Increment 3.2B performance deficiencies. This funds Inc 3.2B unique test costs.</p> <p>FY 2015 Accomplishments: The CTF performed detailed test planning and Increment 3.2B Flight Test execution on production representative hardware.</p> <p>FY 2016 Plans: The CTF will complete developmental flight test in preparation for Low Rate Initial Production (LRIP) decision (Milestone C).</p> <p>FY 2017 Base Plans: The CTF will complete final developmental flight test for Increment 3.2B Flight Test execution.</p> <p>FY 2017 OCO Plans: N/A</p>					
	8.200	27.500	21.100	0.000	21.100
<p>Title: Lab Test & Operations</p> <p>Description: Increment 3.2B Lab Test & Operations plans and conducts system integration and testing of software builds within the suite of F-22 system integration laboratories: the Agile Integration Lab (AIL); the Raptor Integration Lab (Rall); the Air Combat Simulation (ACS) Lab; the Vehicle Management System (VMS) Vehicle Integration Facility (VIF); and the Vehicle System Simulator (VSS).</p>					
	35.500	33.500	7.910	0.000	7.910

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605213F / <i>F-22 Modernization Increment 3.2B</i>	

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p><i>FY 2015 Accomplishments:</i> Increment 3.2B Lab Test & Operations conducted testing for software build-up and integration on production representative hardware in the F-22 system integration laboratories noted in the description above: the AIL, Rail, ACS, VMS, VIF, and VSS. To enhance software maturation, the developmental software labs delivered several planned software versions to support developmental flight test execution.</p> <p><i>FY 2016 Plans:</i> Increment 3.2B Lab Test & Operations will plan and conduct testing for software build-up and integration on production representative hardware in the F-22 system integration laboratories that include: the AIL, the Rail, the ACS lab, the VMS, the VIF, and the VSS. To enhance software maturation, the developmental software labs will deliver several planned software versions to support developmental flight test execution. Increment 3.2B Lab Test & Operations will deliver the fully integrated Operational Flight Program (OFP) required to complete developmental flight test and resolve performance deficiencies in preparation for Air Force Operational Flight Test Evaluation.</p> <p><i>FY 2017 Base Plans:</i> Increment 3.2B Lab Test & Operations will conclude testing on production representative hardware in the F-22 system integration laboratories. Increment 3.2B Lab Test & Operations will deliver the fully integrated Operational Flight Program (OFP) required to complete developmental flight test and resolve performance deficiencies in preparation for Air Force Operational Flight Test Evaluation.</p> <p><i>FY 2017 OCO Plans:</i> N/A</p>					
Accomplishments/Planned Programs Subtotals	163.877	140.640	70.290	0.000	70.290

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• RDT&E: BA07: PE 0207138F: <i>F-22A Squadrons, RDT&E*</i>	146.291	231.599	387.540	0.000	387.540	423.005	418.700	393.633	430.233	Continuing	Continuing
• APAF: BA05: Line Item # F2232B: <i>Increment 3.2B**</i>	28.500	64.325	78.410	0.000	78.410	413.679	13.081	20.373	10.749	0.000	340.617
• APAF: BA05: Line Item # F02200: <i>F-22A***</i>	286.426	119.171	271.593	0.000	271.593	218.441	227.011	368.986	524.575	Continuing	Continuing

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605213F / <i>F-22 Modernization Increment 3.2B</i>
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D. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• APAF: BA056: 000999: <i>Initial Spares</i>	0.000	2.822	4.431	0.000	4.431	7.720	0.000	0.000	0.000	0.000	14.973
• RDT&E: BA07: PE 0207163F: <i>AIM-120D, AMRAAM T&E, RDT&E****</i>	23.800	5.820	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	50.450

Remarks

NOTES:

*F-22A Squadrons, RDT&E/PE 0207138F includes F-22A Squadrons modernization and development. Both PEs 0207138F and 0605213F share lab and Combined OTF Test Force infrastructure support costs across the F-22 enterprise.

**Increment 3.2B, APAF/PE 0207138F, F2232B includes BP11 (Aircraft Modifications) for Increment 3.2B only.

***F-22A Squadrons, APAF/PE 0207138F, F02200 includes BPs 11 (Aircraft Modifications), 13 (Post-Production Support), 16 (Initial Spares), and 19 (Depot Activation) for F-22 Squadrons only.

****AIM-120D, AMRAAM RDT&E/PE 0207163F, funding provides for the AIM-120D development as a part of the F-22 Increment 3.2B effort.

E. Acquisition Strategy

The Raptor Enhancement Development & Integration (REDI) contract is an Indefinite Delivery/Indefinite Quantity Ordering (ID/IQ) contract that maximizes flexibility to start, stop, accelerate and decelerate projects as required. The REDI contract was established to be more responsive to evolving war fighter requirements. The REDI contract allows the issuance of orders for the highest priority war fighter capabilities in operationally meaningful capability increments, requirements analysis, contractor cost estimates and studies, development and demonstration of capability enhancements, and unanticipated future war fighter requirements. Each increment is broken into phases to initiate requirements analysis, the design phase and the development, integration and verification phase of a specific incremental development effort. The REDI II contract is a follow-on ID/IQ contract to the initial REDI contract. REDI II provides maximum flexibility to manage various modernization projects. The REDI II contract allows for the issuance of orders for efforts associated with the planning, analysis, design, development, qualification, test and documentation of F-22 weapon system performance enhancements, life-cycle improvements, Operational Flight Program (OFP) upgrades, and associated efforts essential to accomplishing the F-22 mission.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605213F / F-22 Modernization Increment 3.2B	Project (Number/Name) 654785 / F-22 INCREMENT 3.2B
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Increment 3.2B	Various	Lockheed Martin : Ft. Worth, TX	182.905	120.177	Nov 2014	79.640	Nov 2015	41.280	Nov 2016	0.000		41.280	0.000	424.002	488.035
Subtotal			182.905	120.177		79.640		41.280		0.000		41.280	0.000	424.002	488.035

Remarks
Target Value of Contract includes only active REDI/REDI II delivery orders DO 0070, DO 0071, and DO 0004. Target Value of Contract and Total cost do not match due to prior year costs executed in F-22 Squadrons PE 0207138F and other outside funded PE's as documented in the R-2A.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Combined Test Force	Various	Various : Various	4.390	8.200	Dec 2014	27.500	Dec 2015	21.100	Dec 2016	0.000		21.100	0.000	61.190	-
Laboratory Test Operations	SS/ Various	Lockheed Martin : Fort Worth, TX	11.405	35.500	Jan 2015	33.500	Nov 2015	7.910	Dec 2016	0.000		7.910	0.000	88.315	-
Subtotal			15.795	43.700		61.000		29.010		0.000		29.010	0.000	149.505	-

Remarks
FY12 and prior year costs for Increment 3.2B are shown under PE 0207138F. FY13 and later are shown under PE 0605213F.

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605213F / <i>F-22 Modernization Increment 3.2B</i>	Project (Number/Name) 654785 / <i>F-22 INCREMENT 3.2B</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Increment 3.2B HW Development/Risk Reduction/Lab Equipment**	1	2015	2	2015
Increment 3.2B Code, Integration, and Test	1	2015	1	2018
Increment 3.2B Critical Design Review (CDR)	1	2016	1	2016
Increment 3.2B Milestone C	3	2016	3	2016
Increment 3.2B Initial Operational Test & Evaluation (IOT&E)	3	2017	3	2018
Increment 3.2B Fleet Release	3	2018	3	2018
Increment 3.2B Retrofit	3	2018	4	2020

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605214F I <i>Ground Attack Weapons Fuze Development</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	5.177	3.598	0.937	0.000	0.937	0.000	0.000	0.000	0.000	0.000	9.712
655313: <i>Hard Target Void Sensing Fuze</i>	-	5.177	3.598	0.937	0.000	0.937	0.000	0.000	0.000	0.000	0.000	9.712
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Note

In FY 2015, 655313, Hard Target Void Sensing Fuze, efforts were transferred from PE 0604635F, Ground Attack Weapons Fuze Development, 645312, Hard Target Void Sensing Fuze, in order to properly align the funds in the correct Budget Activity, BA05, which supports Engineering, Manufacturing, and Development (EMD).

A. Mission Description and Budget Item Justification

This program was created to include the whole spectrum of general purpose and specialized fuze development, resulting in commodity fuzes for use with air-to-ground weapons.

The Hard Target Void Sensing Fuze (HTVSF) is an advanced system designed to provide fuzing and void sensing functions for legacy penetrator weapons to destroy hardened targets protected by multiple layers of soil and/or reinforced concrete. The HTVSF will also provide in-flight cockpit programmability, safing and arming, multi-function (time delay and void sensing) and multi-delay arming. Program Element funding currently supports the Engineering, Manufacturing, and Development (EMD) effort for HTVSF.

HTVSF completed Milestone C in May 2015 and Low-Rate Initial Production (LRIP 1) was awarded in Jul 2015. EMD funding is currently needed in FY16-FY17 to complete BLU-109/113 follow-on testing and post-Milestone C development requirements as derived from the Milestone C Decision.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0605214F I Ground Attack Weapons Fuze Development
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	5.332	3.598	0.946	0.000	0.946
Current President's Budget	5.177	3.598	0.937	0.000	0.937
Total Adjustments	-0.155	0.000	-0.009	0.000	-0.009
• 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	-0.155	0.000			
• Other Adjustments	0.000	0.000	-0.009	0.000	-0.009

Change Summary Explanation

No Significant Program Changes

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: HTVSF Test Support	5.177	3.598	0.937	0.000	0.937
Description: BLU-109/BLU-113 follow-on testing; post-Milestone C (MS C) development.					
FY 2015 Accomplishments: Continued Operational Test Support; also BLU-109/BLU-113 follow-on testing and post-MS C development requirements as derived from the MS C decision					
FY 2016 Plans: Continue BLU-109/BLU-113 follow-on testing and post-MS C development requirements as derived from the MS C decision					
FY 2017 Base Plans: Complete BLU-109/BLU-113 follow-on testing and post-MS C development requirements as derived from the MS C decision					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	5.177	3.598	0.937	0.000	0.937

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605214F / <i>Ground Attack Weapons Fuze Development</i>
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D. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE: BA04: PE 0604635F: <i>Ground Attack Weapons Fuze Development</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-
• PAAF: BA01: Line Item # 356120: <i>Fuzes</i>	13.280	17.000	22.243	0.000	22.243	31.537	0.000	0.000	0.000	0.000	0.000

Remarks

- PAAF dollars in War Reserve Materiel (WRM; Fuzes) fund initial procurement of 151/475/1,575/2,274 units for FY15 - FY18.
- Navy PE 050120 to fund 50/225/225 units FY16-FY18.

E. Acquisition Strategy

EMD Awarded to Alliant TechSystems Operations LLC
 Contract completion date: 31 Oct 2015
 Fixed Price Incentive Firm
 Contract Length - 55 months

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605214F / <i>Ground Attack Weapons Fuze Development</i>	Project (Number/Name) 655313 / <i>Hard Target Void Sensing Fuze</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
EMD Contractor	C/CPIF	Orbital ATK : Rocket Ctr, WV	-	0.430	Dec 2015	0.000		0.000		0.000		0.000	Continuing	Continuing	-
Subtotal			-	0.430		0.000		0.000		0.000		0.000	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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	EGLIN AFB : EGLIN AFB, FL	-	0.670	Oct 2014	0.000		0.000		0.000		0.000	0.000	0.670	-
Subtotal			-	0.670		0.000		0.000		0.000		0.000	0.000	0.670	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Target build and sled/flight test	Various	Eglin AFB (96 TW) / Holloman AFB / White Sands Missile Range : Various, US	-	4.077	Jan 2015	3.598	Jan 2016	0.937	Jan 2017	0.000		0.937	0.000	8.612	-
Subtotal			-	4.077		3.598		0.937		0.000		0.937	0.000	8.612	-

Remarks
 Various locations to include: Eglin AFB, Fort Walton Beach FL; Holloman AFB, Alamogordo NM; White Sands Missile Range, Las Cruces NM

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force							Date: February 2016			
Appropriation/Budget Activity 3600 / 5			R-1 Program Element (Number/Name) PE 0605214F / <i>Ground Attack Weapons Fuze Development</i>			Project (Number/Name) 655313 / <i>Hard Target Void Sensing Fuze</i>				
	Prior Years	FY 2015	FY 2016		FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	5.177	3.598		0.937	0.000	0.937	-	-	-

Remarks

HTVSF Completed Milestone C in Apr 2015 and Low-Rate Initial Production (LRIP) was awarded in Jul 2015. \$3.598M in FY16 EMD funding and \$.946M in FY17 funding is needed to complete BLU-109/113 follow-on testing and post Milestone C development requirements as derived from the Milestone C Decision.

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605214F / <i>Ground Attack Weapons Fuze Development</i>	Project (Number/Name) 655313 / <i>Hard Target Void Sensing Fuze</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Engineering, Manufacturing, and Development (EMD) Design FA8681-11-C-0039 25 Mar 2011-31 Mar 2015 Extension of EMD	1	2015	2	2015
GBU-28 Sled Test	2	2015	2	2015
BLU-113 Flight Test DT	2	2015	2	2015
Milestone C	3	2015	3	2015
Follow-on Testing/Development	3	2015	1	2017

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605221F / KC-46
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	4,736.501	763.224	592.364	261.724	0.000	261.724	21.175	4.321	0.000	0.000	0.000	6,379.309
655271: <i>KC-46 RDT&E</i>	4,736.501	763.224	592.364	261.724	0.000	261.724	21.175	4.321	0.000	0.000	0.000	6,379.309
Quantity of RDT&E Articles	4	-	-	-	-	-	-	-	-	-	-	

Program MDAP/MAIS Code: 387

A. Mission Description and Budget Item Justification

Replacement of the legacy tanker fleet will take place in three stages, known as the KC-X (now the KC-46), KC-Y, and KC-Z. The initial Tanker Replacement increment of KC46s will replace roughly a third of the current capability with the purchase of 179 aircraft. The Air Force completed an Analysis of Alternatives (AoA) in Apr 2006 to determine the most appropriate strategy to recapitalize the aging fleet of aerial refueling aircraft. Based on this analysis, the Air Force concluded a strategy of full and open competition to select a commercial derivative replacement tanker aircraft would result in a best value tanker contract. To initiate the first phase of the tanker replacement, the KC-46 program released a final Request for Proposal (RFP) on 24 Feb 2010, and entered source selection on 9 Jul 2010. The KC-46 program held a Milestone B (MS B) Defense Acquisition Board (DAB) on 23 Feb 2011, received approval to enter Engineering and Manufacturing Development (EMD) from the Undersecretary of Defense (Acquisition, Technology and Logistics) (USD(AT&L)) on 24 Feb 2011, and awarded the KC-46 EMD contract to Boeing on 24 Feb 2011 to develop and procure 179 KC-46 aircraft. The program is procuring four RDT&E aircraft for integration and demonstration of capability which will ultimately be operationally fielded. During production, the program plans to procure 175 aircraft throughout 13 lots. KC-46 funding also supports Training Systems, Direct Mission Support, Program Management Administration (PMA) activities, government developmental and operational test support, mission planning capability development, various studies and analyses, and KC-Y/KC-Z planning activities.

The KC-46 will provide the capability to fuel joint and coalition receivers via a boom or drogue system on every mission and will also augment the airlift fleet with cargo, passenger, and aeromedical evacuation capabilities. The KC-46 will operate in day/night and adverse weather conditions to enable deployment, employment, sustainment, and redeployment of U.S. joint, allied, and coalition forces. The KC-46 will have communication, navigation, and surveillance equipment for worldwide operations; the capability to perform missions in chemical and biological environments; the ability to operate in up to medium threat environments with self-defense/protection (both active and passive) capabilities; and the necessary battlespace awareness to mitigate survivability threats.

The Aircrew Training System (ATS) and the Maintenance Training System (MTS) are being developed and procured using KC-46 funding. The ATS entered source selection on 31 May 2012, and a contract was awarded on 1 May 2013 to FlightSafety Services Corporation. The ATS contract will provide Aircrew Training Devices (ATDs), to include Weapon System Trainers (WSTs), Boom Operator Trainers (BOTs), Fuselage Trainers (FuTs), and Part-Task Trainers (PTTs) at each Main Operating Base (MOB) and the Formal Training Unit (FTU). The ATS contract will also support Distributed Mission Operations (DMO), provide aircrew instruction, develop courseware, provide logistics support, acquire a technical data package to support future competition efforts, and manage training device concurrency with the aircraft. The MTS entered source selection on 8 Jun 2015, with an anticipated contract award date of the third quarter of FY2016, based upon ongoing source selection activities. The MTS acquisition focuses on designing, developing, testing, producing, and fielding an optimized training system for KC-46 maintainers by integrating various forms of training media and Maintenance Training Devices (MTDs) into a "blended" solution. This blended solution includes the appropriate mix of hardware and

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605221F / KC-46
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software, "high-fidelity" Augmented Hardware Training Devices (AHTDs), PTTs, Interactive Multimedia Instruction (IMI), and emerging technologies to meet validated Air Mobility Command (AMC) maintenance training requirements.

This program is in Budget Activity 05, System Development and Demonstration (SDD), because it received MS B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

The FY2017 funding request was reduced by \$52.609 million to account for a revised risk assessment and deflation.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	786.437	602.364	314.333	0.000	314.333
Current President's Budget	763.224	592.364	261.724	0.000	261.724
Total Adjustments	-23.213	-10.000	-52.609	0.000	-52.609
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-10.000			
• 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	-23.213	0.000			
• Other Adjustments	0.000	0.000	-52.609	0.000	-52.609

Change Summary Explanation

- The FY2015 funding was reduced by \$23.213 million for Small Business Innovative Research.
- The FY2016 funding was reduced by \$10 million due to a congressionally directed reduction for "program efficiencies."
- The FY2017 funding request was reduced by \$52.609 million to account for a revised risk assessment and deflation.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Title: KC-46 Aircraft Product Development	614.390	247.504	72.071
Description: To begin re-capitalizing the aging tanker fleet, EMD activities will be conducted to include the following types of activities: develop a commercial 767-2C aircraft upon which the KC-46 is based; develop the KC-46 military capability and integrate it into the aircraft; build four EMD aircraft; procure live fire assets; procure required Government Furnished Equipment (GFE); procure simulator and maintenance data; develop technical manuals and Type 1 training; and conduct development and operational testing.			
FY 2015 Accomplishments:			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0605221F / KC-46		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Successfully accomplished 767-2C First Flight and KC-46 First Flight. Continued aircraft manufacturing and certification/qualification ground and flight testing.</p> <p>FY 2016 Plans: Continue aircraft manufacturing and certification/qualification ground and flight testing.</p> <p>FY 2017 Plans: Complete certification/qualification ground and flight testing, support start of Initial Operational Test and Evaluation (IOT&E), and complete EMD aircraft.</p>				
<p>Title: KC-46 Trainer Product Development - Aircrew Training System (ATS)</p> <p>Description: To begin re-capitalizing the aging tanker fleet, trainer development activities will be conducted to include the following types of activities: development and procurement of ATDs, courseware, and associated support equipment.</p> <p>FY 2015 Accomplishments: Completed development of the visual database for ATS Increment 1. Conducted subsystem Critical Design Reviews (CDRs) and continued development activities associated with data-mature, low-risk subsystems for the ATDs.</p> <p>FY 2016 Plans: Complete subsystem and final system level CDRs for Increment 1. Complete hardware/software integration for all ATDs. Complete Increment 1 Computer-Based Training (CBT)/Instructor-Based Training (IBT) courseware development. Begin delivery of courseware and first article ATDs. Commence Government Acceptance Testing.</p> <p>FY 2017 Plans: Complete in-plant and on-site testing of ATDs. Conduct simulator validation of ATDs at Altus AFB and McConnell AFB. Complete Small Group Try-Outs (SGTOs) and System Level Formative Evaluation (SLFE). Achieve Ready for Training (RFT) at Altus and McConnell Air Force Bases (AFBs).</p>		26.671	8.606	3.405
<p>Title: KC-46 Trainer Product Development - Maintenance Training System (MTS)</p> <p>Description: To begin re-capitalizing the aging tanker fleet, trainer development activities will be conducted to include the following types of activities: development and procurement of MTDs, courseware, and associated support equipment.</p> <p>FY 2015 Accomplishments:</p>		27.000	180.888	4.087

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0605221F / KC-46		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Completed market research activities and concluded the requirements definition process. Obtained Acquisition Strategy Panel (ASP) approval and Business Clearance to move into the RFP release process. Initiated source selection activities associated with the MTS.</p> <p>FY 2016 Plans: Complete source selection and award MTS EMD contract. Commence activities associated with MTS development.</p> <p>FY 2017 Plans: Continue activities associated with MTS development. Conduct Preliminary Design Review (PDR), CDR, and in-plant test activities. Initiate on-site installation and testing of EMD assets at the first MOB.</p>				
<p>Title: KC-46 Support</p> <p>Description: Development, integration, and demonstration of the KC-46 mission planning capability. In addition, studies and analysis to support planning activities for future efficiency initiatives, business case analyses, KC-Y and KC-Z planning, and miscellaneous program office support and planning. Also includes requirements such as travel, office supplies, training courses, and service contracts.</p> <p>FY 2015 Accomplishments: Completed Phase II development of the Mission Planning Environment (MPE). Completed Phase II Formal Qualification Test (FQT). Began Development Testing (DT) on Phase II software. Started MPE Phase III development.</p> <p>FY 2016 Plans: Complete FQT on the Phase III MPE for use in KC-46 IOT&E. Continue program support.</p> <p>FY 2017 Plans: Complete Phase III MPE support to IOT&E. Continue program support.</p>		33.712	23.636	25.249
<p>Title: KC-46 Test & Evaluation</p> <p>Description: To begin re-capitalizing the aging tanker fleet, Test & Evaluation (T&E) activities will be conducted to include the following types of activities: Development Test & Evaluation, Operational Test & Evaluation, Tanker Qualification, Receiver Certifications, Live Fire Test & Evaluation, Federal Aviation Administration (FAA) support, and other test planning and organizational support.</p> <p>FY 2015 Accomplishments:</p>		61.451	131.730	156.912

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605221F / KC-46
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Conducted 767-2C First Flight and KC-46 First Flight. Started Ground and Flight Integrated Test. Continued Live Fire Testing and other T&E planning activities. Initiated Operational Assessment-2 (OA-2) supporting MS C.			
FY 2016 Plans: Continue Ground and Flight Integrated Test and Live Fire Testing. Continue T&E planning activities, including preparing for IOT&E. The KC-46 program plans to utilize a combination of EMD and Low Rate Initial Production (LRIP) aircraft for DT and IOT&E. Start aerial refueling tanker-receiver certification.			
FY 2017 Plans: Complete Ground and Flight Integrated Test and Live Fire Testing. Complete T&E planning activities and preparations for IOT&E. Begin IOT&E. Continue aerial refueling tanker-receiver certification.			
Accomplishments/Planned Programs Subtotals	763.224	592.364	261.724

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u>	
										<u>Complete</u>	<u>Total Cost</u>
• APAF: BA02: Line Item #KC046A: <i>KC-46A Tanker</i>	1,573.185	2,350.601	2,884.591	0.000	2,884.591	3,043.448	3,134.092	3,133.118	3,190.866	18,505.297	37,824.698
• APAF:BA06:Line Item #000999 Init...: <i>KC-46A Tanker</i>	0.000	52.965	172.183	0.000	172.183	107.356	82.112	99.997	101.841	440.904	1,057.358

Remarks

E. Acquisition Strategy
The KC-46 program acquisition strategy is to procure an existing commercial, FAA certified aircraft modified to meet USAF requirements. The KC-46 program released a final RFP on 24 Feb 2010, and entered source selection on 9 Jul 2010. The KC-46 program held a MS B DAB on 23 Feb 2011, received approval to enter EMD from the USD(AT&L) on 24 Feb 2011, and awarded the KC-46 contract to Boeing on 24 Feb 2011 to develop and procure 179 KC-46 aircraft. The KC-46 contract procurement was conducted via a full and open competition per Federal Acquisition Regulation (FAR) Part 15, and resulted in a FY2011 EMD Fixed Price Incentive Firm (FPIF) contract. The EMD phase will develop, build, and test four KC-46 aircraft, and will qualify the KC-46 as a tanker and certify pairings with receiver aircraft.

The MS B Acquisition Strategy planned for two LRIP lots followed by 11 Full Rate Production (FRP) lots for a total aircraft procurement of 175 Production aircraft. An update to the Acquisition Strategy is in process to support Milestone C (MS C) plans for three LRIP lots and ten FRP lots with the total aircraft buy remaining at 175 Production aircraft.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force</i> / BA 5: <i>System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605221F / KC-46
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Production will begin with two Firm Fixed Price (FFP) and one Not to Exceed (NTE) LRIP options (LRIP-1 Qty 7, LRIP-2 Qty 12, & LRIP-3 Qty 15) followed by 10 FRP options [via NTE values + Economic Price Adjustment (EPA)]. The LRIP options will be exercised following a successful MS C. The FRP options will be exercised following successful completion of IOT&E.

The ATS acquisition strategy is to provide ATDs, and associated support structure, to each MOB and the FTU. The ATS entered source selection on 31 May 2012, and a contract was awarded on 1 May 2013 to FlightSafety Services Corporation. The ATS contract procurement was conducted via a full and open competition per FAR Part 15, and resulted in an FY2013 EMD FPIF contract. The ATS EMD phase will develop and procure ATDs; and will be supported with courseware, Training System Support Center, the technical data package, and support equipment to ensure system availability and concurrency with the aircraft. The ATS initial production options were exercised in Aug 2015. The MTS acquisition strategy is to acquire MTDs, and associated support structure, for the two AMC active duty Regional Maintenance Training Facilities. The MTS entered source selection on 8 Jun 2015, with an anticipated contract award date of the third quarter of FY2016 based upon ongoing source selection activities. The MTS procurement will be conducted via a full and open competition, per FAR Part 15, and will result in an EMD FFP contract. The MTS EMD phase will develop and procure MTDs; and will be supported with courseware, Training System Support Center, the technical data package, and support equipment to ensure system availability and concurrency with the aircraft.

Based on market research and a cost effectiveness analysis, the engines were procured as Contractor Furnished Equipment (CFE) for EMD. The government (AFLCMC Propulsion Division [AFLCMC/LPA]) completed an updated market research and cost effectiveness analysis dated 7 Aug 2012. Based on the updated market analysis and recommendation, the government intends to continue to procure engines from Boeing, but reserves the right to reconsider the procurement of engines if significant changes occur to the aircraft contract and/or if differential pricing is offered.

The KC-46 program is responsible for the development, testing, and production of a drogue-equipped, wing-mounted refueling system to meet Capability Development Document (CDD) thresholds and objectives for simultaneous refueling of two probe-equipped receivers. The system can be installed or removed from the KC-46 as mission needs dictate.

The long-term support concept for the KC-46 is organic two-level maintenance (2LM): organization level (O-level) and depot level (D-level). For the purposes of this program, all maintenance other than O-level shall be referred to as D-level. The product support strategy will initially employ Interim Contractor Support (ICS) before transitioning to a 100% organically-managed maintenance and supply support capability. Performance Based Logistics (PBL) solutions will be evaluated during EMD as viable approaches to facilitate the transition.

This acquisition strategy requires sufficient aircraft to be designed, tested, and delivered to meet a Required Assets Available (RAA) date of 78 months after contract award. The acquisition strategy defines RAA as 18 aircraft meeting final product baseline with all required training and support in place. Initial Operational Capability (IOC) will be attained when the AMC/CC determines the unit is operationally war ready.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605221F / KC-46	Project (Number/Name) 655271 / KC-46 RDT&E
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
KC-46A aircraft non-recurring development, integration, and testing; 4 RDT&E tanker aircraft; and support	C/FPIF	The Boeing Company : Seattle, WA	4,524.086	614.391	Mar 2015	247.505	Mar 2016	72.071	Mar 2017	0.000		72.071	12.224	5,470.277	5,473.305
KC-46A Aircrew Training System	C/FPIF	FlightSafety Services Corp. : Centennial, CO	59.594	26.671	Sep 2015	8.606	Feb 2016	3.405	Dec 2016	0.000		3.405	8.440	106.716	106.716
KC-46A Maintenance Training System	C/FFP	TBD : TBD	0.000	27.000	Jun 2016	180.888	Jul 2016	4.087	Dec 2016	0.000		4.087	0.000	211.975	-
Subtotal			4,583.680	668.062		436.999		79.563		0.000		79.563	20.664	5,788.968	-

Remarks
 The KC-46 EMD contract was awarded 24 Feb 2011. The contract ceiling price of \$4.9B is the government's maximum financial liability on the prime contract. The "Total Cost" value represents the MS B Service Cost Position (SCP), which accounts for the ceiling price of the contract plus the financial and schedule risk of potential design changes for the KC-46 aircraft.

 The MTS contract award is an estimated date.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
KC-46A studies and analysis associated with the development, integration, and demonstration of KC-46 capability & future planning	Various	Various : Various	32.097	12.710	Oct 2014	5.561	Oct 2015	15.364	Oct 2016	0.000		15.364	1.290	67.022	-
Subtotal			32.097	12.710		5.561		15.364		0.000		15.364	1.290	67.022	-

Remarks
 These contracts are on an as needed basis, with various contract types and performing activities.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605221F / KC-46	Project (Number/Name) 655271 / KC-46 RDT&E
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
KC-46A testing and planning support of development & operational test, FAA & military certification, and aircraft qualification activities	Various	Various : Various	59.759	61.451	Oct 2014	131.730	Oct 2015	156.912	Oct 2016	0.000		156.912	0.000	409.852	-
Subtotal			59.759	61.451		131.730		156.912		0.000		156.912	0.000	409.852	-

Remarks
Integrated testing and planning activities are performed by government organizations, with some contractor technical subject matter experts and teaming with the prime contractor.

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
KC-46A Program Management Administration - Program A&AS Support	C/FFP	US Falcon : Dayton, OH	34.809	12.890	Jan 2015	6.602	Jan 2016	6.090	Jan 2017	0.000		6.090	2.066	62.457	-
KC-46A Program Management Administration - Trainer A&AS Support	C/CPFF	HX5 : Fort Walton Beach, FL	1.800	3.914	Dec 2014	4.062	Jan 2016	2.095	Jan 2017	0.000		2.095	0.753	12.624	-
KC-46A Program Management Administration - Other	Various	KC-46 Program Office : Dayton, W-P AFB, OH	24.356	4.197	Oct 2014	7.410	Oct 2015	1.700	Oct 2016	0.000		1.700	0.723	38.386	-
Subtotal			60.965	21.001		18.074		9.885		0.000		9.885	3.542	113.467	-

Remarks
Two Advisory and Assistance (A&AS) contracts over \$1M. Other PMA funding includes, but is not limited to, travel, supplies, and training.

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605221F / KC-46	Project (Number/Name) 655271 / KC-46 RDT&E
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
EMD: KC-46 Aircraft	1	2015	3	2018
Developmental Test & Evaluation	1	2015	2	2017
767-2C First Flight	1	2015	1	2015
Tanker First Flight	4	2015	4	2015
Operational Assessment-2 (OA-2)	1	2015	2	2016
Receiver Certification	1	2016	3	2018
Initial Operational Test & Evaluation	3	2017	1	2018
Milestone C	3	2016	3	2016
Low Rate Initial Production - Lot 1	3	2016	3	2017
Low Rate Initial Production - Lot 2	3	2016	1	2018
Low Rate Initial Production - Lot 3	2	2017	4	2018
Full Rate Production - Lot 4	2	2018	3	2019
Support Equipment Analysis	1	2015	3	2016
Provisioning	1	2015	2	2018
Depot Maintenance Inter-servicing (DMI), Source of Repair Assignment Process (SORAP), Activation Planning & FAA Certifications	1	2015	2	2020
Aircrew Training System Development & Updates	1	2015	4	2019
Maintenance Training System Development & Updates	3	2016	2	2019

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605223F / <i>Advanced Pilot Training</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	0.000	8.201	10.395	12.377	0.000	12.377	105.699	263.274	272.973	277.816	670.087	1,620.822
655340: <i>Advanced Trainer Replacement T-X</i>	0.000	8.201	10.395	12.377	0.000	12.377	105.689	252.140	243.166	247.479	490.953	1,370.400
655361: <i>Stores-Aircraft Interface*</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.010	11.134	29.807	30.337	179.134	250.422

Program MDAP/MAIS Code: 436

*This project's R-2a exhibit has been suppressed due to funding not beginning until after FY 2017

Note

Prior Years Funding \$5.100M was executed in PE 0604233F.

A. Mission Description and Budget Item Justification

Advanced Pilot Training (APT) program will deliver the capabilities needed to successfully train USAF pilots beyond 2024. The APT program will replace AETC's aging T-38C fleet with new aircraft, Ground Based Training Systems (GBTS) (simulators, training devices, computer based training systems, academics, etc.), and support infrastructure currently used in the fighter/bomber advanced Specialized Undergraduate Pilot Training (SUPT) track as well as in the Introduction to Fighter Fundamentals (IFF) program. The APT program will close training gaps in the current advanced pilot training system and will provide student pilots with the foundational flying skills and core competencies required to transition into current and future fighter/bomber aircraft.

The Stores-Aircraft Interface project provides funding for development planning efforts in support of future capabilities.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605223F / <i>Advanced Pilot Training</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	8.201	11.395	12.152	0.000	12.152
Current President's Budget	8.201	10.395	12.377	0.000	12.377
Total Adjustments	0.000	-1.000	0.225	0.000	0.225
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	-1.000			
• 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	0.225	0.000	0.225

Change Summary Explanation

The FY2016 funding was reduced by \$1 million due to a Congressionally directed reduction for T-X to restrain growth in S&A and A&AS.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0605223F / <i>Advanced Pilot Training</i>				Project (Number/Name) 655340 / <i>Advanced Trainer Replacement T-X</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
655340: <i>Advanced Trainer Replacement T-X</i>	0.000	8.201	10.395	12.377	0.000	12.377	105.689	252.140	243.166	247.479	490.953	1,370.400
Quantity of RDT&E Articles	-	-	-	-	-	-	3	2	-	-		

Note

Prior Years Funding \$5.100M was executed in PE 0604233F.

A. Mission Description and Budget Item Justification

The APT program will replace the AETC aging T-38C fleet with new aircraft, Ground Based Training Systems (GBTS) (simulators, training devices, computer based training systems, academics, etc.), and support infrastructure currently used in the fighter/bomber advanced Specialized Undergraduate Pilot Training (SUPT) track as well as in the Introduction to Fighter Fundamentals (IFF) program. The APT program office is developing an acquisition strategy and related documentation to meet the requirements of the Capabilities Development Document (CDD) in order to comply with OSD direction to continue toward a Milestone B entry and return for a Request for Proposal Defense Acquisition Board in fiscal year FY 2016.

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

	FY 2015	FY 2016	FY 2017
Title: Advanced Pilot Training (APT) Program	8.201	10.395	12.377
Description: Studies, analysis, acquisition documentation and market research activities to reduce risk in support of acquisition strategy, engineering and manufacturing development. Included APT PMA costs such as travel, Other Govt Costs (OGC) and Advisory and Assistance Services (A&AS) in support of a Milestone B approval.			
FY 2015 Accomplishments: Studies, analysis, acquisition documentation and market research activities completed to reduce risk in support of acquisition strategy, engineering and manufacturing development. Included APT PMA costs such as travel, Other Govt Costs (OGC) and Advisory and Assistance Services (A&AS) in support of Milestone B approval.			
FY 2016 Plans: Studies, analysis, acquisition documentation and RFP development activities in support of RFP Release Decision DAB and Source Selection activities. Includes APT PMA costs such as travel, Other Govt Costs (OGC) and Advisory and Assistance Services (A&AS) in support of Milestone B approval.			
FY 2017 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605223F / <i>Advanced Pilot Training</i>	Project (Number/Name) 655340 / <i>Advanced Trainer Replacement T-X</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Studies, analysis, acquisition documentation, source selection activities and contract award. Plans include APT PMA costs such as travel, Other Govt Costs (OGC) and Advisory and Assistance Services (A&AS) in support of Milestone B approval as well as contract kickoff activities.			
Accomplishments/Planned Programs Subtotals	8.201	10.395	12.377

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• APAF:BA03:Line Item # APT000: <i>Advanced Trainer Replacement T-X</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	63.500	4,792.000	4,855.500

Remarks

D. Acquisition Strategy

A full and open competitive source selection is anticipated with USD(AT&L) direction to return for an RFP Release Decision DAB in FY2016. The acquisition strategy is in development.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605223F / <i>Advanced Pilot Training</i>	Project (Number/Name) 655340 / <i>Advanced Trainer Replacement T-X</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Advanced Pilot Training Future Contracts	Various	TBD : TBD	0.000	0.000		0.000		12.236	Sep 2017	0.000		12.236	1,339.427	1,351.663	-
Subtotal			0.000	0.000		0.000		12.236		0.000		12.236	1,339.427	1,351.663	-

Remarks
As the acquisition strategy is developed and cost estimates mature, the amount in cost to complete will be allocated to the appropriate categories.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Advanced Pilot Training Studies and Analysis	Various	Various : Various	0.000	4.020	May 2016	0.000		0.000		0.000		0.000	0.000	4.020	-
Subtotal			0.000	4.020		0.000		0.000		0.000		0.000	0.000	4.020	-

Remarks
Plan to fund both FY15 and FY16 Studies and Analysis requirements with FY15 budget.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Advanced Pilot Training Test Support	MIPR	Edwards AFB : Edwards AFB, CA	0.000	0.029	Jul 2015	0.413	Dec 2016	0.000		0.000		0.000	0.000	0.442	-
Subtotal			0.000	0.029		0.413		0.000		0.000		0.000	0.000	0.442	-

Remarks
Plan to fund both FY16 and FY17 Test Support requirements with FY16 budget.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force											Date: February 2016				
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0605223F / <i>Advanced Pilot Training</i>					Project (Number/Name) 655340 / <i>Advanced Trainer Replacement T-X</i>				

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Advanced Pilot Training PMA Government Costs	Various	AFLCMC : Dayton, OH	0.000	1.406	Jul 2016	1.874	May 2017	0.141	Sep 2017	0.000		0.141	0.000	3.421	-
Advanced Pilot Training A&AS	Various	AFLCMC : Dayton, OH	0.000	2.746	Apr 2015	8.108	Mar 2017	0.000		0.000		0.000	0.000	10.854	-
Subtotal			0.000	4.152		9.982		0.141		0.000		0.141	0.000	14.275	-

Remarks
Plan to fund both FY16 and FY17 PMA (except Travel) and A&AS requirements with FY16 budget.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	8.201	10.395	12.377	0.000	12.377	1,339.427	1,370.400	-

Remarks
Prior years amounts under Program 0604233F, Specialized Undergraduate Flight Training.
Advanced Pilot Training Studies and Analysis: \$0.971M
Advanced Pilot Training PMA Government Costs: \$1.418M
Advanced Pilot Training A&AS: \$2.711M

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605223F / <i>Advanced Pilot Training</i>	Project (Number/Name) 655340 / <i>Advanced Trainer Replacement T-X</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
In-Process Review (IPR) Defense Acquisition Board (DAB)	■																											
Capability Development Document (CDD)	■	■																										
CDD Validation				■																								
Acquisition Strategy Development	■	■	■																									
Acquisition Strategy Approval				■																								
Product Support Analysis	■	■	■																									
Cost Estimate Preparation Certification	■	■	■	■	■	■	■	■																				
Pre Milestone B (RFP Release) Decision Point								■																				
RFP Release								■																				
Source Selection									■	■	■	■																
Milestone B												■																
Engineering and Manufacturing Development Phase													■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Government Preliminary Design Review (PDR)													■															
Post PDR Review														■	■													
Government Critical Design Review (CDR)																	■	■	■	■								
Development, Test and Evaluation																					■	■	■	■	■	■	■	■
Advanced Procurement (AP) Approval																												■
AP Delivery Order																												■

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605223F / <i>Advanced Pilot Training</i>	Project (Number/Name) 655340 / <i>Advanced Trainer Replacement T-X</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
In-Process Review (IPR) Defense Acquisition Board (DAB)	1	2015	1	2015
Capability Development Document (CDD)	1	2015	2	2015
CDD Validation	4	2015	4	2015
Acquisition Strategy Development	1	2015	4	2015
Acquisition Strategy Approval	4	2015	4	2015
Product Support Analysis	1	2015	4	2015
Cost Estimate Preparation Certification	1	2015	4	2016
Pre Milestone B (RFP Release) Decision Point	4	2016	4	2016
RFP Release	4	2016	4	2016
Source Selection	1	2017	4	2017
Milestone B	4	2017	4	2017
Engineering and Manufacturing Development Phase	1	2018	3	2021
Government Preliminary Design Review (PDR)	2	2018	2	2018
Post PDR Review	3	2018	3	2018
Government Critical Design Review (CDR)	2	2019	2	2019
Development, Test and Evaluation	1	2020	4	2021
Advanced Procurement (AP) Approval	4	2021	4	2021
AP Delivery Order	4	2021	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605229F / <i>CSAR HH-60 Recapitalization</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	372.346	100.000	156.085	319.331	0.000	319.331	453.464	460.912	183.325	21.207	3.400	2,070.070
654364: <i>Combat Rescue Helicopter</i>	372.346	100.000	156.085	319.331	0.000	319.331	453.464	460.912	183.325	21.207	3.400	2,070.070
Quantity of RDT&E Articles	4	-	-	5	-	5	-	-	-	-		

Program MDAP/MAIS Code: 479

A. Mission Description and Budget Item Justification

The Combat Rescue Helicopter (CRH) program, formerly referred to as HH-60 Recapitalization, will replace the aging HH-60G. The HH-60G currently supports the Air Force's core function of Personnel Recovery. The primary mission of the HH-60G is to conduct day / night / marginal weather Combat Search and Rescue (CSAR) in order to recover downed aircrew or other isolated personnel in hostile or non-permissive environments.

The CRH will be capable of employment day or night, in adverse weather, and in a variety of threat spectrums from terrorist attacks to chemical, biological, radiological, and nuclear threats. Onboard defensive capabilities will permit the CRH system to operate in an increased threat environment. An in-flight air refueling capability will provide an airborne alert capability and extend its combat mission range. The CRH system may conduct combat search and rescue airborne mission commander duties. The aircraft will be self-supporting to the maximum extent practical. The CRH system may also conduct other collateral missions inherent in their capabilities to conduct Personnel Recovery, such as non-conventional assisted recovery, non-conventional evacuation operations, defense support to civil authorities, civil search and rescue, international aid, emergency aeromedical evacuation, disaster/humanitarian relief, counterdrug activities, support for National Aeronautics and Space Administration flight operations, and insertion/extraction of combat forces.

The CRH development effort will procure a total of nine developmental test aircraft and other necessary ground and flight assets. The exercised portion of the CRH contract also includes development of the complete CRH training system to include CRH Weapon System Trainer (WST), Operational Flight Trainer (OFT), Airframe Systems Trainer (AST), other maintenance training devices, as well as Type 1 training and courseware required to perform aircrew and maintenance training. Other efforts include, but are not limited to, development of a systems integration laboratory and an avionics integration support facility, as well as procurement of data rights and licenses, spares, initiating System Demonstration Test Article (SDTA) development, and product support for the Engineering, Manufacturing, and Development effort.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

The FY 2017 funding request was reduced by \$100 million to account for availability of prior execution balances.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605229F / CSAR HH-60 Recapitalization
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	100.000	156.085	422.514	0.000	422.514
Current President's Budget	100.000	156.085	319.331	0.000	319.331
Total Adjustments	0.000	0.000	-103.183	0.000	-103.183
• 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	-103.183	0.000	-103.183

Change Summary Explanation

The FY 2017 funding request was reduced by \$100 million to account for availability of prior execution balances. The remaining \$3.183M was reduced due to decreased inflation rates.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
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Title: Combat Rescue Helicopter (CRH)	99.620	148.685	309.231
Description: Develop a new helicopter, associated training system and support elements that leverage fielded, non-developmental technologies to recapitalize the HH-60G fleet.			
FY 2015 Accomplishments: Conducted development work on Combat Rescue Helicopter aircraft, training systems and associated product support. Conducted required testing. Management services including studies and analyses, miscellaneous program office support, travel, office supplies, training courses and service contracts. Conducted Aircraft Systems Requirement Review/System Functional Review and Training Systems Requirements Review/System Functional Review.			
FY 2016 Plans: Conduct development work on Combat Rescue Helicopter aircraft, training systems and associated product support. Conduct required testing. Management services including studies and analyses, miscellaneous program office support, travel, office supplies, training courses and service contracts. Conduct Aircraft Preliminary Design Review.			
FY 2017 Plans: Conduct development work on Combat Rescue Helicopter aircraft, training systems and associated product support. Activate the CLIN to develop the SDTA Aircraft and conduct required testing. Management services including studies and analyses,			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605229F / <i>CSAR HH-60 Recapitalization</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
miscellaneous program office support, travel, office supplies, training courses and service contracts. Conduct Training System Preliminary Design Review and both Air Vehicle and Training System Critical Design Reviews.			
Title: Combat Rescue Helicopter Test and Evaluation	0.380	7.400	10.100
Description: Conduct test and evaluation on the Combat Rescue Helicopter and associated training systems to support Developmental Test and Evaluation planning, Operational Test and Evaluation planning, Live Fire Test and Evaluation, and other test planning and organizational support.			
FY 2015 Accomplishments: Conducted test and evaluation on the Combat Rescue Helicopter and associated training systems to support Developmental Test and Evaluation planning, Operational Test and Evaluation planning, Live Fire Test and Evaluation, and other test planning and organizational support.			
FY 2016 Plans: Test and evaluation of the Combat Rescue Helicopter and associated training systems will be conducted including the following types of test activities: Developmental Test and Evaluation planning, Operational Test and Evaluation planning, Live Fire Test and Evaluation, and other test planning and organizational support. Additional manpower at government test due to mission increase.			
FY 2017 Plans: Test and evaluation of the Combat Rescue Helicopter and associated training systems will be conducted including the following types of test activities: Developmental Test and Evaluation planning, Operational Test and Evaluation planning, Live Fire Test and Evaluation, and other test planning and organizational support.			
Accomplishments/Planned Programs Subtotals	100.000	156.085	319.331

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2017</u>	<u>FY 2017</u>						<u>Cost To</u>
			<u>Base</u>	<u>OCO</u>	<u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Complete</u>	<u>Total Cost</u>
• APAF:BA 04:Line Item #H060WH: <i>Combat Rescue Helicopter</i>	0.000	0.000	0.000	0.000	0.000	0.000	88.885	623.047	913.337	6,071.308	7,696.565

Remarks

E. Acquisition Strategy
Procure a new helicopter and associated training systems, and support elements that leverage fielded non-developmental technologies to recapitalize the HH-60G fleet.

The CRH development effort will procure a total of nine developmental test aircraft and other necessary ground and flight assets, to be utilized for both DT and IOT&E.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force Date: February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605229F / CSAR HH-60 Recapitalization
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The exercised portion of the CRH contract also includes development of the complete CRH training system to include CRH Weapon System Trainer (WST), Operational Flight Trainer (OFT), Airframe Systems Trainer (AST), other maintenance training devices, as well as Type 1 training and courseware required to perform aircrew and maintenance training. There is a single prime contractor delivering the aircraft, associated training systems and support elements under a single contract.

Other efforts include, but are not limited to, development of a systems integration laboratory and an avionics integration support facility, as well as procurement of data rights and licenses, spares, initiating System Demonstration Test Article (SDTA) development, and product support for the Engineering, Manufacturing, and Development effort.

The contract type for this effort is Fixed Price Incentive Firm through Low Rate Initial Production.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605229F / CSAR HH-60 Recapitalization	Project (Number/Name) 654364 / Combat Rescue Helicopter
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CRH aircraft development, integration, test articles, trainers, support and contractor test	C/FPIF	Sikorsky Aircraft Corporation : Stratford, CT	357.984	94.097	Mar 2015	137.877	Jan 2016	299.399	Dec 2016	0.000		299.399	1,026.902	1,916.259	1,916.259
Subtotal			357.984	94.097		137.877		299.399		0.000		299.399	1,026.902	1,916.259	1,916.259

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CRH product support related to the aircraft development, integration, test articles, trainers, and contractor test.	Various	Various : TBD	2.251	0.455	Jun 2015	4.350	Jun 2016	3.129	Jun 2017	0.000		3.129	19.542	29.727	29.727
Subtotal			2.251	0.455		4.350		3.129		0.000		3.129	19.542	29.727	29.727

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CRH planning and testing to support developmental and operational test, live fire test and other weapon system testing and support	PO	413th Test Squadron : Eglin AFB, FL	1.232	0.380	Jul 2015	7.400	Mar 2016	10.100	Dec 2016	0.000		10.100	57.308	76.420	76.420
Subtotal			1.232	0.380		7.400		10.100		0.000		10.100	57.308	76.420	76.420

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605229F / CSAR HH-60 Recapitalization	Project (Number/Name) 654364 / Combat Rescue Helicopter
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
CRH A&AS Support	C/CPFF	EPASS : Dayton, OH	9.935	3.774	Jan 2015	4.343	Apr 2016	5.310	Apr 2017	0.000		5.310	15.007	38.369	38.369
CRH Other PMA	Various	Various : Various	0.944	1.294	Jan 2015	2.115	Dec 2015	1.393	Dec 2016	0.000		1.393	3.549	9.295	9.295
Subtotal			10.879	5.068		6.458		6.703		0.000		6.703	18.556	47.664	47.664
Project Cost Totals			372.346	100.000		156.085		319.331		0.000		319.331	1,122.308	2,070.070	2,070.070

Remarks
 FINANCIAL PERFORMANCE: CRH is evaluated against traditional Research and Development (R&D) program expenditure benchmarks. Unlike many traditional R&D programs, however, the CRH EMD contract is a 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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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605229F / CSAR HH-60 Recapitalization	Project (Number/Name) 654364 / Combat Rescue Helicopter

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CRH EMD Development	1	2015	3	2020
Aircraft System Requirements Review	3	2015	3	2015
Aircraft Preliminary Design Review	3	2016	3	2016
Aircraft Critical Design Review	4	2017	4	2017
CRH Training System EMD Development	1	2015	4	2020
Training Systems System Requirements Review	3	2015	3	2015
Training Systems Preliminary Design Review	1	2017	1	2017
Training Systems Critical Design Review	4	2017	4	2017
CRH Test and Evaluation	1	2015	4	2020
Developmental Test and Evaluation	4	2018	2	2020
Milestone C	1	2020	1	2020
Required Assets Available for Initial Operational Capability	4	2020	4	2020

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605278F / <i>HC/MC-130 Recap RDT&E</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	87.388	4.497	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	71.299	163.184
655249: <i>HC-130Recap</i>	87.388	4.497	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	71.299	163.184
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Program MDAP/MAIS Code: 257

A. Mission Description and Budget Item Justification

HC/MC-130 Recapitalization will replace and augment the aging USAF fleets of combat rescue HC-130P/N and special operations MC-130E/P aircraft which are experiencing airworthiness, maintainability and operational limitations. The HC/MC-130 Recap Capabilities Production Document (CPD) defines a common baseline configuration for the weapon system and a FY 2012 Initial Operational Capability. The Joint Requirements Oversight Council (JROC) validated the CPD in Aug 2009.

This program will develop and integrate changes from discrepancies found during Engineering Manufacturing Development (EMD) flight test, operational use, and common C-130J block upgrades during HC/MC production. The C-130J program (PE 0401132F) developed Blocks 7.0 and 8.1 separately but all other platforms (including HC/MC) will have combined Block 7.0/8.1 trial kit install and modification programs and will be known simply as Block 8.1.

The internationally developed Block 8.1 program addresses mandated Communication, Navigation, and Surveillance/Air Traffic Management (CNS/ATM) requirements. It also incorporates capabilities such as Link 16, a new Flight Management System (FMS), Civil GPS Navigation, Identification Friend or FOE (IFF) transponder Mode-5, Civil Data-link, and Automatic Dependent Surveillance-Broadcast (ADS-B).

The HC/MC Block 8.1 RDT&E effort integrates Block 8.1 into a HC-130J and a MC-130J via a trial kit install effort followed by a Development and Operational test effort.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force				Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0605278F / HC/MC-130 Recap RDT&E				
B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	
Previous President's Budget	4.497	0.000	0.000	0.000	0.000	
Current President's Budget	4.497	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)				FY 2015	FY 2016	FY 2017
Title: Test and Evaluation				0.600	0.000	-
Description: Test and evaluation planning, conduct, and support for developmental and operational testing.						
FY 2015 Accomplishments: Funded developmental and operational testing.						
FY 2016 Plans: Funding moved to BA 7						
Title: Continuous Improvement Program				1.297	0.000	-
Description: Software-only updated to address discrepancies identified during development or operational test and evaluation. These updates will be incorporated in both production and fielded aircraft.						
FY 2015 Accomplishments: System and software modifications added to the aircraft configuration as identified as deficiency reports by using command.						
FY 2016 Plans: Funding moved to BA 7						
Title: Block 8.1				2.600	0.000	-

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605278F / HC/MC-130 Recap RDT&E
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: Combined software/hardware upgrade for Block 8.1. Additional efforts include: Link 16, a new Flight Management System (FMS), Civil Global Positioning System (GPS) Navigation, a Special Mission Processor Interface (SMP-I), Identification Friend or Foe (IFF) Mode 5, Civil Data Link, and Automatic Dependent Surveillance-Broadcast (ADS-B).</p> <p>FY 2015 Accomplishments: HC/MC-130J Block 8.1 development began taking advantage of the internationally developed C-130J Block 8.1 program.</p> <p>FY 2016 Plans: Funding moved to BA 7</p>			
Accomplishments/Planned Programs Subtotals	4.497	0.000	-

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APAF: BA05: HCMC00: APAF HC/MC-130 Modifications	0.000	0.000	0.000	0.000	0.000	0.000	31.919	0.000	0.000	293.229	331.722
• APAF: BA02: C-130JH: BA02:APAF PE0207224F, HC-130J	382.024	474.434	337.576	0.000	337.576	198.153	0.000	0.000	0.000	398.587	1,790.774
• APAF: BA02: C-130JM: BA02: APAF PE0207230F, MC-130J	372.971	850.872	598.358	0.000	598.358	450.194	371.649	631.894	449.356	1,992.934	5,718.228

Remarks

E. Acquisition Strategy
 The full rate production decision for the HC/MC-130J RECAP was 4 Oct 13. Lockheed Martin is the prime contractor for the Research & Development work in support of the HC/MC-130J Recap program. Work done to date on the HC/MC-130 Recap program has been on a Cost Plus Award Fee (CPAF) type contract.

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605278F / HC/MC-130 Recap RDT&E	Project (Number/Name) 655249 / HC-130Recap
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
HC/MC-130 Recap EMD	SS/CPAF	Lockheed Martin : Marietta, GA	45.670	0.000		0.000		0.000		0.000		0.000	0.000	45.670	45.670
HC/MC-130 Recap Continuous Improvement Program (CIP)	SS/CPFF	Lockheed Martin : Marietta, GA	21.415	1.297	May 2015	0.000		0.000		0.000		0.000	8.167	30.879	30.879
HC/MC-130 Recap Block 8.1	SS/CPIF	Lockheed Martin : Marietta, GA	4.716	2.600	Sep 2015	0.000		0.000		0.000		0.000	54.976	62.292	62.292
Subtotal			71.801	3.897		0.000		0.000		0.000		0.000	63.143	138.841	138.841

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
HC/MC-130 Recap Other	Various	AFLCMC/WIS : WPAFB, OH	4.931	0.000		0.000		0.000		0.000		0.000	0.000	4.931	4.931
Subtotal			4.931	0.000		0.000		0.000		0.000		0.000	0.000	4.931	4.931

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
HC/MC-130 Recap Test and Evaluation Support	C/FFP	46th Test Wing : EAFB, FL	10.656	0.600	May 2015	0.000		0.000		0.000		0.000	8.156	19.412	19.412
Subtotal			10.656	0.600		0.000		0.000		0.000		0.000	8.156	19.412	19.412

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)				Project (Number/Name)				
3600 / 5	PE 0605278F / HC/MC-130 Recap RDT&E				655249 / HC-130Recap				
	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	87.388	4.497	0.000	0.000	0.000	0.000	71.299	163.184	163.184

Remarks
 Beginning in FY16 all HC/MC RDT&E funding is in BA07

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605278F / HC/MC-130 Recap RDT&E	Project (Number/Name) 655249 / HC-130Recap
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Software Development Test and Evaluation																												
HC/MC-130 Recap Block 8.1 Development																												
HC/MC-130 Recap Block 8.1 First Article Installation and Developmental Test																												
Continuous Improvement Program (CIP)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605278F / HC/MC-130 Recap RDT&E	Project (Number/Name) 655249 / HC-130Recap
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Software Development Test and Evaluation	1	2015	4	2015
HC/MC-130 Recap Block 8.1 Development	4	2015	4	2016
HC/MC-130 Recap Block 8.1 First Article Installation and Developmental Test	4	2016	4	2018
Continuous Improvement Program (CIP)	1	2015	4	2019

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605431F / <i>Advanced EHF MILSATCOM (SPACE)</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	267.023	294.455	228.095	259.131	0.000	259.131	237.784	428.286	827.358	1,342.519	Continuing	Continuing
657103: <i>Advanced MILSATCOM</i>	191.032	181.439	53.475	31.007	0.000	31.007	0.000	0.000	0.000	0.000	0.000	456.953
657104: <i>Evolved AEHF MILSATCOM (EAM)</i>	75.991	113.016	174.620	228.124	0.000	228.124	237.784	428.286	827.358	1,342.519	Continuing	Continuing

Program MDAP/MAIS Code: 261

Note

This program, BA 05 PE 0605431F, project 657104, Protected Tactical Enterprise Service (PTES), is a new start.

In FY2017, Project 657104, Evolved AEHF MILSATCOM, includes one new start effort, Protected Tactical Enterprise Services (PTES).

In FY2014, Project 657103, Advanced MILSATCOM, and Project 657104, Evolved AEHF MILSATCOM, efforts were transferred from PE 0603430F, Advanced EHF MILSATCOM (Space), Project 644050, Advanced MILSATCOM, and Project 64A030, Evolved AEHF MILSATCOM, in order to transition to Budget Activity 5.

A. Mission Description and Budget Item Justification

Develop and acquire Advanced Extremely High Frequency (AEHF) Military Satellite Communications (MILSATCOM) satellites, mission control segment and cryptography for survivable, anti-jam, worldwide, secure communications for the strategic and tactical warfighters. AEHF satellites will replenish the existing EHF system (Milstar) providing much higher capacity and data rate (5x increase over Milstar II) capabilities. AEHF is a cooperative program that includes International Partners (Canada, the United Kingdom, and the Kingdom of the Netherlands).

Space Vehicle-1 (SV-1) launched on 14 August 2010. SV-1 experienced a propulsion anomaly and was raised to its geostationary orbit using alternative orbit raising techniques. SV-1 completed on-orbit test and transitioned to operations in March 2012. SV-2 launched on 4 May 2012, successfully completed on-orbit testing in October 2012, and is under operational control as of 7 November 2012. AEHF Initial Operational Capability (IOC) was declared on 28 July 2015.

With SV-1 and SV-2 launched and Initial Operational Capability (IOC) declared on 28 July 2015, the AEHF program has nearly completed its development phase and is now addressing obsolescence, production continuity, supplier stability and industrial base issues. AEHF SV 5-6 are being procured using the Department of Defense (DoD) Efficient Space Procurement (ESP) concept. The ESP concept is a procurement approach which seeks stable production and efficient sub-contractor product management through the block buy of two space vehicles at one time (as described in Advanced EHF MILSATCOM P-40 Exhibit). In addition, the ESP concept includes use of RDT&E funding to perform systems engineering, architecture development and other activities to meet current and future emerging SATCOM requirements.

Additionally, RDT&E funds support the MILSATCOM Space Modernization Initiative (SMI), which conducts engineering activities to reduce future production costs through manufacturing and producibility enhancements, improve capabilities through insertion of new technologies, and replace obsolete parts, crypto and materials.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605431F / <i>Advanced EHF MILSATCOM (SPACE)</i>
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The SV-6 crypto design and AEHF Capabilities Insertion Program (CIP) are reported as part of the AEHF (SV 5-6 Subprogram) and AEHF (SV 1-4 Subprogram) baselines, respectively. The remaining SMI efforts are not part of the AEHF Major Defense Acquisition Program. The SMI efforts will provide opportunities for competition to develop potential technology upgrades at the component and system level for future satellites of the current or any follow-on system. SMI efforts will include obsolescence management and mitigation, technology maturation, new components' qualification, subsystem and component prototyping, architecture and system concept studies (to include hosted payloads), and pathfinder efforts to address MILSATCOM capability gaps identified in the Joint Space Communications Layer (JSCL) Initial Capabilities Document (ICD) and the "Resilient Basis for SATCOM in Joint Operations" study, and recently assessed in the Protected Satellite Communications Services (PSCS) Analysis of Alternatives (AoA). The purpose of the PSCS AoA is to evaluate alternative space and control segment architectures, along with the associated user segment, to address the required protected satellite communications capabilities in the nuclear, contested, and benign operating environments.

MILSATCOM SMI efforts are funded in Project 657104, Evolved AEHF MILSATCOM (EAM).

In FY17, this Program Element supports Enterprise Ground Services (EGS). EGS is performing tech maturation, experiments and prototyping for increased commonality and resiliency in space program ground systems.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	307.898	228.230	257.254	0.000	257.254
Current President's Budget	294.455	228.095	259.131	0.000	259.131
Total Adjustments	-13.443	-0.135	1.877	0.000	1.877
• Congressional General Reductions	0.000	-0.135			
• 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	-4.799	0.000			
• SBIR/STTR Transfer	-8.644	0.000			
• Other Adjustments	0.000	0.000	1.877	0.000	1.877

Change Summary Explanation

FY2017 net change is +\$1.877M which is composed of the following: +\$10.0M restored for next generation AEHF key management architecture; +\$15.4M for AEHF Capabilities Insertion Program (CIP) Mission Control Segment Increment 8.2; -\$20.94M, due to insufficient topline to close capacity and capability gaps the Protected Tactical Service (PTS) Initial Launch Capability was delayed three years from 2024 to 2027; -\$2.583M inflation adjustment.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0605431F / <i>Advanced EHF MILSATCOM (SPACE)</i>				Project (Number/Name) 657103 / <i>Advanced MILSATCOM</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
657103: <i>Advanced MILSATCOM</i>	191.032	181.439	53.475	31.007	0.000	31.007	0.000	0.000	0.000	0.000	0.000	456.953
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Additional Prior Years funds for Advanced EHF MILSATCOM (Space) are in PE 0603430F, Project 644050, Advanced MILSATCOM, Budget Activity 4.

A. Mission Description and Budget Item Justification

Develop and acquire Advanced Extremely High Frequency (AEHF) Military Satellite Communications (MILSATCOM) satellites, mission control segment and cryptography for survivable, anti-jam, worldwide, secure communications for the strategic and tactical warfighters. AEHF satellites will replenish the existing EHF system (Milstar) providing much higher capacity and data rate (5x increase over Milstar II) capabilities.

AEHF is a cooperative program that includes International Partners (Canada, the United Kingdom, and the Kingdom of the Netherlands).

Space Vehicle-1 (SV-1) launched on 14 August 2010. SV-1 experienced a propulsion anomaly and was raised to its geostationary orbit using alternative orbit raising techniques. SV-1 completed on-orbit test and transitioned to operations in March 2012. SV-2 launched on 4 May 2012, successfully completed on-orbit testing in October 2012, and is under operational control as of 7 November 2012. AEHF Initial Operational Capability (IOC) was declared on 28 July 2015.

Advanced EHF and Enhanced Polar System (EPS) Key Management Architectures (KMA) are not compatible with the National Security Agency's new enterprise system, Key Management Infrastructure (KMI). Per the Acquisition Decision Memorandum signed by (USD)AT&L on 17 June 2013, the Air Force shall transition the AEHF and EPS KMA from the Electronic Key Management System (EKMS) to the KMI by Dec 2017. This funding supports development, acquisition, integration and testing of a Protected SATCOM Key Management Architecture (PKMA) that will replace the legacy EKMS to be compatible with the KMI by December 2017.

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

	FY 2015	FY 2016	FY 2017
Title: AEHF Interim Contractor Support (ICS)	109.445	0.000	0.000
Description: Funds ICS for first two AEHF satellites, Mission Control Segment (MCS), Cryptography, and AEHF Calibration Facility (ACF) until IOC declaration			
FY 2015 Accomplishments: Continued ICS for AEHF satellites' on-orbit support, MCS, AEHF Key Management Architecture, and ACF leading to the 28 July 2015 IOC declaration.			
FY 2016 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605431F / <i>Advanced EHF MILSATCOM (SPACE)</i>	Project (Number/Name) 657103 / <i>Advanced MILSATCOM</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
N/A				
FY 2017 Plans: N/A				
Title: AEHF Key Management Infrastructure (KMI) transition		71.994	53.475	31.007
Description: Develop and conduct systems engineering, integration and test of the Protected SATCOM Key Management Architecture (PKMA). National Security Agency (NSA) will lead the development of the PKMA centralized elements. Enable testing and integration of AEHF Local Key Management functionality within the KMI client with the AEHF system. Initiate PKMA integration activities with the AEHF prime contractor and the Enhanced Polar System (EPS) Control and Planning Segment (CAPS) contractor.				
FY 2015 Accomplishments: Completed Developmental Test and Evaluation (DT&E) events to inform the National Security Agency (NSA) Operational Acceptance (FY 2016) of Protected SATCOM Key Management Architecture (PKMA). Transferred funds to NSA for the development and testing of PKMA centralized elements, and integration testing of the AEHF Local Key Management functionality within the KMI client with the AEHF system. Initiated PKMA integration activities with the satellite vehicle control segment prime contractors, Lockheed Martin and Northrop Grumman.				
FY 2016 Plans: Continue KMI transition. Transfer funds to NSA to develop Protected SATCOM Key Management Architecture (PKMA) critical factory components (FY2016) and support test and deficiency resolution of PKMA elements. Continue testing AEHF Local Key Management functionality, with the KMI client, and AEHF system. Develop and execute transition and testing with Lead Developmental Test Organization (LDTO), AEHF prime contractor, Lockheed Martin, and EPS CAPS contractor, Northrop Grumman Information Systems.				
FY 2017 Plans: Start operational test period, and transition AEHF & EPS operations to Protected SATCOM Key Management Architecture (PKMA). Begin pre-operational support of PKMA centralized elements.				
Accomplishments/Planned Programs Subtotals		181.439	53.475	31.007

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605431F / <i>Advanced EHF MILSATCOM (SPACE)</i>	Project (Number/Name) 657103 / <i>Advanced MILSATCOM</i>
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C. Other Program Funding Summary (\$ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• MPAF: BA05: Line Item # ADV555: <i>Advanced EHF</i>	298.462	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4,587.035
• SPAF: BA01: Line Item # ADV555: <i>Advanced EHF</i>	0.000	327.666	645.569	0.000	645.569	56.854	29.299	31.180	31.742	0.000	1,122.310
• RDT&E: BA05: PE 0605433F: <i>Wideband Global SATCOM (Space)</i>	14.095	8.646	12.248	0.000	12.248	10.168	0.000	0.000	0.000	0.000	290.756

Remarks

Wideband Global SATCOM (Space) funding is within the Command and Control System - Consolidated (CCS-C) project.

D. Acquisition Strategy

The Advanced MILSATCOM, also known as Advanced EHF (AEHF), program is a sole source acquisition to a contractor team comprised of Lockheed Martin (prime/integrator) and Northrop Grumman (provider of the satellite payload). This team performed the Advanced Component Development and Prototypes (ACD&P) and Systems Development and Demonstration (SDD) of two RDT&E-funded satellites and associated mission command and control ground capabilities under Cost Plus Award Fee line items on the contract. AEHF incorporated lessons learned and improvements from Milstar and commercial SATCOM practices into the next generation EHF secure, anti-jam military communications satellite system.

The Protected SATCOM Key Management Architecture (PKMA) acquisition is a software development effort to update DoD secure satellite communication encryption systems and become compatible with the National Security Agency's enterprise Key Management Infrastructure (KMI). The Acquisition Decision Memorandum was signed by (USD)AT&L on 17 June 2013. The prime contractor for the PKMA development under the NSA is Leidos with subcontracts to L3 Communications and General Dynamics.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605431F / <i>Advanced EHF MILSATCOM (SPACE)</i>	Project (Number/Name) 657103 / <i>Advanced MILSATCOM</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Crypto Interim Contractor Support	MIPR	Cryptologic Sys Group : San Antonio, TX	10.100	0.000		0.000		0.000		0.000		0.000	0.000	10.100	20.300
AEHF SVs 1-2 and MCS Interim Contractor Support	SS/CPIF	Lockheed Martin : Sunnyvale, CA	109.901	104.238	Dec 2014	0.000		0.000		0.000		0.000	0.000	214.139	207.561
GFP - AEHF Calibration Facility (ACF)	Various	Lincoln Labs : Lexington, MA	3.286	0.000		0.000		0.000		0.000		0.000	0.000	3.286	3.286
PKMA MIT/LL Test Support	Various	Lincoln Labs : Lexington, MA	0.000	0.200	Apr 2015	0.496	Apr 2016	0.509	Apr 2017	0.000		0.509	0.000	1.205	-
New KMI Component Development	MIPR	NSA : Ft Meade, MD	54.800	52.244	Dec 2014	37.871	Dec 2015	8.864	Dec 2016	0.000		8.864	0.000	153.779	158.861
Enterprise SE&I	C/CPIF	Linquest Corp : Los Angeles, CA	0.000	1.141	Jul 2016	1.662	Jul 2017	1.662	Jul 2018	0.000		1.662	0.000	4.465	-
NSA Interim Contractor Support	MIPR	NSA : Ft Meade, MD	0.000	0.000		0.000		10.000	Dec 2016	0.000		10.000	0.000	10.000	10.000
Install/Integrate/Test New AEHF KMI Components	SS/CPIF	Lockheed Martin : Sunnyvale, CA	3.979	5.825	Mar 2015	2.659	Apr 2016	0.000		0.000		0.000	0.000	12.463	12.464
Install/Integrate/Test New EPS KMI Components	SS/CPIF	Northrop Grumman Information Systems : Redondo Beach, CA	0.000	6.959	Nov 2015	5.127	Apr 2016	0.000		0.000		0.000	0.000	12.086	13.442
Test New KMI Hardware/ Software	MIPR	AFLCMC : San Antonio, TX	1.946	5.500	Aug 2015	2.542	Apr 2016	7.042	Apr 2017	0.000		7.042	0.000	17.030	21.893
Operational Test Support	Various	17th Test Sqd : Peterson, CO	0.000	0.050	Jan 2015	0.323	Nov 2015	0.172	Nov 2016	0.000		0.172	0.000	0.545	-
Subtotal			184.012	176.157		50.680		28.249		0.000		28.249	0.000	439.098	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605431F / <i>Advanced EHF MILSATCOM (SPACE)</i>	Project (Number/Name) 657103 / <i>Advanced MILSATCOM</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Award LM PKMA Integration and Test Contract	■																											
Multiservice Operational Test and Evaluation (MOT&E)	■																											
Initial Operational Capability (IOC)				■																								
Award NG PKMA Integration and Test Contract						■																						
PKMA Development Complete							■																					
Operations Transition to PKMA											■																	
Operations Acceptance of PKMA															■													

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605431F / <i>Advanced EHF MILSATCOM (SPACE)</i>	Project (Number/Name) 657103 / <i>Advanced MILSATCOM</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Award LM PKMA Integration and Test Contract	1	2015	1	2015
Multiservice Operational Test and Evaluation (MOT&E)	1	2015	1	2015
Initial Operational Capability (IOC)	4	2015	4	2015
Award NG PKMA Integration and Test Contract	1	2016	1	2016
PKMA Development Complete	3	2016	3	2016
Operations Transition to PKMA	3	2017	3	2017
Operations Acceptance of PKMA	1	2018	1	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0605431F / <i>Advanced EHF MILSATCOM (SPACE)</i>				Project (Number/Name) 657104 / <i>Evolved AEHF MILSATCOM (EAM)</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
657104: <i>Evolved AEHF MILSATCOM (EAM)</i>	75.991	113.016	174.620	228.124	0.000	228.124	237.784	428.286	827.358	1,342.519	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 05 PE 0605431F, project 657104, Protected Tactical Enterprise Service (PTES), is a new start.

Additional Prior Years funds for Advanced EHF MILSATCOM (Space) are in PE 0603430F, Project 64A030, Evolved AEHF MILSATCOM, Budget Activity 4.

A. Mission Description and Budget Item Justification

The Space Modernization Initiative (SMI) strategy is to evolve current and future Protected MILSATCOM systems and develop a more affordable and resilient MILSATCOM enterprise capable of meeting near term and emerging MILSATCOM requirements. A significant thrust for this initiative is to demonstrate technologies and Concepts of Operations (CONOPS) that lead to a future Protected Tactical Service (PTS) that provides tactical-level MILSATCOM users protected, anti-jam satellite communications while operating in a contested environment. The protected tactical service will provide tactical users significantly higher data rates than AEHF and a security architecture that enables forward deployed users to have protected satellite communications in scenarios where AEHF terminals cannot be deployed. Under this construct the SMI will: 1) Reduce parts/obsolescence risk to future AEHF space vehicles, 2) Continue the AEHF Capabilities Insertion Program (CIP) to enhance the current AEHF constellation performance, 3) Define requirements and acquisition strategy for a future National Command, Control, and Communications (NC3) evolved strategic system, 4) Invest in technologies/demonstrations/CONOPS that enable a future Protected Tactical Service capability by continued development of the Protected Tactical Waveform (PTW) technologies, maturing the Protected Tactical Testbed, and demonstrating resilient and affordable wideband protected technologies and CONOPS, 5) Begin the Protected Tactical Enterprise Service (PTES) program (and transition to new Program Element in FY18) to provide the enabling joint ground system for future PTW operations, and 6) Evaluate other potential commercial technologies that are capable of meeting current and future emerging SATCOM requirements.

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

	FY 2015	FY 2016	FY 2017
Title: AEHF SV-6 Flight Crypto & Future AEHF Parts Obsolescence Mitigation	20.000	0.000	0.000
Description: AEHF SV-6 flight cryptographic equipment redesign effort and future AEHF parts obsolescence mitigation effort. Included in PNO 261.			
FY 2015 Accomplishments: Completed the SV-6 flight crypto effort and the AEHF parts/obsolescence effort.			
FY 2016 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605431F / <i>Advanced EHF MILSATCOM (SPACE)</i>	Project (Number/Name) 657104 / <i>Evolved AEHF MILSATCOM (EAM)</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
N/A				
FY 2017 Plans: N/A				
Title: AEHF Capabilities Insertion Program (CIP)		43.626	32.116	31.900
Description: Develop software that will increase the current AEHF constellation capacity by 10%, broaden overall user base, and accommodate a larger user population through improved resource utilization efficiencies. Develop software to increase current AEHF terminal data rates with adaptive coding algorithms. These efforts are included in PNO 261.				
FY 2015 Accomplishments: Completed Phase I (INC 7.6) of the MCS software development. Awarded Phase II (INC 8.0) capability improvements, including Internal Process Reviews (IPRs) to assess design suitability and implementation of functionality to deliver increased system capacity.				
FY 2016 Plans: Complete Phase II (INC 8.0) development and begin verification. Award and begin Phase III (INC 8.1) development to deliver faster tactical planning, improved international partner communication planning and terminal lock-on, and implement other improvements.				
FY 2017 Plans: Complete Phase II (INC 8.0) verification. Continue Phase III (INC 8.1) development. Award and begin Phase IV (INC 8.2) development to accommodate a larger user population through improved communication planning, frequency planning and other improvements.				
Title: Evolved AEHF		1.539	14.323	36.000
Description: The Evolved AEHF (E-AEHF) provides nuclear survivable, protected military satellite communications (MILSATCOM) to eXtended Data Rate (XDR) users only. E-AEHF supports strategic mission requirements such as Presidential and National Voice Conferencing (PNVC), Nuclear Command and Control (NC2) strategic networks, terminal report back, and Emergency Action Message (EAM) dissemination.				
FY 2015 Accomplishments: Began system definitions and early requirements/acquisition planning.				
FY 2016 Plans:				

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605431F / <i>Advanced EHF MILSATCOM (SPACE)</i>	Project (Number/Name) 657104 / <i>Evolved AEHF MILSATCOM (EAM)</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Continue requirements/architecture/acquisition strategy development activities. Conduct threat analysis, ground architecture assessments and identify opportunities for improving system resiliency. FY 2017 Plans: Engage industry to refine requirements tradeoffs and begin applicable risk reduction efforts. Continue development of acquisition strategy and associated documentation.				
Title: Protected MILSATCOM "Design for Affordability" and Protected Testbed Description: Perform design for affordability studies, demonstrations, and technology risk reduction on critical technology elements for the space payload, terminals and networking segments, with a focus on the Protected Tactical Waveform (PTW) and continue to develop the Protected Tactical testbed in support of the Protected Tactical demonstration efforts. FY 2015 Accomplishments: Conducted PTW component level demonstrations over wideband systems using existing fielded terminals with newly designed contractor provided PTW brassboard modems, matured the PTW technology, generated PTW modem test reports, and continued to develop the PTW specification and interface documents. Designed and matured the Protected Tactical Testbed components, mission management segments, key management areas, and performed PTW modem over the air (OTA) test with contractor modems and tested newly developed hardware and software components for PTW. FY 2016 Plans: Conduct Protected Testbed PDR, CDR and intersegment compatibility testing. Expand on the terminal and space/ground prototype to provide the ground functionality required for future protected tactical waveform testing. Continue to develop ground hub test events, demo contractor developed PTW modems, conduct interim network test, conduct OTA PTW testing to verify contractor developed software and hardware, continue to enhance the Protected Tactical Testbed that supports PTW functional interface testing with operational wideband systems and acquire operational wideband terminals. Deliver three testbed simulators to contractors for early risk-reduction and developmental testing in preparation for follow-on over-the-air demonstrations. FY 2017 Plans: Support three contractor modem-to-testbed PTW compatibility demonstrations in support of the Protected Tactical Demonstration. Finalize hardware baseline to support over-the-air demonstrations over WGS and Commercial SATCOM for the Protected Tactical Demonstration. Conduct intersegment integration events. Complete remaining intersegment testing. Prepare testbed for future systems integration lab events supporting the development of terminal modems. Support further definition and refinement of PTW ICD and other interface documents and standards in preparation for operational use of PTW over wideband systems.		30.391	32.851	37.406
Title: Protected Tactical Demonstration		17.460	95.330	93.518

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: The Protected Tactical Demonstration will develop and demonstrate prototype Terminal Modem (TM) Line Replaceable Units (LRUs) utilizing PTW over wideband space/ground systems with an option to demonstrate over a commercial SATCOM system and design and build the Mission Management System (MMS) simulator. Develop PTW components, protected tactical terminal modems that will be capable of being fully integrated into existing wideband terminals, and a new End Cryptographic Unit (ECU) that will support the PTW. The ECUs will be integrated with the PTW modem and certified by NSA. The Protected Tactical Field Demonstration will demonstrate an Anti-Jam (AJ) and Low Probability of Intercept (LPI)/Low Probability of Detection (LPD) communications capability that can be provided to tactical users in all Services through fielded terminals, existing wideband MILSATCOM assets, and potential COMSATCOM assets. Conduct trade space and requirements definition to support future PTW-related capabilities. Identify potential assets such as ground hubs and information assurance components that can be further developed by future PTW-related programs for wideband users and explore releasability of PTW-related technologies to International Partners.</p> <p>FY 2015 Accomplishments: Developed and delivered government designed Protected Tactical Waveform (PTW) modem and ECU requirements; established technical baseline and issued solicitation for modem contracts; designed and built demo MMS simulators and requirements, and prepared for System Design Review (SDR).</p> <p>FY 2016 Plans: Award up to three contracts for the development of TM LRUs to support the Protected Tactical Demonstration, review system/functional requirements, conduct SDR, and prepare for PDR and CDR. Continue further development of all contractors' developed prototype PTW terminal modems and ECUs; continue to mature and test MMS simulators; demo and test the MMS simulator with the ground hub and Key Management System; continue to develop/mature requirements and interface control documents for protected tactical system components. Conduct other risk reduction tests with hub, KMS, and MMS simulators.</p> <p>FY 2017 Plans: Conduct both PDR and CDR, and baseline terminal modem and ECU requirements in preparation for contractor-built modem and ECU test articles. Support contractor-led factory test events of terminal modem and ECU. Exercise contract option for entrance into compatibility testing phase of demonstration. Ensure compatability of terminal modem and ECU with government testbed simulators.</p>			
<p>Title: Protected Tactical Enterprise Service (PTES)</p> <p>Description: The Protected Tactical Enterprise Service will provide the enabling joint ground system for future PTW operations. This PTES includes Joint PTW Hubs at existing WGS teleports and the required Mission Management and Key Management Systems (MMS/KMS) needed to support PTW operations over any wideband system as well as any planned future dedicated PTW-capable systems. PTES will enable, along with the Terminal Modem Line Replaceable Units developed during the</p>	0.000	0.000	19.800

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016		
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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Protected Tactical Demonstration, an Anti Jam (AJ) and Low Probability of Intercept (LPI)/Low Probability of Detection (LPD) communications capability over WGS for tactical users in all Services and International Partners.				
FY 2015 Accomplishments: N/A				
FY 2016 Plans: N/A				
FY 2017 Plans: Complete technical baseline and system requirements. Conduct source selection and award risk reduction/development contracts for the joint ground system.				
Title: Enterprise Ground Services (EGS)		0.000	0.000	9.500
Description: Enterprise Ground Services (EGS) is envisioned to provide a robust enterprise ground architecture for Air Force space systems, which leverages mission commonality and automation to reduce sustainment costs and re-focus manpower on warfighting capabilities. In addition, EGS will enable a near-real-time common operating picture of enterprise-wide tactical health, status, indications, and warnings for Air Force satellites. The end-state will be a modern technical infrastructure which is cyber-secure and resilient against the Advanced Persistent Threat and employs streamlined architecting, acquisition, and operational processes. Through early architecture studies and prototyping, the government will establish clear ownership of the technical baseline to meet Better Buying Power principles as the EGS effort evolves through development. This effort provides focus and expertise for the development, test, certification and enforcement of standards and interfaces for all AFSPC satellite ground systems to enable transition planning for legacy ground systems, new capability demonstrations, and systems acquisition leading to an enterprise ground architecture for Air Force space systems.				
FY 2015 Accomplishments: N/A.				
FY 2016 Plans: N/A.				
FY 2017 Plans: Conduct developmental planning, mature technologies, and develop initial small-scale prototype capability for the enterprise ground architecture. Efforts in 2017 will include, but not be limited to, systems engineering, special studies, cyber security planning and implementation, standards and interface development and codification, integration and test efforts in support of				

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force	Date: February 2016
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
demonstrations, and operational architecture planning. In addition, this effort will build the technical and programmatic roadmap to enable a phased enterprise transition in the future.			
Accomplishments/Planned Programs Subtotals	113.016	174.620	228.124

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• MPAF: BA05: Line Item # ADV555: <i>Advanced EHF</i>	298.462	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4,587.035
• SPAF: BA01: Line Item # ADV555: <i>Advanced EHF</i>	0.000	327.666	645.569	0.000	645.569	56.854	29.299	31.180	31.742	0.000	1,122.310

Remarks

D. Acquisition Strategy
MILSATCOM SMI includes parts obsolescence redesign and incremental capability upgrades for potential future block buys contracted with current Prime contractor team. Enterprise studies, system design for affordability, protected tactical awards and risk reduction efforts for next generation capabilities will include full and open competition efforts.

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605431F / <i>Advanced EHF MILSATCOM (SPACE)</i>	Project (Number/Name) 657104 / <i>Evolved AEHF MILSATCOM (EAM)</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AEHF SV-6 Flight Crypto and Future Parts Obsolescence Mitigation	SS/CPIF	Lockheed Martin : Sunnyvale, CA	14.391	20.000	Dec 2014	0.000		0.000		0.000		0.000	0.000	34.391	-
AEHF Capabilities Insertion Program (CIP)	SS/CPIF	Lockheed Martin : Sunnyvale, CA	14.325	43.626	Jul 2015	24.243	Jun 2016	31.900	Jun 2017	0.000		31.900	Continuing	Continuing	56.151
Protected MILSATCOM "Adaptive Coding"	Various	MIT/LL : Lexington, MA	1.899	0.000		0.000		0.000		0.000		0.000	0.000	1.899	-
Protected MILSATCOM "Design for Affordability" Phase 3 BAA #1	C/FFP	The Boeing Company : El Segundo, CA	5.995	0.000		0.000		0.000		0.000		0.000	0.000	5.995	5.995
Protected MILSATCOM "Design for Affordability" Phase 3 BAA #2	C/FFP	Loral : Palo Alto, CA	4.400	0.000		0.000		0.000		0.000		0.000	0.000	4.400	4.400
Protected MILSATCOM "Design for Affordability" Phase 3 BAA #3	C/FFP	Raytheon : Marlborough, MA	3.981	0.000		0.000		0.000		0.000		0.000	0.000	3.981	3.981
Protected MILSATCOM "Design for Affordability" Phase 3 BAA #4	C/FFP	L3 COM - West : Salt Lake City, UT	3.374	0.000		0.000		0.000		0.000		0.000	0.000	3.374	3.374
Protected Tactical Demonstration (Modem)	TBD	TBD : TBD	0.000	0.000		64.974	May 2016	67.460	Jan 2017	0.000		67.460	Continuing	Continuing	-
Protected Tactical Demonstration (Mission Management System simulator)	Various	Various : Various	0.000	11.490	Oct 2014	10.245	Jan 2016	10.955	Jan 2017	0.000		10.955	Continuing	Continuing	-
Technical Mission Analysis	MIPR	Aerospace : El Segundo, CA	0.000	0.000		2.999	Oct 2015	2.033	Oct 2016	0.000		2.033	Continuing	Continuing	-
Evolved AEHF (E-AEHF)	Various	Various : Various	0.000	1.539	Jul 2015	8.239	Jan 2016	33.102	Jan 2017	0.000		33.102	Continuing	Continuing	-
Protected Testbed	Various	MIT/LL : Various	7.030	11.493	Dec 2014	32.851	Jan 2016	19.792	Jan 2017	0.000		19.792	Continuing	Continuing	-
Protected Tactical Enterprise Services (PTES)	TBD	TBD : TBD	0.000	0.000		0.000		18.595	Apr 2017	0.000		18.595	Continuing	Continuing	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605431F / <i>Advanced EHF MILSATCOM (SPACE)</i>	Project (Number/Name) 657104 / <i>Evolved AEHF MILSATCOM (EAM)</i>
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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 SE&I	C/CPAF	Linquest : Los Angeles, CA	4.030	9.096	Dec 2014	11.062	Jan 2016	11.542	Jan 2017	0.000		11.542	Continuing	Continuing	-
Enterprise Ground Services (EGS)	Various	Various : Various	0.000	0.000		0.000		9.500	Jan 2017	0.000		9.500	0.000	9.500	-
Subtotal			59.425	97.244		154.613		204.879		0.000		204.879	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FFRDC	Various	Various : Various	10.832	10.800	Jan 2015	9.473	Jan 2016	10.526	Jan 2017	0.000		10.526	Continuing	Continuing	-
Other Support	Various	Various : Various	0.160	0.101	Dec 2014	0.100	Dec 2015	0.100	Dec 2016	0.000		0.100	Continuing	Continuing	-
A&AS	Various	Various : Various	5.574	4.871	Dec 2014	10.434	Jan 2016	12.619	Jan 2017	0.000		12.619	Continuing	Continuing	-
Subtotal			16.566	15.772		20.007		23.245		0.000		23.245	-	-	-

Remarks
Other is only for travel

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force								Date: February 2016			
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0605431F / <i>Advanced EHF MILSATCOM (SPACE)</i>				Project (Number/Name) 657104 / <i>Evolved AEHF MILSATCOM (EAM)</i>			
	Prior Years	FY 2015		FY 2016		FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	75.991	113.016		174.620		228.124	0.000	228.124	-	-	-

Remarks
 Additional Prior Years funds for Advanced EHF MILSATCOM (Space) are in PE 0603430F, Project 64A030, Evolved AEHF MILSATCOM, Budget Activity 4.

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605431F / <i>Advanced EHF MILSATCOM (SPACE)</i>	Project (Number/Name) 657104 / <i>Evolved AEHF MILSATCOM (EAM)</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Outbrief Protected AoA				■																								
AEHF CIP: Award Phase II Contract 8.0				■																								
AEHF CIP: Award Phase III Contract 8.1							■																					
AEHF CIP: Award Phase IV Contract 8.2											■																	
Evolved AEHF: Initiate System Definition				■																								
Evolved AEHF: Initiate Risk Reduction and System Definition											■																	
PTW Demo: Award Demo (Modem) Contracts							■																					
PTW Demo: Conduct End to End OTA Demonstration																				■								
PTES: Release Request for Proposal (RFP)											■																	

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605431F / <i>Advanced EHF MILSATCOM (SPACE)</i>	Project (Number/Name) 657104 / <i>Evolved AEHF MILSATCOM (EAM)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Outbrief Protected AoA	4	2015	4	2015
AEHF CIP: Award Phase II Contract 8.0	4	2015	4	2015
AEHF CIP: Award Phase III Contract 8.1	3	2016	3	2016
AEHF CIP: Award Phase IV Contract 8.2	3	2017	3	2017
Evolved AEHF: Initiate System Definition	4	2015	4	2015
Evolved AEHF: Initiate Risk Reduction and System Definition	2	2017	2	2017
PTW Demo: Award Demo (Modem) Contracts	3	2016	3	2016
PTW Demo: Conduct End to End OTA Demonstration	3	2019	3	2019
PTES: Release Request for Proposal (RFP)	3	2017	3	2017

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605432F / <i>Polar MILSATCOM (SPACE)</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	101.401	99.788	71.867	50.815	0.000	50.815	24.487	0.000	0.000	0.000	0.000	348.358
657105: <i>Polar Satellite Communications</i>	101.401	99.788	71.867	50.815	0.000	50.815	24.487	0.000	0.000	0.000	0.000	348.358
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Program MDAP/MAIS Code: 121

Note

Additional Prior Years funds for Polar MILSATCOM (SPACE) are in PE 0603432F, Project 644052 Polar Satellite Communications, Budget Activity 4.

A. Mission Description and Budget Item Justification

This program element acquires the Polar Military Satellite Communications (MILSATCOM) system that provides protected communications (anti-jam and low probability of intercept and detection) for users in the north polar region.

Through FY05, Polar Satellite Communications funded three low data rate (LDR) Milstar packages on three classified host satellites as an expedited, interim solution for protected connectivity requirements in the north polar region (i.e., Interim Polar System (IPS)). Two satellites with hosted packages are required to provide the necessary 24-hour coverage. The third package went into operations in November 2008 to sustain the 24-hour coverage.

In FY06, the DoD began funding the next generation Polar Satellite Communications capability with two more polar packages via the same host vehicle type (i.e., Enhanced Polar System (EPS)). The host spacecraft and the polar communications packages required design modifications that replaced obsolete components and took advantage of the more capable Advanced Extremely High Frequency (AEHF) technology including the eXtended Data Rate (XDR) waveform. The EPS Capability Development Document (CDD), approved by the Joint Requirements Oversight Council in September 2006, is based on a two-package, hosted XDR program with operational availability in CY15 and CY17. EPS is comprised of four segments: Payload, Ground Control, Gateway, and Terminal (acquired by each Service's Terminal Program Office). Milestone B review was completed 2 April 2014.

The Polar MILSATCOM program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605432F / <i>Polar MILSATCOM (SPACE)</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	103.245	72.084	51.320	0.000	51.320
Current President's Budget	99.788	71.867	50.815	0.000	50.815
Total Adjustments	-3.457	-0.217	-0.505	0.000	-0.505
• Congressional General Reductions	0.000	-0.217			
• 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	-3.457	0.000			
• Other Adjustments	0.000	0.000	-0.505	0.000	-0.505

Change Summary Explanation

FY17: -\$0.505M inflation adjustment

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
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Title: EPS	99.788	71.867	50.815
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Description: Develop and acquire EPS MILSATCOM which consists of 1) two Extremely High Frequency payloads, using AEHF's eXtended Data Rate (XDR) waveform, on hosted spacecraft, 2) a standalone Control and Planning Segment (CAPS) to provide command and control and XDR mission planning capability, and 3) one gateway to provide connectivity between polar and mid-latitude users through the Global Information Grid.

FY 2015 Accomplishments:

Completed Payload #1 checkout, making it available for on-orbit testing. Continued to integrate Payload #2 onto host satellite. Continued Gateway segment installation. Continued developing, integrating, testing and installing CAPS to verify full functionality with other segments.

FY 2016 Plans:

Complete Integration & Test, complete Gateway installation and Installation Qualification Test at Clear AFS and Camp Roberts, and finalize system installation for CAPS at Schriever AFB. Execute factory intersegment testing between CAPS, payload, and the terminals. Execute EPS Key Management Architecture testing. Execute CAPS to Mission Ground Station (MGS) intersegment testing. Execute payload on-orbit intersegment testing between CAPS, Telemetry and Command Terminal (T&C-T), Payload, Gateway and the polar user terminals.

FY 2017 Plans:

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605432F / <i>Polar MILSATCOM (SPACE)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Complete test activities for Lead Developmental Test Organization (LDTO) part 1. Execute end-to-end system functionality testing with Payload #1. Execute Payload #2 on-orbit testing.			
Accomplishments/Planned Programs Subtotals	99.788	71.867	50.815

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• None: <i>None</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

E. Acquisition Strategy

The Enhanced Polar System (EPS) is the follow-on to the currently operational Interim Polar System (IPS) and is a component of the Extremely High Frequency SATCOM architecture providing secure, protected communications to worldwide users. The EPS acquisition consists of four segments (Payload, Ground Control, Gateway, and Terminal) acquired by separate procurement actions. Each EPS payload and its integration onto classified host satellites is funded by the EPS program while the development and integration is performed by the host organization. The MILSATCOM System Directorate will procure the Ground Control and Planning Segment. The Ground Gateway segment, funded by the EPS program, will be organically developed by the Navy's Space and Naval Warfare Systems Center Pacific (SSC-Pacific). The MILSATCOM System Directorate is the prime systems integrator for the EPS payload, ground control, and gateway segments. The Terminals that will use EPS will be acquired by each Service's Terminal Program Office.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605432F / Polar MILSATCOM (SPACE)	Project (Number/Name) 657105 / Polar Satellite Communications
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Control and Planning Segment	C/CPIF	Northrop Grumman Information Systems : Redondo Beach, CA	52.969	51.438	Nov 2014	31.636	Nov 2015	12.551	Nov 2016	0.000		12.551	2.276	150.870	148.600
Gateway architecture development	MIPR	Space and Naval Warfare Systems Command (SPAWAR) Systems Center - Pacific : San Diego, CA	17.586	12.779	Nov 2014	9.145	Nov 2015	9.802	Nov 2016	0.000		9.802	2.719	52.031	75.454
EPS Design/Development Contract	SS/CPAF	NGAS : Redondo Beach, CA	0.665	4.340	Nov 2014	2.000	Nov 2015	7.333	Nov 2016	0.000		7.333	3.761	18.099	606.693
T&C-T Development	MIPR	Lincoln Labs : Boston, MA	1.082	2.025	Nov 2014	3.070	Nov 2015	2.134	Nov 2016	0.000		2.134	5.500	13.811	-
Technical Mission Analysis	Various	Various : Various	0.000	1.795	Nov 2014	8.358	Nov 2015	5.739	Nov 2016	0.000		5.739	3.886	19.778	-
Enterprise SE&I	Various	Various : Various	9.505	10.957	Nov 2014	10.486	Nov 2015	7.014	Nov 2016	0.000		7.014	3.459	41.421	-
Subtotal			81.807	83.334		64.695		44.573		0.000		44.573	21.601	296.010	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Planning/Management Support for T&E	MIPR	Various : Various	0.463	0.816	Nov 2014	0.000		0.000		0.000		0.000	0.000	1.279	-
Subtotal			0.463	0.816		0.000		0.000		0.000		0.000	0.000	1.279	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605432F / <i>Polar MILSATCOM (SPACE)</i>	Project (Number/Name) 657105 / <i>Polar Satellite Communications</i>
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Payload #1 available for test		■																										
Gateway Site Install			■	■																								
Field CAPS					■	■	■	■																				
Launch Payload #2											■	■																
Conduct MOT&E															■	■												
IOC/FOC declaration																■												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605432F / <i>Polar MILSATCOM (SPACE)</i>	Project (Number/Name) 657105 / <i>Polar Satellite Communications</i>
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Payload #1 available for test	2	2015	2	2015
Gateway Site Install	3	2015	4	2015
Field CAPS	1	2016	4	2016
Launch Payload #2	2	2017	1	2018
Conduct MOT&E	1	2018	2	2018
IOC/FOC declaration	3	2018	3	2018

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605433F / <i>WIDEBAND GLOBAL SATCOM (SPACE)</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	28.345	52.185	41.632	0.000	41.632	14.385	0.000	0.000	0.000	0.000	136.547
657102: <i>Command and Control Sys-Consolidated (CCS-C)</i>	-	14.095	8.646	12.248	0.000	12.248	10.168	0.000	0.000	0.000	0.000	45.157
657107: <i>WGS Space Systems Resiliency Upgrade</i>	-	14.250	43.539	29.384	0.000	29.384	4.217	0.000	0.000	0.000	0.000	91.390

Note

In FY2014, Project 657102, Command and Control System - Consolidated (CCS-C), efforts were transferred from PE 0603854F, Wideband Global SATCOM (SPACE), Project 644870, CCS-C, in order to transition to Budget Activity 5.

A. Mission Description and Budget Item Justification

The Wideband Global SATCOM (WGS) System provides DoD users with high data rate military satellite communications (MILSATCOM) services in accordance with the Joint Space Management-approved MILSATCOM architecture (Aug 96), the Joint Requirements Oversight Council (JROC)-approved MILSATCOM Capstone Requirements Document (Oct 97), and the JROC-approved WGS Operational Requirements Document (May 00). Dual-frequency WGS satellites augment, then replace the DoD's Defense Satellite Communications System (DSCS) X-band service and augment one-way Global Broadcast Service Ka-band capabilities. In addition, WGS provides a new high capacity two-way Ka-band service.

All WGS Block I (Satellites 1-3) and Block II (Satellites 4-6) have been launched and are operational. With the operation of WGS-5, the constellation has global coverage and Full Operational Capability (FOC) was declared on 12 May 2014. Project 657107, WGS Space Systems Resiliency Upgrade, is an Acquisition Category III (ACAT III) effort. The WGS resiliency upgrade will enable the WGS system to both locate and neutralize ground-based jamming threats, to both X-band and Ka-band.

The Command and Control System-Consolidated (CCS-C) system provides integrated launch and on-orbit command and control (C2) functionality at Schriever AFB and Vandenberg AFB for MILSATCOM satellites. Schriever AFB is used for primary operations and Vandenberg AFB is used for backup operations. CCS-C uses modified commercial off the shelf hardware/software to control emerging and legacy MILSATCOM systems including Milstar, Defense Satellite Communications System (DSCS), Wideband Global SATCOM (WGS) and Advanced Extremely High Frequency (AEHF) satellites.

The CCS-C project 657102 funds system architecture evolution to provide increased performance for additional satellites and to comply with DoD, Air Force, and AFSPC-directed standards for Information Assurance, Satellite Control Standardization, and Net-Readiness. This continuing effort was previously funded in the FY14PB and prior as an ACAT II program. With the 10 October 2013 FOC declaration, the program has transitioned to an ACAT III program, the Command and Control System - Consolidated Assurance and Capability Enhancement (CACE), beginning FY2014. The WGS and AEHF procurement program elements fund the mission unique software and databases for the WGS Block II Follow-On satellites and the AEHF 4-6 satellites, respectively.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605433F / <i>WIDEBAND GLOBAL SATCOM (SPACE)</i>
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This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	31.328	56.343	44.116	0.000	44.116
Current President's Budget	28.345	52.185	41.632	0.000	41.632
Total Adjustments	-2.983	-4.158	-2.484	0.000	-2.484
• Congressional General Reductions	0.000	-0.158			
• Congressional Directed Reductions	0.000	-4.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	1.316	0.000			
• SBIR/STTR Transfer	-4.299	0.000			
• Other Adjustments	0.000	0.000	-2.484	0.000	-2.484

Change Summary Explanation

FY15: Net +\$1.3M reprogrammings, +\$3.2M from Weather System Follow-on for SBIR correction, -\$1.9M from CCS-C to Family of Advanced Beyond Line of Sight Terminals (FAB-T)

FY16: -\$4.0M Congressional Directed Reduction for WGS excess to need

FY17: Net -\$2.484M, -\$5.95M reduces System Program Office management oversight of Command and Control System - Consolidated (CCS-C) due to lower risk as the acquisition program ends and sustainment begins in FY19, +\$8.0M for a wideband Analysis of Alternatives, -\$4.258M to account for availability of prior execution balances, and -\$0.276M inflation adjustment

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0605433F / WIDEBAND GLOBAL SATCOM (SPACE)				Project (Number/Name) 657102 / Command and Control Sys-Consolidated (CCS-C)			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
657102: <i>Command and Control Sys-Consolidated (CCS-C)</i>	-	14.095	8.646	12.248	0.000	12.248	10.168	0.000	0.000	0.000	0.000	45.157
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Additional Prior Years funds for Wideband Global SATCOM (SPACE) are in PE 0603854F, Project 644870, Command and Control System - Consolidated (CCS-C), Budget Activity 4.

A. Mission Description and Budget Item Justification

The Military Satellite Communications (MILSATCOM) Command and Control System-Consolidated (CCS-C) system provides integrated launch and on-orbit command and control (C2) functionality at Schriever AFB and Vandenberg AFB for MILSATCOM satellites. Schriever AFB is used for primary operations and Vandenberg AFB is used for backup operations. CCS-C uses modified commercial off the shelf hardware/software to control emerging and legacy MILSATCOM systems including Milstar, Defense Satellite Communications System (DSCS), Wideband Global SATCOM (WGS) and Advanced Extremely High Frequency (AEHF) satellites.

The CCS-C project 657102 funds system architecture evolution to provide increased performance for additional satellites and to comply with DoD, Air Force, and AFSPC-directed standards for Information Assurance, Satellite Control Standardization, and Net-Readiness. This continuing effort was previously funded in the FY14PB and prior as an Acquisition Category II (ACAT II) program. With the 10 October 2013 Final Operational Capability (FOC) declaration, the program has transitioned to an ACAT III program, the Command and Control System-Consolidated Assurance and Capability Enhancement (CACE), beginning FY2014. The WGS and AEHF procurement program elements fund the mission unique software and databases for the WGS Block II Follow-On satellites and the AEHF 4-6 satellites, respectively.

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

	FY 2015	FY 2016	FY 2017
Title: CCS-C development	14.095	8.646	12.248
Description: Develop system architecture to provide enhanced C2 of MILSATCOM satellites.			
FY 2015 Accomplishments: Continued CCS-C contract to implement new Cross-Domain Solution and Host Based Security System to enhance Information Assurance posture; upgraded, integrated, and tested new cryptologic equipment; and implemented new architecture changes to increase WGS capacity, reduce system downtime, and decrease O&M costs. Conducted Preliminary Design Review (PDR).			
FY 2016 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605433F / WIDEBAND GLOBAL SATCOM (SPACE)	Project (Number/Name) 657102 / Command and Control Sys-Consolidated (CCS-C)
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Execute CCS-C modifications to implement new Cross-Domain Solution and Host Based Security System to enhance Information Assurance posture; upgrade, integrate, and test new cryptologic equipment; and implement new architecture changes to increase WGS capacity, reduce system downtime, and decrease O&M costs. Conduct Critical Design Review (CDR).			
FY 2017 Plans: Continue to execute implementation, integration, and begin test verification activities for all CCS-C modifications. Manage both the operational CCS-C baseline and the new CCS-C Assurance and Capacity Enhancement (CACE) upgraded baseline throughout testing activities.			
Accomplishments/Planned Programs Subtotals	14.095	8.646	12.248

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• OPAF: BA03: Line Item # 836780: <i>Milsatcom Space</i>	0.265	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.265
• SPAF: BA01: Line Item # MILSAT: <i>Milsatcom Space</i>	0.000	0.269	0.272	0.000	0.272	0.276	0.281	0.000	0.000	0.000	1.098
• MPAF: BA05: Line Item # ADV555: <i>Advanced EHF</i>	3.679	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.679
• SPAF: BA01: Line Item # ADV555: <i>Advanced EHF</i>	0.000	1.906	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.906
• MPAF: BA05: Line Item # GAP000: <i>Wideband Global System Procurement</i>	2.071	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.071
• SPAF: BA01: Line Item # GAP000: <i>Wideband Global System Procurement</i>	0.000	2.083	2.083	0.000	2.083	0.208	0.000	0.000	0.000	0.000	4.374

Remarks

D. Acquisition Strategy
Competitive contract was awarded in November 2012 and began performance in January 2013. The CCS-C Production and Sustainment Contract (CPASC) includes effort to increase the capability of the CCS-C system to provide ongoing C2, launch readiness support, and anomaly resolution for MILSATCOM satellite families.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605433F / <i>WIDEBAND GLOBAL SATCOM (SPACE)</i>	Project (Number/Name) 657102 / <i>Command and Control Sys-Consolidated (CCS-C)</i>

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605433F / WIDEBAND GLOBAL SATCOM (SPACE)	Project (Number/Name) 657102 / Command and Control Sys-Consolidated (CCS-C)
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Production and Sustainment Contract	C/FPIF	Kratos : San Diego, CA	-	10.866	Oct 2014	5.008	Oct 2015	7.736	Oct 2016	0.000		7.736	Continuing	Continuing	TBD
Technical Mission Analysis	C/Various	Aerospace : El Segundo, CA	-	0.000	Oct 2014	1.654	Oct 2015	1.529	Oct 2016	0.000		1.529	Continuing	Continuing	-
Enterprise SE&I	C/CPIF	LinQuest : Los Angeles, CA	-	0.549	Oct 2014	0.890	Oct 2015	0.812	Oct 2016	0.000		0.812	Continuing	Continuing	TBD
Subtotal			-	11.415		7.552		10.077		0.000		10.077	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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 : El Segundo, CA	-	0.930	Oct 2014	0.097	Oct 2015	0.382	Oct 2016	0.000		0.382	Continuing	Continuing	-
A&AS	Various	Various : Various	-	1.746	Oct 2014	0.947	Oct 2015	1.739	Oct 2016	0.000		1.739	Continuing	Continuing	TBD
Other Support	Various	Various : Various	-	0.004	Oct 2014	0.050	Oct 2015	0.050	Oct 2016	0.000		0.050	Continuing	Continuing	-
Subtotal			-	2.680		1.094		2.171		0.000		2.171	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force								Date: February 2016		
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0605433F / <i>WIDEBAND GLOBAL SATCOM (SPACE)</i>			Project (Number/Name) 657102 / <i>Command and Control Sys-Consolidated (CCS-C)</i>			
	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals	-	14.095	8.646	12.248	0.000	12.248	-	-	-	

Remarks

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605433F / WIDEBAND GLOBAL SATCOM (SPACE)	Project (Number/Name) 657102 / Command and Control Sys-Consolidated (CCS-C)

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Capacity Upgrade: "Wideband Capacity Capability Improvement."	1	2015	4	2018
Resource Pooling:--"Processing Architecture Capability Improvement for Better Resource Management" --"Automated Data Synchronization for Increased Efficiency."	1	2015	4	2018
Cryptography Upgrade: "Replace CCS-C KI-17 with KS-252"	1	2015	4	2018
Secure FTP: "Cross-Domain Capability Improvement for secure data transfer"	1	2015	4	2018
IA Controls: "8500 Compliance Capability Improvement for security."	1	2015	4	2018
Conduct CACE Preliminary Design Review	3	2015	3	2015
Conduct CACE Critical Design Review	2	2016	2	2016
Interoperability: "Interoperability Capability Improvement to Migrate to USB standard"	1	2017	4	2018

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0605433F / WIDEBAND GLOBAL SATCOM (SPACE)			Project (Number/Name) 657107 / WGS Space Systems Resiliency Upgrade				
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
657107: WGS Space Systems Resiliency Upgrade	-	14.250	43.539	29.384	0.000	29.384	4.217	0.000	0.000	0.000	0.000	91.390
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Wideband Global SATCOM (WGS) System provides the DoD with high data rate military satellite communications (MILSATCOM) services in accordance with the Joint Space Management Board-approved MILSATCOM architecture (August 1996), the Joint Requirements Oversight Council (JROC)-approved MILSATCOM Capstone Requirements Document (October 1997), and JROC-approved WGS Operational Requirements Document (May 2000). This program was originally conceived to augment the near-term "bandwidth gap" in warfighter communications needs. Dual-frequency WGS satellites augment, then replace the DoD's Defense Satellite Communications System X-band service and augment one-way Global Broadcast Service Ka-band capabilities. In addition, WGS provides a high capacity two-way Ka-band service.

All WGS Block I (Satellites 1-3), Block II (Satellites 4-6), and the first Block II Follow-on (Satellite 7) have been launched and are operational. With the operation of WGS-5, the constellation has global coverage and Full Operational Capability (FOC) was declared on 12 May 2014. Project 657107, WGS Space Systems Resiliency Upgrade, is an Acquisition Category III (ACAT III) effort. The WGS resiliency upgrade will enable the WGS system to both locate and neutralize ground-based jamming threats, to both X-band and Ka-band. FY17 PB continues X-band anti-jam enhancement and initiates Ka-band ground based anti-jam development.

The FY17 PB includes funding to conduct an Analysis of Alternatives (AoA) on a future Wideband System to determine the next wideband satellite communications architecture.

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

	FY 2015	FY 2016	FY 2017
Title: WGS Upgrade	14.250	43.539	21.544
Description: Upgrade WGS system to both locate and neutralize ground-based jamming threats.			
FY 2015 Accomplishments: Completed Request For Proposal release, receipt of proposal, and technical evaluation of proposal.			
FY 2016 Plans: X-band: Initiate Ground Based Receiver Equipment Development, Global SATCOM Command and Control Element (GSCCE) Software (SW) Development (GBAN), Random Access Memory (RAM) Patch Development, In Service Calibration/Geolocation/Beam SW Development, and initiate Rack Integration and Test (I&T).			
FY 2017 Plans:			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605433F / WIDEBAND GLOBAL SATCOM (SPACE)	Project (Number/Name) 657107 / WGS Space Systems Resiliency Upgrade

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
X-band: Complete Ground Based Receiver Equipment Development, Global SATCOM Command and Control Element (GSCCE) Software (SW) Development (GBAN), Random Access Memory (RAM) Patch Development, In Service Calibration/Geolocation/Beam SW Development, and Rack Integration and Test (I&T). Initiate System I&T and Information Assurance Certification.			
Ka-band: Initiate Ground Based Receiver Equipment Development, Global SATCOM Command and Control Element (GSCCE) Software (SW) Development (GBAN), Random Access Memory (RAM) Patch Development, and Geolocation/Beam Pointing SW Development.			
Title: Wideband AoA	0.000	0.000	7.840
Description: Analysis of alternatives for a follow-on wideband communications system to the WGS system.			
FY 2015 Accomplishments: N/A			
FY 2016 Plans: N/A			
FY 2017 Plans: Support the Principal DoD Space Advisor (PDSA) in the conduct of a wideband Analysis of Alternatives to determine the appropriate mix of military and commercial wideband satellite communications.			
Accomplishments/Planned Programs Subtotals	14.250	43.539	29.384

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• MPAF: BA05: Line Item # GAP000: Wideband Global System Procurement	36.071	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3,018.730
• SPAF: BA01: Line Item # GAP000: Wideband Global System Procurement	0.000	74.476	86.272	0.000	86.272	90.659	62.112	0.000	0.000	0.000	313.519

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605433F / <i>WIDEBAND GLOBAL SATCOM (SPACE)</i>	Project (Number/Name) 657107 / <i>WGS Space Systems Resiliency Upgrade</i>

D. Acquisition Strategy

The Wideband Global SATCOM (WGS) Space Systems Resiliency Upgrade will be accomplished by modifying the WGS Block II Follow-On (B2FO) Firm Fixed Price (FFP) contract definitized in August 2010. The B2FO contract currently provides development, production, and deployment of WGS satellites 7 and beyond.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605433F / WIDEBAND GLOBAL SATCOM (SPACE)	Project (Number/Name) 657107 / WGS Space Systems Resiliency Upgrade
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
WGS Upgrade: X-band Anti-jam enhancement	SS/FFP	The Boeing Company : El Segundo, CA	-	13.250	Feb 2016	24.020	Mar 2016	19.290	Oct 2016	0.000		19.290	Continuing	Continuing	52.620
WGS Upgrade: Ka-band Anti-jam enhancement	C/TBD	TBD : TBD	-	0.000		17.959	Jun 2017	0.966	Jul 2017	0.000		0.966	Continuing	Continuing	-
Technical Mission Analysis	Various	Aerospace : El Segundo, CA	-	0.900	Feb 2015	0.622	Nov 2015	0.631	Oct 2016	0.000		0.631	Continuing	Continuing	-
Wideband Analysis of Alternatives (AoA)	TBD	TBD : TBD	-	0.000		0.000		7.840	Oct 2016	0.000		7.840	Continuing	Continuing	-
Subtotal			-	14.150		42.601		28.727		0.000		28.727	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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 : El Segundo, CA	-	0.100	Feb 2015	0.067	Mar 2016	0.069	Oct 2016	0.000		0.069	Continuing	Continuing	6.180
Other Support	Various	Various : TBD	-	0.000		0.871	Mar 2016	0.588	Nov 2016	0.000		0.588	Continuing	Continuing	1.200
Subtotal			-	0.100		0.938		0.657		0.000		0.657	-	-	7.380

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605433F / WIDEBAND GLOBAL SATCOM (SPACE)	Project (Number/Name) 657107 / WGS Space Systems Resiliency Upgrade

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Contract Award (X-band)																												
Ground Based Receiver Equipment Development																												
GSCCE Software Development (GBAN)																												
RAM Patch Development																												
In Service Calibration / Geolocation / Beam SW																												
Rack Integration & Test																												
System Integration & Test and IA Certification																												
Fielding and Activation																												
Contract Award (Ka-band)																												
Ground Based Receiver Equipment Development (Ka)																												
GSCCE Software Development (GBAN) (Ka)																												
RAM Patch Development (Ka)																												
Geolocation / Beam Pointing SW (Ka)																												
Rack Integration & Test (Ka)																												
System Integration & Test and IA Certification (Ka)																												
Fielding and Activation (Ka)																												
Wideband Analysis of Alternatives (AoA)																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605433F / <i>WIDEBAND GLOBAL SATCOM (SPACE)</i>	Project (Number/Name) 657107 / <i>WGS Space Systems Resiliency Upgrade</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Contract Award (X-band)	2	2016	2	2016
Ground Based Receiver Equipment Development	2	2016	1	2017
GSCCE Software Development (GBAN)	2	2016	1	2017
RAM Patch Development	2	2016	1	2017
In Service Calibration / Geolocation / Beam SW	1	2017	2	2017
Rack Integration & Test	1	2017	3	2017
System Integration & Test and IA Certification	3	2017	3	2018
Fielding and Activation	4	2018	1	2019
Contract Award (Ka-band)	3	2017	3	2017
Ground Based Receiver Equipment Development (Ka)	3	2017	2	2018
GSCCE Software Development (GBAN) (Ka)	3	2017	2	2018
RAM Patch Development (Ka)	4	2017	3	2018
Geolocation / Beam Pointing SW (Ka)	4	2017	3	2018
Rack Integration & Test (Ka)	3	2018	4	2018
System Integration & Test and IA Certification (Ka)	3	2018	3	2019
Fielding and Activation (Ka)	4	2019	2	2020
Wideband Analysis of Alternatives (AoA)	1	2017	1	2018

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605458F / <i>Air & Space Ops Center 10.2 RDT&E</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	0.000	83.245	47.629	28.911	0.000	28.911	0.000	0.000	0.000	0.000	0.000	159.785
654945: <i>AOC 10.2 Development</i>	0.000	83.245	47.629	28.911	0.000	28.911	0.000	0.000	0.000	0.000	0.000	159.785
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Program MDAP/MAIS Code: N42

A. Mission Description and Budget Item Justification

The Air Operations Center Weapon System (AOC WS), AN/USQ-163 Falconer, the senior element of the Theater Air Control System (TACS), is the weapon system 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.

The AOC WS Increment 10.2 program keeps the AOC interoperable, certified, supportable, and compliant through the integration, testing and fielding of new capabilities and upgrades to the AOC WS baseline. The program supports mission requirements at Geographic and Functional AOCs, as well as Support and Manpower Augmentation units. To keep the AOC current and interoperable with the Combatant Commands (CCMD), cyber requirements, and fifth generation weapon system/ weapons, the AOC WS program plans to evolve the AOC through the integration and test of progressively improving capabilities. These activities ensure a system of systems engineering perspective for the AOC WS, and include weapon system standardization activities as defined by AOC WS requirements documents.

AOC Increment 10.2 received a Milestone B decision 11 October 2013. This project will provide for design, development, integration of 3rd party capabilities, and testing; as well as, build-up and fielding of the Help Desk (HD), Formal Training Unit (FTU), Combined Air Operations Center-experimental (CAOC-X) suite, and one geographic site.

Activities also include studies and analysis to support current program planning and execution, as well as future program planning, and transition to production and sustainment contract.

This program is in Budget Activity 5, System Development & Demonstration (SDD) because the program passed Milestone B and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full fielding decision.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605458F / <i>Air & Space Ops Center 10.2 RDT&E</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	85.938	47.629	0.000	0.000	0.000
Current President's Budget	83.245	47.629	28.911	0.000	28.911
Total Adjustments	-2.693	0.000	28.911	0.000	28.911
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-0.006	0.000			
• SBIR/STTR Transfer	-2.687	0.000			
• Other Adjustments	0.000	0.000	28.911	0.000	28.911

Change Summary Explanation

FY17: Funding increased to fund the completion of development and testing due to program slip beyond MS-C threshold.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Title: AOC WS Inc 10.2 Prime Development</p> <p>Description: AOC 10.2 infrastructure development and mission capability integration. Development of a robust, open, Net-Centric infrastructure with a Service Oriented Architecture (SOA). Conduct system maintenance and interoperability updates.</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Continued contractor modernization and provided contractor support for development and operational testing, training, and initial site deployment. This included but is not limited to obtaining an Interim Authority to Test (IATT) - Prepared to obtain an Authority to Operate (ATO) - Conducted the contractor System Acceptance Test (SAT) - Conducted the Government Developmental Testing (DT), and the Operational Assessment. Additionally, bill of Material (BOM) procurement, pre-installation activities, site-preparations, and some on-site installation activities for the Initial Operational Test and Evaluation (IOT&E) sites began. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Complete contractor Design/Development, achieve Milestone C, and provide contractor support for development and Operational Testing (OT), training, and initial site deployment, including but is not limited to the following. 	77.016	45.447	26.661

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0605458F / <i>Air & Space Ops Center 10.2 RDT&E</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Obtain an Authority to Operate (ATO) - Complete the Government Developmental Testing (DT) and Operational Assessment. - Initial Operational Test and Evaluation (IOT&E) activities include conduct of OT Phase I at the Combined AOC-Experimental (CAOC-X), focused on operational suitability, and fielding to the Formal Training Unit (FTU). FY 2017 Plans: -Continue IOT&E site installation with the Help Desk and first Geographic AOC (GEO #1). -Conduct OT phase II at GEO #1, focused on operational effectiveness. -Complete OT activities. -Obtain Full Deployment Decision. -Transfer to Long-Term Modification and Sustainment (LTM&S) contract for sustainment. 				
<p>Title: AOC WS Inc 10.2 Test and Evaluation</p> <p>Description: Test and Evaluation</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Planned and implemented comprehensive Modernization contractor testing (in-plant integration and test, functional testing, security testing, etc.), System Acceptance Testing, Developmental Test and Evaluation (DT&E), and Operational Test and Evaluation (OT&E) on the AOC 10.2 baseline and system updates, to include test planning, conducted test, and documentation review. <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Plan and implement comprehensive Modernization contractor testing (in-plant integration and test, functional testing, security testing, etc.), System Acceptance Testing, DT&E, and OT&E on the AOC 10.2 baseline and system updates, to include test planning, conducting test, and documentation review. <p>FY 2017 Plans:</p>		3.303	1.424	2.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605458F / <i>Air & Space Ops Center 10.2 RDT&E</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
- Plan and implement comprehensive OT&E on the AOC 10.2 baseline and system updates, to include test planning, conducting test, and documentation review.			
Title: AOC WS Inc 10.2 Training Description: Training FY 2015 Accomplishments: - Effort included the support of the Modernization effort for AOC 10.2 training analysis, planning, and development during Engineering & Manufacturing Development (EMD), to include both contractor-developed capabilities and supplemental training for contractor modified 3rd party capabilities. -- This also included curriculum and courseware / material development, instructor training, class / Computer Based Training conduct, and training surveys / analysis / updates / enhanced simulation capabilities. FY 2016 Plans: - Effort includes, but is not limited to, support of the Modernization effort for AOC 10.2 training analysis, planning, and development during EMD, to include both contractor-developed capabilities and supplemental training for contractor modified 3rd party capabilities. -- This includes curriculum and courseware / material development, instructor training, class / Computer Based Training conduct, and training surveys / analysis / updates / enhanced simulation capabilities. FY 2017 Plans: - Effort includes, but is not limited to, support of the Modernization effort for AOC 10.2 training analysis, planning, and development during Post Milestone C efforts (Production and Deployment) to include both contractor-developed capabilities and supplemental training for contractor modified 3rd party capabilities.	2.926	0.758	0.250
Accomplishments/Planned Programs Subtotals	83.245	47.629	28.911

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE: BA07: PE 0207410F: <i>Air and Space Operations Center Weapon System (AOC WS), Project 675117</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	264.584
• RDTE: BA04: PE 0604458F: <i>Air & Space Ops Center</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	66.970

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605458F / <i>Air & Space Ops Center 10.2 RDT&E</i>
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D. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF BA03 Line Item # 834560: <i>Air Operations Center (AOC) 10.2</i>	0.000	14.846	30.623	0.000	30.623	11.844	0.000	0.000	0.000	36.500	93.813

Remarks

For OPAF BA03 Line Item # 834560, the FY16 PB described the Geographic AOC fielding plan with installations of 1 / 4 / 1 in FYs 16 / 17 / 18. AOC 10.2 development slips caused the Air Force to reconsider the fielding plan. The revised Geographic AOC fielding plan is 1 / 2 / 3 in FYs 16 / 17 / 18. The Air Force is evaluating the FY18 funding needs to complete this plan.

E. Acquisition Strategy

The acquisition strategy builds on existing capabilities using evolutionary acquisition to standardize, modernize and sustain the AOC. 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. The latest increment is AOC 10.2, which leverages the Cost Plus Incentive Fee (CPIF) AOC Modernization Contract, competitively awarded on 25 October 2011, covering initial development plus options for fielding, tech refresh, help desk and sustainment. The Modernization prime contractor is using a system of systems perspective and following systems engineering rigor to evolve AOC to a Net-Centric environment, compliant with DoD SOA standards. The AOC 10.2 Program Management Office (PMO) provides technical oversight to the AOC 10.2 Modernization effort, led by a Government AOC Weapon System (WS) Chief Engineer and a Modernization Lead Engineer. Additionally, significant technical expertise is provided by MITRE, MIT Lincoln Laboratory, and Engineering & Technology Acquisition Support Services contractors.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605458F / Air & Space Ops Center 10.2 RDT&E	Project (Number/Name) 654945 / AOC 10.2 Development
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
AOC 10.2 Modernization Government Furnished Equipment	Various	Various : Various	0.000	2.027	Dec 2014	0.000		1.140	Mar 2017	0.000		1.140	0.000	3.167	-
AOC 10.2 Modernization Contract	C/CPIF	Northrop Grumman : Herndon, VA	0.000	65.442	Oct 2014	38.884	Oct 2015	19.026	Nov 2016	0.000		19.026	0.000	123.352	212.958
AOC 10.2 Training	C/Various	Various : Various	0.000	2.926	Apr 2015	0.758	Jan 2016	0.250	May 2017	0.000		0.250	0.000	3.934	-
Subtotal			0.000	70.395		39.642		20.416		0.000		20.416	0.000	130.453	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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	3.303	May 2015	1.424	Jan 2016	2.000	Apr 2017	0.000		2.000	0.000	6.727	TBD
Subtotal			0.000	3.303		1.424		2.000		0.000		2.000	0.000	6.727	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
System Engineering	C/Various	MITRE : Bedford, MA	0.000	5.035	Oct 2014	2.413	Oct 2015	2.395	Oct 2016	0.000		2.395	0.000	9.843	TBD
Program Management Administration	C/Various	Various : Hanscom AFB, MA	0.000	4.512	Nov 2014	4.150	Oct 2015	4.100	Dec 2016	0.000		4.100	0.000	12.762	TBD
Subtotal			0.000	9.547		6.563		6.495		0.000		6.495	0.000	22.605	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force								Date: February 2016			
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0605458F / Air & Space Ops Center 10.2 RDT&E				Project (Number/Name) 654945 / AOC 10.2 Development			
	Prior Years	FY 2015		FY 2016		FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	83.245		47.629		28.911	0.000	28.911	0.000	159.785	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605458F / Air & Space Ops Center 10.2 RDT&E	Project (Number/Name) 654945 / AOC 10.2 Development

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
AOC Inc 10.2 Milestone C (JUN 2016)								■																				
AOC Inc 10.2 Full Deployment Decision (JUN 2017)												■																
AOC Inc 10.2 Design/Development	■																											
AOC Inc 10.2 Fielding to CAOC-X / Development Test (DT) / Operational Test (OT) / Initial Operational Test and Evaluation (IOTE)													■															
AOC Inc 10.2 Fielding to the Help Desk												■																
AOC Inc 10.2 Fielding to the Formal Training Unit (FTU)								■																				
AOC Inc 10.2 Fielding to Geo #1 / OT Phase 2												■																

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605458F / <i>Air & Space Ops Center</i> 10.2 RDT&E	Project (Number/Name) 654945 / <i>AOC 10.2 Development</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AOC Inc 10.2 Milestone C (JUN 2016)	3	2016	3	2016
AOC Inc 10.2 Full Deployment Decision (JUN 2017)	3	2017	3	2017
AOC Inc 10.2 Design/Development	1	2015	1	2016
AOC Inc 10.2 Fielding to CAOC-X / Development Test (DT) / Operational Test (OT) / Initial Operational Test and Evaluation (IOTE)	4	2015	3	2017
AOC Inc 10.2 Fielding to the Help Desk	1	2017	2	2017
AOC Inc 10.2 Fielding to the Formal Training Unit (FTU)	4	2016	1	2017
AOC Inc 10.2 Fielding to Geo #1 / OT Phase 2	1	2017	2	2017

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605931F / <i>B-2 Defensive Management System</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	630.820	95.440	271.961	315.615	0.000	315.615	265.910	152.759	84.642	20.807	0.000	1,837.954
653844: <i>B-2 DMS</i>	630.820	95.440	271.961	315.615	0.000	315.615	265.910	152.759	84.642	20.807	0.000	1,837.954
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Program MDAP/MAIS Code: 431

A. Mission Description and Budget Item Justification

The Defensive Management System Modernization (DMS-M) program enhances the B-2 direct attack capability by addressing emerging and future 21st century threats and robust modern Integrated Air Defense Systems (IADS). By leveraging "state-of-the-art" electronic warfare antennae, processors, controllers and displays, B-2 aircrews will realize unprecedented situational battlespace awareness and dynamic, real-time threat avoidance in the most complex radio frequency emitter environments. The inherent increased sensitivity of the modernized DMS over the legacy system, with increased processing power, will build a battlespace picture that could be shared with joint force platforms by on-board communication systems. The current B-2 DMS was designed in the 1980s and has not received any upgrades to date. Also, many components of the legacy DMS are not supportable and will severely impact aircraft availability without significant investment in reliability and maintainability upgrades.

During development, the engineering baseline will be finalized and four production representative kits will be procured to support integrated development/operational test and a pre-Milestone C Operational Assessment, as well as B-2 Nuclear Certification testing. After completion of the Milestone C decision, Low Rate Initial Production will begin in FY 2020. After a successful Operational Test and Evaluation, the Full Rate Production decision will occur in FY 2021. Diminishing manufacturing sources and materiel shortages for affected components and subassemblies, will be addressed to protect the planned production program by mitigating unplanned part redesign and requalification risks.

In the FY 2017 budget request, the B-2 DMS-M program was baselined to the USAF Service Cost Position, and the budget was adjusted to the Service Cost Position.

BA5 - This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0605931F / B-2 Defensive Management System
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	98.768	271.961	247.860	0.000	247.860
Current President's Budget	95.440	271.961	315.615	0.000	315.615
Total Adjustments	-3.328	0.000	67.755	0.000	67.755
• 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	-3.328	0.000			
• Other Adjustments	0.000	0.000	67.755	0.000	67.755

Change Summary Explanation

FY17 +\$67.755M added to fund DMS-M to the October 2015 Service Cost Position

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: B-2 Defensive Management System Modernization (DMS-M) Tech Development Phase 2	95.440	29.000	0.000	0.000	0.000
Description: DMS Modernization program develops improved aircrew situational awareness through replacement of passive antennas, receiver/processors, and display processors. DMS-M also addresses critical system shortfalls, and improves legacy DMS component repair issues.					
FY 2015 Accomplishments: Definitized the Technology Development Phase 2 Undefined Contract Award. Continued the Technology Development Phase 2 effort. Continued preparation for the Milestone B Defense Acquisition Board. Released the Engineering and Manufacturing Development (EMD) Request for Proposal (RFP).					
FY 2016 Plans: Complete the Technology Development Phase 2 effort.					
FY 2017 Base Plans: N/A					
FY 2017 OCO Plans: N/A					
Title: B-2 Defensive Management System Modernization (DMS-M) EMD	0.000	242.961	315.615	0.000	315.615

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0605931F / <i>B-2 Defensive Management System</i>
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C. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>Description: DMS Modernization program develops improved aircrew situational awareness through replacement of passive antennas, receiver/processors, and display processors. DMS-M also addresses critical system shortfalls, and improves legacy DMS component repair issues.</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: Award the EMD contract and initiate the EMD Phase. Complete the system Critical Design Review (CDR).</p> <p>FY 2017 Base Plans: Install the first DMS-M kit on the test aircraft, conduct Low Observable baseline flights, accomplish the Integrated Functional Capability certification, and complete ground testing in preparation for the start of Developmental Test and Evaluation (DT&E) in FY18.</p> <p>FY 2017 OCO Plans: N/A</p>					
Accomplishments/Planned Programs Subtotals	95.440	271.961	315.615	0.000	315.615

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• APAF: BA07: Line Item #b2dms0: <i>B-2 DMS</i>	0.000	0.000	0.000	0.000	0.000	0.000	49.884	280.497	365.563	108.000	803.944
• APAF: BA07: Line Items # 000999: <i>Acft Initial Spares & Repairs</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	14.956	-	-
• APAF: BA07: Line Item #000075: <i>Other Production Charges</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	7.756	-	-

Remarks

E. Acquisition Strategy

Key elements of the overall acquisition strategy include: use of sole source contract with a prime/integrating contractor (Northrop Grumman) who will perform subsystem and component competitions where appropriate, use of cost plus incentive fee (CPIF) development contracts, and the combination of developmental upgrades with

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force Date: February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)
3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	PE 0605931F / <i>B-2 Defensive Management System</i>

software sustainment blocks to minimize the number of software releases, aircraft downtime, and differences in fielded configurations. The government will encourage the prime contractor to compete subsystems and key components to reduce cost and risk.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605931F / B-2 Defensive Management System	Project (Number/Name) 653844 / B-2 DMS
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Air Vehicle - Technology Development	SS/CPFF	Various : Various	608.213	92.282	Mar 2015	29.000	Oct 2015	0.000		0.000		0.000	0.000	729.495	-
Air Vehicle - Engineering and Manufacturing Development (EMD)	SS/CPIF	Various : Various	0.000	0.000		227.658	Feb 2016	292.616	Dec 2016	0.000		292.616	461.433	981.707	TBD
Subtotal			608.213	92.282		256.658		292.616		0.000		292.616	461.433	1,711.202	-

Remarks
Northrop-Grumman, El Segundo, CA is the prime contractor and integrator.

Major subsystem vendors are:
Electronic Support Measures: BAE, Nashua NH
Advanced Graphics Processor: Lockheed-Martin, Owego, NY
Band 1 - 3 antennas: Randtron, Menlo Park CA
Band 4 antenna: Ball Aerospace, Westminster, CO

The acquisition phase formerly known as Technology Development (TD) is now referred to as Technology Maturation and Risk Reduction (TMRR)

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Government Test	MIPR	AFFTC : Various	3.224	0.845	Jan 2015	4.300	Jan 2016	13.062	Jan 2017	0.000		13.062	32.921	54.352	TBD
Subtotal			3.224	0.845		4.300		13.062		0.000		13.062	32.921	54.352	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605931F / B-2 Defensive Management System	Project (Number/Name) 653844 / B-2 DMS
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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	19.383	2.313	Dec 2014	11.003	Dec 2015	9.937	Dec 2016	0.000		9.937	29.764	72.400	-
Subtotal			19.383	2.313		11.003		9.937		0.000		9.937	29.764	72.400	-
Project Cost Totals			630.820	95.440		271.961		315.615		0.000		315.615	524.118	1,837.954	-

Remarks
Northrop-Grumman, the prime contractor for the B-2 weapon system, is the integrator and major contractor for B-2 DMS activities.

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605931F / B-2 Defensive Management System	Project (Number/Name) 653844 / B-2 DMS

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
DMS-M Milestone B Decision					■																							
DMS-M EMD Contract Award						■																						
DMS-M Critical Design Review											■																	
DMS-M EMD																												
DMS-M Combined Developmental Test / Operational Test (DT/OT)																												
DMS-M Milestone C - Low Rate Initial Production (LRIP) Decision																												
DMS-M Low Rate Initial Production (LRIP)																												
DMS-M Full Rate Production (FRP) Decision																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605931F / <i>B-2 Defensive Management System</i>	Project (Number/Name) 653844 / <i>B-2 DMS</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
DMS-M Milestone B Decision	1	2016	1	2016
DMS-M EMD Contract Award	2	2016	2	2016
DMS-M Critical Design Review	4	2016	4	2016
DMS-M EMD	2	2016	1	2020
DMS-M Combined Developmental Test / Operational Test (DT/OT)	1	2018	1	2021
DMS-M Milestone C - Low Rate Initial Production (LRIP) Decision	1	2020	1	2020
DMS-M Low Rate Initial Production (LRIP)	1	2020	4	2021
DMS-M Full Rate Production (FRP) Decision	1	2021	1	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0101125F / <i>Nuclear Weapons Modernization</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	176.990	148.281	212.121	137.909	0.000	137.909	150.974	95.551	36.420	0.000	0.000	958.246
657007: <i>B61 LIFE EXTENSION PROGRAM</i>	176.990	148.281	212.121	137.909	0.000	137.909	150.974	95.551	36.420	0.000	0.000	958.246
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Program MDAP/MAIS Code: 468

A. Mission Description and Budget Item Justification

The purpose of this program element is to conduct and support United States Air Force (USAF) and Joint Department of Defense (DoD) / Department of Energy (DOE) acquisition activities for the modernization of nuclear weapons.

B61-12 Life Extension Program (LEP): The B61-12 LEP will integrate DOE efforts to extend the service life of the warhead with DoD efforts to develop a guided Tail Kit Assembly (TKA) required to maintain current B61 mission characteristics. Programmatic integration of the Air Force-led, joint DoD-DOE program is accomplished through the B61 LEP Project Officers Group (POG) and its subgroups. In accordance with Air Force Materiel Command mission assignment memo (dated 17 Feb 11) and National Nuclear Security Administration (NNSA)-Air Force Nuclear Weapons Center (AFNWC) Memorandum of Understanding (MOU dated 28 Jun 12), the USAF is responsible for development, acquisition and delivery of a guided TKA and All Up Round (AUR) technical integration, system qualification and fielding of the B61-12 variant on multiple platforms.

The FY2017 funding request was reduced by \$40.915 million to account for the availability of prior year execution balances.

This program is in Budget Activity 5, System Development and Demonstration (SDD), because it is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0101125F / <i>Nuclear Weapons Modernization</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	168.357	212.121	206.283	0.000	206.283
Current President's Budget	148.281	212.121	137.909	0.000	137.909
Total Adjustments	-20.076	0.000	-68.374	0.000	-68.374
• 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	-10.000	0.000			
• SBIR/STTR Transfer	-10.076	0.000			
• Other Adjustments	0.000	0.000	-68.374	0.000	-68.374

Change Summary Explanation

FY15: -\$10M for higher Air Force priorities; -\$10.1M for SBIR

FY17: -\$68M addressing higher Air Force priorities

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

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Engineering & Manufacturing Development Contract (B61)	79.200	113.642	58.024	0.000	58.024
Description: Prime contract to develop, test, integrate and nuclear certify a guided TKA in support of the B61-12 LEP.					
FY 2015 Accomplishments: Continued B61-12 TKA development, design, test, integration, qualification and nuclear certification activities in support of the B61-12 LEP. Continued design, integration and testing of the B61-12 system and verification of requirements and validation of TKA performance. Continued flight testing to verify aircraft flight environments in support of weapon development. Continued B61-12 TKA program practices that ensure the following were met: requirements flow down, requirement allocation to hardware and software, requirements compliance matrix, system performance, reliability, maintainability, product assurance, testability,					

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016				
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>		R-1 Program Element (Number/Name) PE 0101125F / <i>Nuclear Weapons Modernization</i>				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
<p>producibility and supportability. Conducted contractor flight tests with weapons drops in preparation for the Critical Design Review (CDR). Conducted Environmental and Separation Flight Testing. Provided support to DOE flight tests in preparation for the Baseline Design Review (BDR) for the bomb assembly (BA). Supported aircraft Operational Flight Program (OFP) development and integration to deliver the OFP test tapes for flight testing.</p> <p>FY 2016 Plans: Continues B61-12 TKA development, design, test, integration, qualification and nuclear certification activities in support of the B61-12 LEP. Continues design, integration and testing of the B61-12 system and verification of requirements and validation of TKA performance. Continues flight testing to verify aircraft flight environments in support of weapon development. Continues B61-12 TKA program practices that ensure the following were met: requirements flow down, requirement allocation to hardware and software, requirements compliance matrix, system performance, reliability, maintainability, product assurance, testability, producibility and supportability. Provides support to the DOE flight tests in support of the BDR for the BA. Provides support to aircraft OFP development and integration to deliver the OFP test tapes in support of flight testing. Continues TKA Developmental Test (DT) drops, and preparation work for FY17 System Qualification drops.</p> <p>FY 2017 Base Plans: Continues B61-12 TKA development, design, test, integration, qualification and nuclear certification activities in support of the B61-12 LEP. Continues design, integration and testing of the B61-12 system and verification of requirements and validation of TKA performance. Continues flight testing to verify aircraft flight environments in support of weapon development. Continues B61-12 TKA program practices that ensure the following are met: requirements flow down, requirement allocation to hardware and software, requirements compliance matrix, system performance, reliability, maintainability, product assurance, testability, producibility and supportability. Provides support to aircraft OFP development and integration to deliver the OFP test tapes in support of flight testing. Continues TKA Developmental Test (DT) drops, and provides support to the FY17 System Qualification drops.</p> <p>FY 2017 OCO Plans: N/A</p>						
Title: All Up Round (AUR) Technical Integration (B61)		12.358	12.403	12.266	0.000	12.266

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0101125F / <i>Nuclear Weapons Modernization</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
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Description: Covers all system engineering tasks in support of AUR technical integration, qualification & fielding, including program support to the B61 LEP POG.

FY 2015 Accomplishments:
Continued B61-12 system qualification plan, warhead component qualification, TKA qualifications, and B61-12 AUR integration activities. Continued support to maintain technical and programmatic schedules and program documents that support the AUR technical integration. Continued to develop warhead-to-TKA interface requirements and design. Continued to provide technical expertise to maintain B61-12 aircraft compatibility with platforms through completion of the test and evaluation program. Continued to develop test assets to support early integration efforts at the aircraft system integration laboratories. Conducted B61-12 AUR technical and programmatic reviews, including design reviews, systems reviews, technical interchange meetings, and test reviews. Also conducted test assessments to validate modeling and simulation results in support of system qualification; configuration management of B61-12 AUR drawings, interface control documents, and system specifications; and development of trainers and other USAF configurations. Provided AUR integration support to the DOE flight tests in support of the BDR for the BA.

FY 2016 Plans:
Continues B61-12 system qualification plan, warhead component qualification, TKA qualifications, and B61-12 AUR integration activities. Continues support to maintain technical and programmatic schedules and program documents that support the AUR technical integration. Continues to develop warhead-to-TKA interface requirements and design. Continues to provide technical expertise to maintain B61-12 aircraft compatibility with platforms through completion of the test and evaluation program. Continues to develop test assets to support integration efforts at the aircraft system integration laboratories. Includes B61-12 AUR technical and programmatic reviews, including design reviews, systems reviews, technical interchange meetings, and test reviews. Also includes test assessments to validate modeling and simulation results in support of system qualification; configuration management of B61-12 AUR drawings, interface control documents, and system specifications; and support of trainers and other USAF configurations. Provides AUR integration support to the DOE flight tests in support of the BDR for the BA. Provides for management of system security requirements. Provides AUR integration support to the DOE in preparation for System Qualification drops.

FY 2017 Base Plans:
Continues B61-12 system qualification plan, warhead component qualification, TKA qualifications, and B61-12 AUR integration activities. Continues support to maintain technical and programmatic schedules and program

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0101125F / <i>Nuclear Weapons Modernization</i>
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C. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
documents that support the AUR technical integration. Continues to develop warhead-to-TKA interface requirements and design. Continues to provide technical expertise to maintain B61-12 aircraft compatibility with platforms through completion of the test and evaluation program. Continues to develop test assets to support integration efforts at the aircraft system integration laboratories. Includes B61-12 AUR technical and programmatic reviews, including design reviews, systems reviews, technical interchange meetings, and test reviews. Also includes test assessments to validate modeling and simulation results in support of system qualification; configuration management of B61-12 AUR drawings, interface control documents, and system specifications; and support of trainers and other USAF configurations. Provides for management of system security requirements. Provides AUR integration support to the DOE in support of System Qualification drops. FY 2017 OCO Plans: N/A					
Title: Aircraft Integration (B61) Description: B61-12 integration with aircraft, including mission planning system upgrades to accommodate the new weapon variant and weapon design compatibility with threshold aircraft. FY 2015 Accomplishments: Continued meeting participation/membership and integration activities with aircraft. Continued test tapes development and demonstration/validation of the OFP. Continued mission planning upgrades for aircraft and design compatibility with threshold aircraft. Conducted aircraft OFP development and integration to deliver the OFP test tapes in support of flight testing. FY 2016 Plans: Continues meeting participation/membership and integration activities for aircraft. Continues test tapes development and demonstration/validation of the OFP. Continues design compatibility with aircraft. Continues mission planning upgrades. Continues OFP development and integration to deliver the OFP test tapes in support of flight testing. FY 2017 Base Plans: Continues meeting participation/membership and integration activities for aircraft. Continues test tapes development and demonstration/validation of the OFP. Continues design compatibility with aircraft. Continues	48.855	58.147	39.007	0.000	39.007

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0101125F / <i>Nuclear Weapons Modernization</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
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mission planning upgrades. Continues OFP development and integration to deliver the OFP test tapes in support of flight testing. FY 2017 OCO Plans: N/A					
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Title: Test Support (B61) Description: Test activities and support for TKA design validation & verification and nuclear certification, as well as B61-12 AUR system qualification (includes design and operational certification activities). FY 2015 Accomplishments: Continued test planning and execution activities to support B61-12 weapon development, AUR technical integration and aircraft integration. Continued flight testing to verify aircraft flight environments and TKA and AUR design verification, including environmental and separation flight testing, initial autopilot and contractor flight tests with weapons drops in preparation for the CDR. Continued development and delivery of necessary BAs to accomplish TKA test and trainer activities. Provided support to the DOE flight tests in support of the BDR for the BA. Supported aircraft OFP development and integration to deliver the OFP test tapes in support of flight testing. FY 2016 Plans: Continues test planning and execution activities to support B61-12 weapon development, AUR technical integration and aircraft integration. Continues flight testing to verify aircraft flight environments and TKA and AUR design verification, including initial TKA DT drops and preparation for AUR System Qualification drops. Continues development and delivery of necessary BAs to accomplish TKA test and trainer activities. Provides support to the DOE flight tests in support of the BDR for the bomb assembly. Supports aircraft development and integration to deliver the OFP test tapes in support of flight testing. FY 2017 Base Plans: Continues test planning and execution activities to support B61-12 weapon development, AUR technical integration and aircraft integration. Continues flight testing to verify aircraft flight environments and TKA and AUR design verification, including initial TKA DT drops and preparation for TKA Operational Test (OT) drops and AUR System Qualification drops. Continues development and delivery of necessary BAs to accomplish TKA	7.868	27.929	28.612	0.000	28.612
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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0101125F / <i>Nuclear Weapons Modernization</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
test and trainer activities. Provides support to the DOE flight tests for the bomb assembly. Supports aircraft development and integration to deliver the OFP test tapes in support of flight testing.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	148.281	212.121	137.909	0.000	137.909

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• PAAF: BA01 Line Item # 354040: B61	0.000	0.000	0.000	0.000	0.000	145.440	207.208	2.460	0.000	0.000	355.108

Remarks

E. Acquisition Strategy
 The Milestone Decision Authority directed a three-fold competitive acquisition strategy at the 30 April 2012 Materiel Development Decision. 1) A single prime contractor was chosen to develop the B61-12 TKA through Engineering Manufacturing and Development (EMD) using full and open competition. EMD consists of two phases; 2) the prime contractor is to maintain competition at the subcomponent level; and 3) a sole source contract will be awarded for production to the EMD contractor.

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force												Date: February 2016				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 5				PE 0101125F / Nuclear Weapons Modernization				657007 / B61 LIFE EXTENSION PROGRAM								
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
B61 LEP EMD Contracts	C/CPIF	Boeing : St Charles, MO	107.389	74.067	Nov 2014	108.634	Dec 2015	52.916	Nov 2016	0.000		52.916	113.388	456.394	0.000	
Subtotal			107.389	74.067		108.634		52.916		0.000		52.916	113.388	456.394	0.000	
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
AUR Technical Integration	MIPR	Various : various	17.358	12.358	Oct 2014	12.403	Jan 2016	12.266	Jan 2017	0.000		12.266	11.162	65.547	-	
Aircraft Integration	MIPR	Various : various	23.728	48.855	Oct 2014	58.147	Nov 2015	39.007	Nov 2016	0.000		39.007	96.249	265.986	-	
Subtotal			41.086	61.213		70.550		51.273		0.000		51.273	107.411	331.533	-	
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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 Support for B61 LEP Development	PO	96 TW : Eglin, FL	15.519	7.868	Oct 2014	27.929	Dec 2015	28.612	Nov 2016	0.000		28.612	56.762	136.690	-	
Subtotal			15.519	7.868		27.929		28.612		0.000		28.612	56.762	136.690	-	
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	Various	various : various	12.996	5.133	Oct 2014	5.008	Oct 2015	5.108	Oct 2016	0.000		5.108	5.384	33.629	-	
Subtotal			12.996	5.133		5.008		5.108		0.000		5.108	5.384	33.629	-	
Project Cost Totals			176.990	148.281		212.121		137.909		0.000		137.909	282.945	958.246	-	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force							Date: February 2016			
Appropriation/Budget Activity 3600 / 5			R-1 Program Element (Number/Name) PE 0101125F / <i>Nuclear Weapons Modernization</i>			Project (Number/Name) 657007 / <i>B61 LIFE EXTENSION PROGRAM</i>				
	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	

Remarks

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0101125F / <i>Nuclear Weapons Modernization</i>	Project (Number/Name) 657007 / <i>B61 LIFE EXTENSION PROGRAM</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Engineering & Manufacturing Development Phase 1	1	2015	4	2017
Engineering & Manufacturing Development Phase 2	1	2016	4	2018
All-Up-Round Integraton Test	1	2015	4	2019
Ground Test/WTT/Flight Test	1	2015	4	2020
F-15E Integration	1	2015	2	2021
CDR	2	2016	2	2016
F-16 Integration	1	2015	2	2021
B-2A Integration	2	2015	4	2020
PA-200 Integration	3	2015	4	2020
F-35 Integration	3	2015	4	2021
Milestone C Decision	1	2019	1	2019
Production	1	2019	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0207171F / F-15 EPAWSS
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.000	180.681	256.669	0.000	256.669	194.843	204.972	201.119	148.034	Continuing	Continuing
657108: EPAWSS DEVELOPMENT	-	0.000	180.681	256.669	0.000	256.669	194.843	204.972	201.119	148.034	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Program MDAP/MAIS Code: 485

Note

In FY 2016, PE 0207171F, F-15 EPAWSS, Project 676038, EPAWSS, Budget Activity 07, Operational Systems Development was transferred to PE 0207171F, F-15 EPAWSS, Project 657108, EPAWSS Development, Budget Activity 05, System Development and Demonstration to align the program in the correct budget activity.

In FY 2015, PE 0207134F, F-15E Squadrons, Project 670131, Initial Operational Test and Evaluation, F-15 EPAWSS development efforts were transferred to PE 0207171F, F-15 EPAWSS, Project 676038, EPAWSS in order to provide budget transparency.

Prior Years funding in FY 2013 and FY 2014 of \$14.677M was executed in PE 0207134F.

Prior Year funding in FY 2015 of \$38.944M was executed in PE 0207171F, Project 676038.

A. Mission Description and Budget Item Justification

The F-15 is the most versatile fighter in the world today. The F-15C continues to provide air superiority with an undefeated and unmatched aerial combat record. The F-15E retains this air superiority capability and adds systems, such as advanced imaging and targeting systems, to meet the requirement for all-weather, deep penetration, and night / under-the-weather, air-to-surface attack. A mainstay in operations both domestic and abroad, upgrades to the F-15 (avionics, armament, airframe and engines) are critical to maintaining combat viability (lethality, survivability and supportability). Projected to remain in service past 2040, avionics modernization is key to long-term weapon system viability. This modernization is built on a foundation of technical and acquisition support studies (both internal to the Air Force and through outside contractors). The proliferation of fourth generation enemy aircraft, sophisticated "double-digit" anti-aircraft missile systems and other enemy systems pose a significant threat to F-15 survivability. The F-15 Eagle Passive Active Warning and Survivability System (EPAWSS) will replace the F-15's functionally obsolete self-defense Tactical Electronic Warfare System (TEWS) to enhance weapon system situational awareness and survivability against enemy threats. F-15 EPAWSS will also improve reliability and sustainability. F-15 EPAWSS is linked to an aircraft operational flight program update schedule that works to integrate new capabilities with the airframe. Incorporation of corresponding spiral and / or phased technology / equipment improvements that include support equipment, mission planning systems, and training device upgrades will improve performance, supportability and aircrew training.

The F-15 EPAWSS upgrade will significantly improve the F-15's capability to autonomously and automatically detect, identify and locate radio frequency (RF) threats as well as provide the ability to deny, degrade, deceive, disrupt and defeat RF and electro-optical / infrared (EO / IR) threat systems in contested and unplanned operations

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0207171F / F-15 EPAWSS
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within highly contested environments through 2040. The F-15 EPAWSS will provide indication, type and position of ground-based RF threats as well as the indication, type and bearing of airborne threats with the situational awareness needed to avoid, engage or negate the threat. The F-15 EPAWSS will prevent RF and IR threat systems from detecting or acquiring accurate targeting information prior to threat engagement to complicate and / or negate an enemy threat targeting solution--and effectively counter enemy missiles / weapons if adversary threat systems engage and employ weapons against friendly forces--through components such as chaff, flares, decoys / angle countermeasures and jamming.

Increment 1 replaces the obsolete TEWS. Increment 2 adds a towed decoy/angled countermeasure capability.

This program is in Budget Activity 5, System Development and Demonstration, because it has passed Milestone A approval, is conducting technical maturation and risk reduction, and has been approved to release the Request for Proposal for engineering and manufacturing development activities.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.000	186.481	214.428	0.000	214.428
Current President's Budget	0.000	180.681	256.669	0.000	256.669
Total Adjustments	0.000	-5.800	42.241	0.000	42.241
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-5.800			
• 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	42.241	0.000	42.241

Change Summary Explanation

FY2016 Funding decreased -\$5.800M because of a congressional mark
 FY2017 increase of \$42.241M to fully fund EPAWSS Inc 1

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Title: Eagle Passive/Active Warning Survivability System (EPAWSS)	0.000	180.681	256.669	0.000	256.669
Description: Planned replacement of the existing F-15 self-protection, Tactical Electronic Warfare System (TEWS). This includes technical and acquisition- related studies.					
FY 2015 Accomplishments:					

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0207171F / <i>F-15 EPAWSS</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
N/A					
FY 2016 Plans: Completed Increment 1 TMRR PDR-level design to support Milestone B decision. Refined design for FY17 CDR. Continued acquisition planning for EMD and Milestone B. Awarded and executed EMD development and test contract for Increment 1. This includes technical and acquisition-related studies.					
FY 2017 Base Plans: Complete Increment 1 TMRR CDR-level design. Continue acquisition planning for Milestone C. Continue execution of EMD. Produce EMD test assets. Execute risk reduction, development test activities, and continue acquisition and technical-related studies for Increments 1 and 2.					
FY 2017 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	0.000	180.681	256.669	0.000	256.669

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• APAF: BA05: Line Item # F15EWS: <i>Aircraft Modification</i>	0.000	0.000	0.000	0.000	0.000	0.000	276.560	255.744	406.435	3,861.190	4,799.940
• APAF: BA07: Line Item #000999: <i>Aircraft Spares and Repair Parts</i>	0.000	0.000	0.000	0.000	0.000	0.000	4.070	4.880	9.340	193.820	212.110
• RDT&E: BA07: PE0207171F: <i>F-15 EPAWSS BA07</i>	38.944	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	38.944

Remarks
FY 19 - FY 21 funding is for F-15 C & F-15 E Procurement.

E. Acquisition Strategy
The MDA approved acquisition approach is to design a solution that leverages mature non-developmental components that integrate into the existing footprint on the F-15 aircraft left behind by the legacy F-15 electronic warfare system. To further improve schedule, affordability and program risk outcomes, and consistent with the JROC approved CDD, the F-15 EPAWSS program will pursue a two-increment acquisition approach. Increment 1 replaces the existing Radar Warning Receiver, Internal Countermeasures System and Countermeasures Dispenser System. Increment 2 adds a towed decoy / angle countermeasure capability.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force Date: February 2016

Appropriation/Budget Activity
3600: *Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)*

R-1 Program Element (Number/Name)
PE 0207171F / *F-15 EPAWSS*

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207171F / F-15 EPAWSS	Project (Number/Name) 657108 / EPAWSS DEVELOPMENT
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
F-15 EPAWSS TMRR	SS/ Various	Boeing : St. Louis, MO	-	0.000		97.404	Feb 2016	43.806	Oct 2016	0.000		43.806	Continuing	Continuing	177.341
F-15 EPAWSS EMD	SS/ Various	Boeing : St. Louis, MO	-	0.000		62.160	Sep 2016	163.992	Nov 2016	0.000		163.992	Continuing	Continuing	477.000
F-15 EPAWSS	Various	Various : Various	-	0.000		19.721	Feb 2016	47.068	Dec 2017	0.000		47.068	Continuing	Continuing	199.895
Subtotal			-	0.000		179.285		254.866		0.000		254.866	-	-	854.236

Remarks
 FY16PB- EPAWSS efforts were transferred from Budget Activity 7, Operational Systems Development, PE 0207171F, Project Number 676038 to Budget Activity 5, Engineering and Manufacturing Development, PE 0207171F, Project Number 657108 per OSD direction. The individual program reference to "various" contract methods addresses other government costs for trainers, test, hardware, special studies, etc., that are required to meet F-15 EPAWSS program objectives. The execution vehicles between these DoD entities vary by effort.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Support Costs	Various	Various : Various	-	0.000		1.396	Jan 2016	1.803	Dec 2016	0.000		1.803	Continuing	Continuing	40.655
Subtotal			-	0.000		1.396		1.803		0.000		1.803	-	-	40.655

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207171F / F-15 EPAWSS	Project (Number/Name) 657108 / EPAWSS DEVELOPMENT
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Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

Remarks
The individual program reference to "various" contract methods addresses other government costs for trainers, test, hardware, special studies, etc. that are required to meet F-15 EPAWSS program objectives. The execution vehicles between these DoD entities vary by effort.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	0.000	180.681	256.669	0.000	256.669	-	-	894.891

Remarks
Prior Years funding in FY 2013 and FY 2014 of \$14.677M was executed in PE 0207134F.

Prior Year funding in FY 2015 of \$38.944M was executed in PE 0207171F, Project 676038.

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207171F / F-15 EPAWSS	Project (Number/Name) 657108 / EPAWSS DEVELOPMENT
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
EPAWSS MS A				■																								
EPAWSS TMRR Contract Award				■																								
EPAWSS MS B								■																				
EPAWSS EMD Contract Award								■																				
EPAWSS MS C																				■								
EPAWSS Production Contract Award																												■

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207171F / F-15 EPAWSS	Project (Number/Name) 657108 / EPAWSS DEVELOPMENT

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
EPAWSS MS A	4	2015	4	2015
EPAWSS TMRR Contract Award	4	2015	4	2015
EPAWSS MS B	4	2016	4	2016
EPAWSS EMD Contract Award	4	2016	4	2016
EPAWSS MS C	2	2019	2	2019
EPAWSS Production Contract Award	3	2019	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0207701F / <i>Full Combat Mission Training</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	8.831	18.082	12.051	0.000	12.051	15.679	15.472	12.008	14.735	Continuing	Continuing
655012: <i>Full Combat Mission Training</i>	-	0.000	2.666	2.775	0.000	2.775	2.831	2.882	2.936	2.989	Continuing	Continuing
655354: <i>F-16 Block 40/50 MTC</i>	-	8.831	15.416	9.276	0.000	9.276	12.848	12.590	9.072	11.746	Continuing	Continuing

A. Mission Description and Budget Item Justification

Full Combat Mission Training (FCMT) supports Air Force Distributed Mission Operations (DMO) and Live-Virtual-Constructive (LVC) integration. DMO is an operational readiness initiative enabling the USAF to exercise and train at the operational and strategic levels of war while facilitating unit-level training. Networked LVC components form the integrated DMO battlespace by linking geographically distributed high fidelity combat and combat support training devices, including Command and Control (C2) and Intelligence, Surveillance, and Reconnaissance (ISR) systems.

Project 655012, FCMT, efforts are focused on development, demonstration, and transitioning of critical functions associated with the DMO/LVC network and linked simulators.

Project 655354, F-16 Block 40/50 Mission Training Center (MTC), efforts are focused on development and demonstration of the F-16 Block 40/50 MTC. The FY 2017 funding request was reduced by 1.232 million to account for the availability of prior year execution balances.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	8.831	18.082	13.283	0.000	13.283
Current President's Budget	8.831	18.082	12.051	0.000	12.051
Total Adjustments	0.000	0.000	-1.232	0.000	-1.232
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-1.232	0.000	-1.232

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force Date: February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)
3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	PE 0207701F / <i>Full Combat Mission Training</i>

Change Summary Explanation

The FY 2017 funding request was reduced by 1.232 million to account for the availability of prior year execution balances.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0207701F / Full Combat Mission Training				Project (Number/Name) 655012 / Full Combat Mission Training			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
655012: Full Combat Mission Training	-	0.000	2.666	2.775	0.000	2.775	2.831	2.882	2.936	2.989	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Full Combat Mission Training (FCMT) supports Air Force Distributed Mission Operations (DMO) and Live-Virtual-Constructive (LVC) integration. DMO is an operational readiness initiative enabling the USAF to exercise and train at the operational and strategic levels of war while facilitating unit-level training. FCMT funding provides research in areas benefiting the AF DMO/LVC environment as a whole. Provides research and development to facilitate integration of fielded and newly acquired, Air Force owned training devices into DMO/LVC networks. Enhances the quality of training for the systems added to the network. Enables aircrews to network with LVC components to form the integrated DMO battlespace. Links geographically distributed high-fidelity combat and combat support training devices including Command and Control (C2) and Intelligence, Surveillance, and Reconnaissance (ISR) systems. Develops, demonstrates and inserts multi-level security capability. This capability allows the warfighters at home station to exercise and train at the operational and strategic levels of war as well as conduct networked unit-level training.

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

	FY 2015	FY 2016	FY 2017
Title: FCMT Cross Domain Solutions (CDS)	0.000	1.006	1.003
Description: Development, demonstration and insertion of multi-level security capability.			
FY 2015 Accomplishments: N/A			
FY 2016 Plans: - Begin Multi-Level Security (MLS) testbed development and support for MLS testing and implementation on, but not limited to, the F-22 and F-35 Trainers - Start development of fourth to fifth generation coalition rule set development for US and UK training integration - Start evaluation of commercial and government off-the-shelf Cross Domain Solution (CDS) advanced devices and capabilities.			
FY 2017 Plans: - Complete Multi Level Security (MLS) testbed development and support for MLS testing for fourth and fifth generation trainers. - Continue fourth to fifth generation Cross Domain Solution (CDS) rule set development. - Begin accreditation for coalition rule sets. - Continue evaluation of commercial and government off-the-shelf CDS devices and capabilities. - Begin fourth to fifth generation MLS rule development for routine Live, Virtual and Constructive (LVC) environment integration.			
Title: FCMT Develop DMO Capabilities	0.000	0.600	0.572

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207701F / Full Combat Mission Training	Project (Number/Name) 655012 / Full Combat Mission Training		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Description: Development, demonstrations, studies and insertions of DMO/LVC related technologies and proficiency based continuation training strategies.</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Begin integration of research-developed scenarios and syllabi across DMO environments. - Begin development of in-mission and cross-mission metrics for routine proficiency evaluations of individual and small team readiness. <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Create and evaluate alternative data formats for routinely tracking and storing performance and proficiency data. - Begin integration of learning management tools into routine Distributed Mission Operations (DMO) training events. - Demonstrate learning managed DMO scenario and syllabus adaptation across two Mission Training Centers (MTCs). 				
<p>Title: FCMT Validation of warfighter seasoning and development of objective performance enhancements</p> <p>Description: Studies to assess and validate warfighter seasoning in continuation training and accreditation of portions of this process; studies to develop objective enhancement and measurement tools for the DMO/LVC environment.</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Develop training assessment and performance measurement tools for readiness studies. - Validate training environment credibility assessments for an identified set of ACC Virtual and Constructive environments. - Begin integration of performance evaluation and After Action Review (AAR) tools for the operational Mission Training Centers (MTCs) <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Complete integration and demonstration of performance evaluation and after action tools. - Begin development of standards for baselining environment credibility of virtual and constructive environments. - Demonstrate persistent performance measurement and readiness assessment in fourth to fifth LVC training events. - Validate training environment credibility assessments for an identified set of ACC Virtual and Constructive environments. 		0.000	1.000	1.000

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207701F / Full Combat Mission Training	Project (Number/Name) 655012 / Full Combat Mission Training		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
- Begin integration of performance evaluation and After Action Review (AAR) tools for the operational Mission Training Centers (MTCs).				
<p>Title: FCMT Other Network Studies</p> <p>Description: Research and development to provide for the integration of fielded and newly introduced, Air Force, Joint and Coalition high-fidelity flight and mission trainers.</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: - Perform research and development for the integration of F-35, Joint and Coalition Trainers into the Combat Air Forces (CAF) Distributed Mission Operations (DMO) network. - Conduct interoperability studies to evaluate the training value of fifth generation interoperable coalition training on the CAF DMO network.</p> <p>FY 2017 Plans: - Begin development of common Joint and Coalition data standards for secure, interoperable training at joint and coalition levels of analysis. - Begin evaluation of the integration of different data management and tracking methods to support large scale, secure and persistent Joint and Coalition LVC events. - Begin evaluation of alternative network architectures and typologies for globally distributed secure LVC training and rehearsal</p>		0.000	0.060	0.200
Accomplishments/Planned Programs Subtotals		0.000	2.666	2.775
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
Each platform joining the Distributed Mission Operations (DMO)/Live-Virtual-Constructive (LVC) environment selects its own acquisition strategy based on using Command needs, Economic Analysis (EA) and the magnitude of the training system changes required to provide DMO capability. The initial systems in the DMO/LVC environment; F-15C, AWACS, F-16 Block 40/50 and F-15E, all required new training systems. In addition, the Operations and Integration capability was created. The Training Simulation Service (TSS) acquisition strategy was used to meet a portion of these requirements. In the TSS approach, the contractor owns and provides the simulator equipment, maintains simulator concurrency with weapon systems, and has incentives to keep the equipment up to date with simulator and network				

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207701F / <i>Full Combat Mission Training</i>	Project (Number/Name) 655012 / <i>Full Combat Mission Training</i>

technologies. Currently fielded and projected Air Force-owned Flight and Mission Training Systems without DMO/LVC capability will be modified using Full Combat Mission Training (FCMT) funds to ensure compatibility with the DMO-LVC environment.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207701F / Full Combat Mission Training	Project (Number/Name) 655012 / Full Combat Mission Training
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-	-	-	-	-	-	-	-	-	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Full Combat Mission Training: Development, Testing and insertion of Multi-level-security protocols, Cross Domain rule set development and accreditation	Various	Air Force Research Lab, 711 Human Performance Wing, Human : Dayton, OH	-	0.000		1.006	Feb 2016	1.003	Dec 2016	0.000		1.003	Continuing	Continuing	-
Full Combat Mission Training: Development, demonstration, studies and insertion of distributed mission ops related technologies and proficiency based continuation training	Various	Air Force Research Lab, 711 Human Performance Wing : Dayton, OH	-	0.000		0.600	Feb 2016	0.572	Dec 2016	0.000		0.572	Continuing	Continuing	-
Full Combat Mission Training: Validation of warfighter seasoning and development of objective performance enhancements for DMO/ LVC environment	Various	Air Force Research Lab, 711 Human Performance Wing : Dayton, OH	-	0.000		1.000	Feb 2016	1.000	Dec 2016	0.000		1.000	Continuing	Continuing	-
Full Combat Mission Training: Research and Development to support integration of newly fielded high-fidelity training systems and networks	Various	Air Force Research Lab, 711 Human Performance Wing : Dayton, OH	-	0.000		0.060	Dec 2015	0.200	Dec 2016	0.000		0.200	Continuing	Continuing	-
Subtotal			-	0.000		2.666		2.775		0.000		2.775	-	-	-

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207701F / Full Combat Mission Training	Project (Number/Name) 655012 / Full Combat Mission Training
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Develop and integrate After Action Review tools for Mission Training Centers																												
Develop metrics and tools to measure training proficiency gained during live, virtual, constructive events																												
Demonstrate persistent performance measurement and readiness assessment in 4th to 5th generation LVC events																												
Integrate 5th generation systems into distributed mission operations network																												
Develop joint and coalition data standards and evaluate data management methods to support live, virtual, and constructive events																												
Evaluate network architectures and typologies for distributed, secure, live, virtual, constructive events																												
Develop gateways and cross domain solutions to integrate high-fidelity trainers with Air Force, joint, and coalition networks																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207701F / Full Combat Mission Training	Project (Number/Name) 655012 / Full Combat Mission Training

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Develop Multi-Level Security testbed and support testing on 5th Gen systems	2	2016	4	2017
Develop 4th to 5th generation rule sets for coalition integration	2	2016	4	2017
Evaluate and assess commercial and government off-the-shelf cross domain solution devices	2	2016	3	2017
Perform accreditation for cross domain solution rule sets	1	2017	2	2018
Develop rule sets for routine live, virtual, and constructive environment integration	2	2017	2	2018
Continue to develop cross domain solution rule sets	3	2018	4	2021
Integrate scenarios and syllabi across DMO environments	2	2016	4	2016
Develop metrics for routine proficiency evaluations and determine standard format for storing/analyzing proficiency data	2	2016	4	2017
Demonstrate learning managed distributed mission operations scenario	1	2017	4	2017
Refine learning managed scenario and integrate with live, virtual, constructive events	1	2018	3	2021
Develop training assessment and performance measurement tools	3	2016	4	2016
Validate training environment credibility assessments for an identified set of ACC Virtual and Constructive Environments	2	2016	4	2017
Develop and integrate After Action Review tools for Mission Training Centers	2	2016	4	2017
Develop metrics and tools to measure training proficiency gained during live, virtual, constructive events	1	2018	4	2021
Demonstrate persistent performance measurement and readiness assessment in 4th to 5th generation LVC events	1	2017	2	2018
Integrate 5th generation systems into distributed mission operations network	2	2016	3	2017
Develop joint and coalition data standards and evaluate data management methods to support live, virtual, and constructive events	1	2017	3	2018

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207701F / <i>Full Combat Mission Training</i>	Project (Number/Name) 655012 / <i>Full Combat Mission Training</i>
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Events	Start		End	
	Quarter	Year	Quarter	Year
Evaluate network architectures and typologies for distributed, secure, live, virtual, constructive events	2	2017	4	2017
Develop gateways and cross domain solutions to integrate high-fidelity trainers with Air Force, joint, and coalition networks	1	2018	4	2021

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0207701F / Full Combat Mission Training				Project (Number/Name) 655354 / F-16 Block 40/50 MTC			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
655354: F-16 Block 40/50 MTC	-	8.831	15.416	9.276	0.000	9.276	12.848	12.590	9.072	11.746	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

F-16 Block 40/50 Mission Training Center (MTC) supports the development, acquisition, fielding and sustainment of high fidelity, Distributed Mission Operations (DMO) capable flight simulators for F-16 Block 40 and 50 weapon systems. Each MTC includes multiple high fidelity Simulator Cockpits, Instructor Operator Stations, a Threat Server and Brief/Debrief and Mission Observation capability. Each is capable of linking to geographically distributed high-fidelity combat and combat support training devices including Command and Control (C2) and Intelligence, Surveillance, and Reconnaissance (ISR) systems. This capability allows the warfighters at home station to exercise and train at the operational and strategic levels of war as well as conduct networked unit-level training.

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

	FY 2015	FY 2016	FY 2017
Title: F-16 MTC Modification Development	8.831	15.416	9.276
Description: Development and testing of modifications to the F-16 MTC to maintain concurrency with F-16 aircraft.			
FY 2015 Accomplishments: Developed, tested, and fielded F-16 MTC Operational Flight Plan (OFP) M6.2+ Phase 2 (upgrades). Initially defined OFP M7.1+ concurrency modifications.			
FY 2016 Plans: -- Develop, test and field F-16 MTC Operational Flight Plan (OFP) M7.1+ to ensure the MTC is non-concurrent for only 12 months with the M7.1+ operational capability resident in the aircraft as of 4th quarter FY16. Cost of Development, test and fielding estimated at 12.1M -- Define initial OFP M7.2+ concurrency modifications. Definition of requirements in FY16 will ensure the MTC will achieve concurrency with the capabilities resident in the aircraft when the aircraft upgrades to OFP 7.2 1st quarter of FY19. Cost of definition of requirements for OFP 7.2 estimated at 3.3M			
FY 2017 Plans: -- Develop, test and field F-16 MTC Operational Flight Plan (OFP) M7.1+ to ensure the MTC achieves concurrency with the M7.1+ operational capability resident in the aircraft as of 4th quarter FY16. Cost of Development, test and fielding estimated at 2.4M -- Develop, test, and field F-16 MTC Operational Flight Plan (OFP) M7.2+ concurrency modifications. Ensures the MTC will achieve concurrency with the capabilities resident in the aircraft when the aircraft upgrades to OFP 7.2 1st quarter of FY19. Estimated cost of Development, Test and fielding is 6.9M			
Accomplishments/Planned Programs Subtotals	8.831	15.416	9.276

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207701F / Full Combat Mission Training	Project (Number/Name) 655354 / F-16 Block 40/50 MTC

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

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• APAF: BA05: Line Item #OTHACF: <i>Other Aircraft</i>	1.140	2.459	1.694	0.000	1.694	5.468	5.713	1.975	2.011	Continuing	Continuing
• APAF: BA06: Line item # 000999: <i>Initial Spares/Repair Parts</i>	0.130	0.279	0.214	0.000	0.214	0.219	0.214	0.216	0.220	Continuing	Continuing

Remarks

D. Acquisition Strategy

F-16 Block 40/50 MTCs are being developed, fielded, and modified under a competitively awarded Federal Acquisition Regulation (FAR) Part 15 Supply contract with RDT&E and APAF funds. The MTCs are sustained by Contract Logistic Support (CLS) using Operations and Maintenance funds.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207701F / Full Combat Mission Training	Project (Number/Name) 655354 / F-16 Block 40/50 MTC
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
F-16 Blk 40/50 Mission Training Center (MTC)	C/Various	L3 Comm, Link Simulation & Training : Arlington, TX	-	8.705	Dec 2014	15.241	Dec 2015	9.094	Dec 2016	0.000		9.094	Continuing	Continuing	TBD
Subtotal			-	8.705		15.241		9.094		0.000		9.094	-	-	-

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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	C/FFP	AFLCMC/WNS AFMC : Dayton, OH	-	0.126	Dec 2014	0.175	Dec 2015	0.182	Dec 2016	0.000		0.182	Continuing	Continuing	TBD
Subtotal			-	0.126		0.175		0.182		0.000		0.182	-	-	-

			Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	8.831	15.416	9.276	0.000	9.276	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207701F / Full Combat Mission Training	Project (Number/Name) 655354 / F-16 Block 40/50 MTC

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
OFP M6.1	████████																											
OFP M 6.2+ Phase 1	████████																											
OFP M6.2+ Phase 2	██████████																											
MTC Spangdahlem AB GE Fielded					████████																							
OFP M7.1+					████████████████████																							
OFP M7.2+									████████████████████																			
MTC Misawa AB JA									████████																			
MTC Aviano AB IT Fielded									████████																			
OFP M8.1+																	████████████████████											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207701F / Full Combat Mission Training	Project (Number/Name) 655354 / F-16 Block 40/50 MTC

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
OFP M6.1	1	2015	2	2015
OFP M 6.2+ Phase 1	1	2015	2	2015
OFP M6.2+ Phase 2	1	2015	4	2015
MTC Spangdahlem AB GE Fielded	3	2015	4	2015
OFP M7.1+	4	2015	4	2017
OFP M7.2+	1	2017	1	2019
MTC Misawa AB JA	2	2017	3	2017
MTC Aviano AB IT Fielded	3	2017	4	2017
OFP M8.1+	1	2019	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0305176F I Combat Survivor Evader Locator
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.000	0.993	29.253	0.000	29.253	0.785	0.946	0.000	0.000	Continuing	Continuing
654522: CSAR EMD	-	0.000	0.993	29.253	0.000	29.253	0.785	0.946	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY16, Project 654522 CSAR EMD, included an effort for CSEL Crypto. FY17 continues the Crypto effort.

A. Mission Description and Budget Item Justification

The Combat Survivor Evader Locator (CSEL) System provides aircrews with end-to-end global satellite secure emergency communication capability during combat and peace-time flying operations. A hand held rescue radio is required as part of the mandatory aircrew survival gear. CSEL is the Joint Program of Record. CSEL supports four of five Personnel Recovery Mission Phases; Report, Locate, Support and Recover.

A NSA Cryptographic Modernization mandate and the Ultra High Frequency Follow-On satellite constellation at end of life are both driving upgrades to 54,876 hand held CSEL rescue radios and base station. FY16 funding is to conduct an abbreviated analysis of alternatives detailing the development required to integrate common waveforms, provide for cryptographic modernization, and leverage software defined capabilities.

FY17 funding includes \$27.660M for the development effort to modernize the system to integrate common waveforms, provide for cryptographic modernization, leverage software defined capabilities based on the analysis of alternatives, and to procure intellectual property. This funding will also be used to perform various studies and analysis in support of the CSEL Enterprise.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	0.000	0.993	1.885	0.000	1.885
Current President's Budget	0.000	0.993	29.253	0.000	29.253
Total Adjustments	0.000	0.000	27.368	0.000	27.368
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	27.368	0.000	27.368

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0305176F / <i>Combat Survivor Evader Locator</i>
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Change Summary Explanation

FY17 funding includes \$27.660M for the development effort to modernize the system to integrate common waveforms, provide for cryptographic modernization, leverage software defined capabilities based on the analysis of alternatives, and to procure intellectual property. This funding will also be used to perform various studies and analysis in support of the CSEL Enterprise.

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

	FY 2015	FY 2016	FY 2017
Title: CSEL Crypto Description: A NSA Cryptographic Modernization mandate and the Ultra High Frequency Follow-On satellite constellation at end of life are both driving upgrades to 54,876 hand held CSEL rescue radios and base station. FY 2016 Plans: FY16 funding is to conduct an abbreviated analysis of alternatives detailing the development required to integrate common waveforms, provide for cryptographic modernization, and leverage software defined capabilities. FY 2017 Plans: FY17 funding is for the development effort to modernize the system to integrate common waveforms, provide for cryptographic modernization, leverage software defined capabilities based on the analysis of alternatives, and to procure intellectual property. This funding will also be used to perform various studies and analysis in support of the CSEL Enterprise.	-	0.993	29.253
Accomplishments/Planned Programs Subtotals	-	0.993	29.253

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• P-54: <i>OPAF: BA03: Line Item # 837170: Combat Survivor Evader Locator</i>	0.000	0.000	0.000	0.000	0.000	27.290	0.000	0.000	0.000	0.000	0.000

Remarks

E. Acquisition Strategy

Every effort will be made to use full and open competition and evolutionary acquisition strategies.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force												Date: February 2016				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 5				PE 0305176F / Combat Survivor Evader Locator				654522 / CSAR EMD								
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
Crypto Modernization - HW/SW Development	C/TBD	Not specified : Hill AFB, UT	-	0.000		0.000		28.053	Jul 2017	0.000		28.053	Continuing	Continuing	-	
Subtotal			-	0.000		0.000		28.053		0.000		28.053	-	-	-	
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
Subtotal			-	-		-		-		-		-	-	-	-	
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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	
Subtotal			-	-		-		-		-		-	-	-	-	
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Program Management Administration	C/Various	Various : Hill AFB, UT	-	0.000		0.363	Jan 2016	0.400	Jan 2017	0.000		0.400	Continuing	Continuing	-	
Systems Engineering	C/Various	Various : Hill aAFB, UT	-	0.000		0.630	Jan 2016	0.800	Jan 2017	0.000		0.800	Continuing	Continuing	-	
Subtotal			-	0.000		0.993		1.200		0.000		1.200	-	-	-	
Project Cost Totals			-	0.000		0.993		29.253		0.000		29.253	-	-	-	

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force							Date: February 2016		
Appropriation/Budget Activity 3600 / 5			R-1 Program Element (Number/Name) PE 0305176F / <i>Combat Survivor Evader Locator</i>			Project (Number/Name) 654522 / <i>CSAR EMD</i>			

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
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Remarks
 Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0305176F / <i>Combat Survivor Evader Locator</i>	Project (Number/Name) 654522 / <i>CSAR EMD</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Crypto Modernization Analysis of Alternatives (AoA)	2	2016	2	2017
Crypto Modernization Development	4	2017	4	2019
Crypto Modernization Test & Evaluation (T&E)	3	2019	4	2019

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0307581F / JSTARS Recap
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	5.000	70.879	44.343	128.019	0.000	128.019	413.991	621.998	583.224	473.967	827.800	3,169.221
650003: <i>JSTARS Recapitalization</i>	5.000	70.879	44.343	128.019	0.000	128.019	413.991	621.998	583.224	473.967	827.800	3,169.221
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Program MDAP/MAIS Code: 513

A. Mission Description and Budget Item Justification

JSTARS Recap is a manned aircraft replacement for the legacy E-8C that provides decision superiority via tactical Battle Management, Command and Control (BMC2) and Battlespace Awareness (BA) across the full Range of Military Operations (ROMO). Armed with an on-board BMC2 crew, powerful radar, and robust communications and information systems, it enables theater ground and air commanders to make quick decisions with decisive results during complex and rapidly unfolding operations. It is the only Theater Air Control System (TACS) node with a wide-area ground surveillance sensor, and provides commanders with 'fail forward' distributed control of an assigned area at the edge of the battlefield. Capabilities include near-real-time wide-area surveillance (WAS) and targeting information on wheeled and tracked vehicles, slow-moving rotary and fixed wing aircraft, rotating antennas, jammers, dismount targets, and stationary ground/surface targets (including maritime). Synthetic Aperture Radar (SAR) imagery enables both terrain imaging and stationary target location. The system is designed for day and night worldwide deployment in all weather conditions.

JSTARS Recap is the most cost-effective and operationally-effective materiel solution derived from the DoD's Joint Capability Integration and Development System (JCIDS) process, which includes a completed Initial Capability Document (ICD), Analysis of Alternatives (AoA), and draft Capability Development Document (CDD). JSTARS Recap enhances the warfighter's ability to achieve the joint vision of combat operations by integrating current and mature subsystem technologies onto a business class commercial derivative aircraft. It delivers advanced battle management aids and information fusion technologies to enable rapid decisions by automating tracking and addressing time-critical targets for surface and land forces. JSTARS Recap addresses the downward sustainment trends with the aging E-8C fleet and focuses on maintaining current JSTARS operational mission capabilities.

In FY 2015, PE 0604283F, BMC2 Sensor Development, Project 645363, MP-RTIP, and PE 0207581F, Joint Surveillance Target Attack Radar System (JSTARS), Project 670003, JSTARS, efforts were transferred to PE 0307581F, JSTARS Recap, Project 650003, JSTARS Recapitalization (Recap) in order to consolidate efforts and continue risk reduction activities. With the Pre-Engineering and Manufacturing Development (EMD) contract completing in 4QFY16, activities in FY17 center around obtaining a MS B decision in 4QFY17. The Air Force will conduct source selection activities for the EMD contract to be awarded in 1QFY18, and continue with Radar Risk Reduction Activities and program office execution. Activities also include studies, analyses, and risk reduction activities addressing all subsystems to support both current program planning/execution and future AF program planning.

This program is in budget Activity 5, System Development and Demonstration (SDD) because it is projected to receive Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0307581F / JSTARS Recap
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	73.088	44.343	298.521	0.000	298.521
Current President's Budget	70.879	44.343	128.019	0.000	128.019
Total Adjustments	-2.209	0.000	-170.502	0.000	-170.502
• 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	-2.209	0.000			
• Other Adjustments	0.000	0.000	-170.502	0.000	-170.502

Change Summary Explanation

FY17: The decrease in FY17 reflects EMD contract award now being made in FY18.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
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Title: Technology Maturation and Risk Reduction (TMRR)	70.879	44.343	128.019
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Description: JSTARS Recap TMRR/Pre-EMD Contract activities leverage DoD's prior investments and Industry's Independent Research and Development (IR&D) investments to conduct technical reviews and subsystem prototype demonstrations. The goal of TMRR/Pre-EMD activities is to validate industry's system-level design readiness/maturity with respect to top integration risks and use of Open Systems Architecture (OSA) and Open Mission System (OMS) standards. The TMRR/Pre-EMD activities inform the government about the integration complexity and associated lifecycle risks involved with different system-level design solutions. Activities also include studies, analyses, and risk reduction addressing all subsystems to support current program planning/execution and future program planning.

FY 2015 Accomplishments:

- Materiel Development Decision (MDD) ADM was approved 7 May 2015
- Request for Quotes (RFQs) released and contract awarded on 3 Pre-EMD base contracts 7 August 2015 to carry through System Requirements Review (SRR)

FY 2016 Plans:

- Received MS A decision 10 December 2015
- Exercised contract option in 1QFY16 for Industry Teams to complete system level designs

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0307581F / JSTARS Recap
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> - Will conduct multiple system-level technical reviews (to include System Functional Reviews (SFRs) and Preliminary Design Reviews (PDRs)) - Will conduct subsystem prototype demonstrations - Will release draft Request for Proposal (RFP) for EMD to industry (2QFY16) - Will prepare for and complete RFP Release Decision milestone requirements (4QFY16) <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Will conduct Radar Risk Reduction activities in FY17 to mature radar designs specific to JSTARS Recap, maintain radar subsystem competition, establish sub component manufacturing lines, further radar OSA efforts, and reduce the JSTARS Recap number one risk, subsystem integration. - Will continue other subsystem and weapon systems risk reduction activities - Will conduct associated activities to obtain MS B (4QFY17) - Will conduct source selection of the EMD contract for early 1QFY18 award 			
Accomplishments/Planned Programs Subtotals	70.879	44.343	128.019

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

N/A

Remarks

E. Acquisition Strategy

The JSTARS Recap program is a pre-Major Defense Acquisition Program (MDAP) that achieved MS A approval on 10 December 2015 and with MS B planned for 4QFY17. JSTARS Recap is comprised of a business-class commercial derivative jet with integrated BMC2, radar and communication subsystems. The program will integrate available systems and mature technologies using Open Systems Architecture (OSA) to minimize the risks for the EMD Phase and lower lifecycle costs.

The program will conduct Pre-EMD activities which will consist of Requirements Maturation (a Pre MS A activity) and TMRR (a Post MS A activity). A subsequent separate full and open competition for EMD will follow the Pre-EMD effort. EMD contract award is planned for 1QFY18 to achieve system affordability goals and support the warfighter's Initial Operating Capability (IOC) date. The USAF will field a total of 16 operational JSTARS Recap aircraft and will maintain and support one JSTARS Recap test aircraft in order to meet the user's requirement (total of 17 aircraft), which is currently being fulfilled by the JSTARS Legacy E-8C fleet. Three weapon systems will be developed and built during EMD to accomplish both Developmental Test and Evaluation (DT&E) and Operational Test and Evaluation (OT&E). All of these systems will be configured as operational representatives; one will remain a dedicated test aircraft and two will be used with two Low Rate Initial Production (LRIP) aircraft to meet the IOC requirement of four aircraft. Full Rate Production (FRP) will result in a total of 12 additional aircraft, with the plan of four being delivered annually to meet Full Operational Capability (FOC) of FY28.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force Date: February 2016

Appropriation/Budget Activity	R-1 Program Element (Number/Name)
3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	PE 0307581F / <i>JSTARS Recap</i>

OSA and Open Mission System (OMS) are a fundamental technical and business basis of the program. The USAF has developed and maintained the system's government reference architecture which adheres to an OSA and shapes how industry will plan their integration activities towards this materiel solution. The net result of this technical/business approach is a responsive industrial base and ensures the design of the system is adaptable/flexible to meet changing threats. The USAF has allocated resources to support internal system engineering and integration activities aimed at bolstering competition, improving affordability, and reducing overall Weapon System (WS) lifecycle costs.

F. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0307581F / JSTARS Recap	Project (Number/Name) 650003 / JSTARS Recapitalization
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PRE-EMD Contract #1	C/FFP	Boeing Service Co. : Richardson, TX	0.000	17.695	Aug 2015	10.231	Jan 2016	0.000		0.000		0.000	0.000	27.926	27.926
PRE-EMD Contract #2	C/FFP	Northrup Grumman systems Corp : Melbourne, FL	0.000	17.695	Aug 2015	7.453	Jan 2016	0.000		0.000		0.000	0.000	25.148	25.148
PRE-EMD Contract #3	C/FFP	Lockheed Martin Corp : King of Prussia, PA	0.000	17.695	Aug 2015	7.424	Jan 2016	0.000		0.000		0.000	0.000	25.119	25.119
Radar Risk Reduction	C/Various	TBD : TBD	0.000	0.000		0.000		102.818	Oct 2016	0.000		102.818	0.000	102.818	TBD
JSTARS Recap EMD	Various	TBD : TBD	0.000	0.000		0.000		0.000		0.000		0.000	2,793.033	2,793.033	TBD
Subtotal			0.000	53.085		25.108		102.818		0.000		102.818	2,793.033	2,974.044	-

Remarks

Pre-Engineering and Manufacturing Development (EMD) contracts will be incrementally funded with the basic contract (Materiel Solution Analysis) awarded on 7 August 2015 and options for Technology Maturation and Risk Reduction (TMRR) activities exercised in FY16. Two Radar Risk Reduction contracts will be awarded in FY17. EMD contract will be awarded in 1QFY18.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Responsible Test Organization (RTO)	MIPR	Various : Various	0.000	1.269	Feb 2015	2.054	Oct 2015	2.100	Oct 2016	0.000		2.100	52.147	57.570	TBD
Subtotal			0.000	1.269		2.054		2.100		0.000		2.100	52.147	57.570	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0307581F / JSTARS Recap	Project (Number/Name) 650003 / JSTARS Recapitalization
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

Remarks
Activities include, but not limited to, detailed test planning and provisioning to include the writing of a detailed test and safety plans, setting up the test execution data and documentation management infrastructure, developing data analysis tools, provisioning for test assets, instrumentation and ranges. Activities will be accomplished utilizing the DoD Major Ranges & Test Facilities which include, but not limited to, the AFTC (412TW and 96TH), Joint Interoperability Test Center (JITC), the 346th TS, Live Fire Test Organizations (AFLMC/EZJA and 96th TG Det 1), and Operational Test Agencies (AFOTEC).

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FFRDC	Various	Various : Bedford, MA	3.025	8.440	Oct 2014	9.193	Oct 2015	11.077	Oct 2016	0.000		11.077	51.400	83.135	TBD
PASS Support (A and AS)	Various	Various : Bedford, MA	1.485	4.117	Nov 2014	1.090	Nov 2015	1.804	Nov 2016	0.000		1.804	10.500	18.996	TBD
ETASS Support (A and AS)	Various	Various : Bedford, MA	0.000	1.373	Nov 2014	2.550	Nov 2015	2.550	Nov 2016	0.000		2.550	9.400	15.873	TBD
PMA - Other	Various	Various : Bedford, MA	0.490	2.595	Dec 2014	4.348	Dec 2015	7.670	Dec 2016	0.000		7.670	4.500	19.603	TBD
Subtotal			5.000	16.525		17.181		23.101		0.000		23.101	75.800	137.607	-

Remarks
High percentage of management services are a result of FFRDC and other contractor support required to conduct studies and other risk reducing analysis to better inform the government about integration risks, use of Open System Architecture (OSA), and subsystem performance towards Service Acquisition Executive (SAE) initiative "owning the technical baseline." Specific activities include modeling and analysis/simulation to better understand/anticipate performance, establishment of System Integration Lab (SIL) for development/integration, and Open Mission Systems (OMS) compliance testing. In addition, contractor support is necessary for all the required acquisition documentation.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	5.000	70.879	44.343	128.019	0.000	128.019	2,920.980	3,169.221	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0307581F / JSTARS Recap	Project (Number/Name) 650003 / JSTARS Recapitalization
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	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	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
Materiel Development Decision - ADM Signed May 2015	■																											
Milestone A (DEC 2015)					■																							
PRE Engineering and Manufacturing Development activities					■																							
Technology Maturation and Risk Reduction					■																							
System Requirements Review					■																							
System Functional Review					■																							
Preliminary Design Review - TMRR					■																							
Capability Development Document (Joint Staff coordination through the JROC)									■																			
Development RFP Release Decision Point									■																			
Radar Risk Reduction RFP Release					■																							
Radar Risk Reduction Activities									■																			
Milestone B (SEP 2017)									■																			
Engineering and Manufacturing Development													■															
Preliminary Design Review - EMD													■															
T1, T2, and T3 Aircraft buys/deliveries													■															
Critical Design Review													■															
Developmental Test and Evaluation																					■							

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0307581F / JSTARS Recap	Project (Number/Name) 650003 / JSTARS Recapitalization
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Matériel Development Decision - ADM Signed May 2015	2	2015	3	2015
Milestone A (DEC 2015)	1	2016	1	2016
PRE Engineering and Manufacturing Development activities	4	2015	2	2016
Technology Maturation and Risk Reduction	2	2016	4	2016
System Requirements Review	1	2016	1	2016
System Functional Review	2	2016	2	2016
Preliminary Design Review - TMRR	3	2016	3	2016
Capability Development Document (Joint Staff coordination through the JROC)	4	2016	4	2016
Development RFP Release Decision Point	4	2016	4	2016
Radar Risk Reduction RFP Release	2	2016	2	2016
Radar Risk Reduction Activities	1	2017	1	2018
Milestone B (SEP 2017)	4	2017	4	2017
Engineering and Manufacturing Development	1	2018	4	2021
Preliminary Design Review - EMD	3	2018	3	2018
T1, T2, and T3 Aircraft buys/deliveries	1	2018	3	2020
Critical Design Review	1	2019	1	2019
Developmental Test and Evaluation	2	2021	4	2021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0401319F / <i>Presidential Aircraft Replacement (PAR)</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	11.006	82.420	351.220	0.000	351.220	625.631	740.999	573.711	487.270	Continuing	Continuing
655250: <i>Presidential Aircraft Recap (PAR)</i>	-	11.006	82.420	351.220	0.000	351.220	625.631	740.999	573.711	487.270	Continuing	Continuing
Quantity of RDT&E Articles		-	-	2	-	2	-	-	-	-		

Program MDAP/MAIS Code: 425

A. Mission Description and Budget Item Justification

The Presidential Aircraft Recapitalization (PAR) Program will replace the Presidential VC-25A fleet which faces capability gaps, rising maintenance costs, and parts obsolescence as it reaches the end of its planned 30-year life-cycle. The PAR Program Office will deliver a new fleet of aircraft to meet the requirements for the President to execute the duties of Head of State, Chief Executive, and Commander-in-Chief. The Boeing 747-8 commercial aircraft will be uniquely modified to provide the President, staff, and guests with safe and reliable air transportation with the equivalent level of communications capability and security available in the White House. The modifications to the 747-8 aircraft will include an electrical power upgrade with dual Auxiliary Power Units that are usable in flight, a mission communication system, work and rest environment, executive interior, military avionics, self-defense system, autonomous enplaning and deplaning, and autonomous baggage loading. No significant changes to the existing VC-25A Concept of Operations or Concept of Employment are expected.

In August 2012, the Under Secretary of Defense for Acquisition, Technology and Logistics (USD (AT&L)) approved the PAR Materiel Development Decision. The Capability Development Document, was validated by the Joint Requirements Oversight Council in November 2014. In January 2015, the Secretary of the Air Force's Determination and Findings designated the Boeing 747-8 aircraft as the PAR platform, and the USD (AT&L)'s Acquisition Decision Memorandum authorized Pre-Milestone B (Pre-MS B) contracts aimed at improving affordability and reducing program execution risk. In February 2015, the Assistant Secretary of the Air Force for Acquisition approved a Justification and Approval designating Boeing as the sole source for PAR Pre-MS B and design, integration and modification activities. The acquisition strategy was approved by USD (AT&L) in September 2015.

This budget supports Pre-MS B risk reduction activities and studies as well as design, modification, install and test of two aircraft to make them Presidential mission ready. Pre-MS B efforts are the first step in a deliberate process to control program risks and life-cycle costs. These activities will include the definition of detailed requirements and design trade-offs required to support informed decisions, that will lead to a lower risk Engineering and Manufacturing Development program and lower life cycle costs. Following a successful MS B in 4th quarter FY16, the program will purchase two Boeing 747-8 commercial aircraft and begin Preliminary Design. Given the commercial aircraft delivery timeline, the Program Office must award a contract to Boeing for the commercial aircraft before design work begins. In FY18 the EMD activities will include the management, detailed design, integration, modification, test/verification, certification and pre-operational support to deliver two PAR Aircraft to be Presidential mission ready.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0401319F / <i>Presidential Aircraft Replacement (PAR)</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	11.006	102.620	480.977	0.000	480.977
Current President's Budget	11.006	82.420	351.220	0.000	351.220
Total Adjustments	0.000	-20.200	-129.757	0.000	-129.757
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-20.200			
• 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	-129.757	0.000	-129.757

Change Summary Explanation

The FY2016 funding was reduced by \$20.2 million due to a Congressionally directed reduction to defer commercial aircraft buy to FY2017.

The FY 2017 funding request was reduced by \$126.257 million to account for the USD (AT&L) approved acquisition strategy. The remaining \$3.5M was reduced due to deflation.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Title: Pre-MS B Risk Reduction, Commercial A/C, Prelim Design & PMA	10.781	81.960	350.290
Description: Pre-MS B risk reduction activities to refine requirements and reduce risk; begin Preliminary Design activities and utilize modeling and simulation, system integration labs and mockups to assist in the design and Program Management Administration to support the program office. In FY17 the program office will begin incrementally funding 2 commercial 747-8 aircraft which will enable PAR test activities.			
FY 2015 Accomplishments: Funds in FY 2015 initiated the Pre-MS B risk reduction activities and supported Program Management Administration for the program office.			
FY 2016 Plans: Funds in FY 2016 will continue Pre-MS B risk reduction activities and support Program Management Administration.			
FY 2017 Plans:			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0401319F / <i>Presidential Aircraft Replacement (PAR)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Funds in FY 2017 will complete Pre-MS B risk reduction activities, begin Preliminary Design activities and support Program Management Administration. The program office will also begin incrementally funding 2 aircraft which will support PAR developmental activities.			
Title: Government Test	0.225	0.460	0.930
Description: Government test activities to prepare for, oversee, and conduct test events.			
FY 2015 Accomplishments: Funds in FY 2015 were used for government test activities to prepare for test events.			
FY 2016 Plans: Funds in FY 2016 will be used to prepare for government test activities.			
FY 2017 Plans: Funds in FY 2017 will be used to prepare for, oversee and conduct initial test events.			
Accomplishments/Planned Programs Subtotals	11.006	82.420	351.220

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• MILCON: PE 0401319F: <i>PAR Facilities</i>	0.000	0.000	22.220	0.000	22.220	277.500	31.000	0.000	0.000	-	-

Remarks

E. Acquisition Strategy
The USD(AT&L) PAR Acquisition Strategy was approved in September 2015. The PAR Program will integrate technologically mature subsystems into commercial Boeing 747-8 aircraft. The PAR program will design, modify, install and test two aircraft to make them Presidential mission ready. Boeing will be the sole source for PAR development activities. However, the Air Force intends to incorporate competition for subsystems for the modified aircraft as much as practicable and will participate substantively in selected Boeing-led subsystem competitions. The PAR Program will have a single contract with multiple planned major contract modifications which include 747-8 commercial aircraft, Preliminary Design and EMD. The initial effort for risk reduction activities was awarded on 29 January 2016.

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force												Date: February 2016			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 5				PE 0401319F / Presidential Aircraft Replacement (PAR)				655250 / Presidential Aircraft Recap (PAR)							
Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
PAR Contract Activities	Various	Not specified. : TBD	-	7.689	Sep 2015	75.850	Feb 2016	344.020	Oct 2016	0.000		344.020	Continuing	Continuing	-
Subtotal			-	7.689		75.850		344.020		0.000		344.020	-	-	-
Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
PAR Developmental Test and Evaluation	MIPR	412 TW : Edwards AFB, CA	-	0.225	Sep 2015	0.460	Aug 2016	0.930	Aug 2017	0.000		0.930	Continuing	Continuing	-
Subtotal			-	0.225		0.460		0.930		0.000		0.930	-	-	-
Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
PAR Other Government Costs	Various	AFLCMC/WLJ : Dayton, OH	-	1.176	Dec 2014	2.671	Nov 2015	2.090	Nov 2016	0.000		2.090	Continuing	Continuing	-
A&AS	C/T&M	AFLCMC/WL : Dayton, OH	-	1.916	Feb 2015	3.439	Feb 2016	4.180	Feb 2017	0.000		4.180	Continuing	Continuing	-
Subtotal			-	3.092		6.110		6.270		0.000		6.270	-	-	-
Project Cost Totals			-	11.006		82.420		351.220		0.000		351.220	-	-	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force							Date: February 2016			
Appropriation/Budget Activity 3600 / 5			R-1 Program Element (Number/Name) PE 0401319F / <i>Presidential Aircraft Replacement (PAR)</i>			Project (Number/Name) 655250 / <i>Presidential Aircraft Recap (PAR)</i>				
	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract	

Remarks
 Prior Years RDT&E Funding \$27.3M was executed in PE 0401314F, Project 675355, BA07

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0401319F / <i>Presidential Aircraft Replacement (PAR)</i>	Project (Number/Name) 655250 / <i>Presidential Aircraft Recap (PAR)</i>

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Pre-MS B Risk Reduction Activities					████████████████████																							
Commercial A/C RFP Release					██																							
Milestone B and EMD RFP Release Decision								██																				
Commercial A/C Award									██																			
Preliminary Design Award & Activities								████████████████████																				
PDR												██																
EMD Award & Activities													████████████████████	████████████████████	████████████████████	████████████████████	████████████████████	████████████████████	████████████████████	████████████████████	████████████████████	████████████████████	████████████████████	████████████████████	████████████████████	████████████████████		
CDR																				██								

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0401319F / <i>Presidential Aircraft Replacement (PAR)</i>	Project (Number/Name) 655250 / <i>Presidential Aircraft Recap (PAR)</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Pre-MS B Risk Reduction Activities	2	2016	2	2018
Commercial A/C RFP Release	2	2016	2	2016
Milestone B and EMD RFP Release Decision	4	2016	4	2016
Commercial A/C Award	1	2017	1	2017
Preliminary Design Award & Activities	4	2016	4	2018
PDR	3	2018	3	2018
EMD Award & Activities	3	2018	4	2021
CDR	4	2019	4	2019

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0701212F / <i>Automated Test Systems</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.000	14.563	19.062	0.000	19.062	11.800	0.000	0.000	0.000	Continuing	Continuing
6506TE: <i>Test And Evaluation Support Budget Authority</i>	-	0.000	14.563	19.062	0.000	19.062	11.800	0.000	0.000	0.000	Continuing	Continuing

Note

The Bomber Armament Tester is replacing six legacy testers and combining their capabilities into one tester. The Bomber Armament Tester will support the B-2, B-1 and B-52 platforms.

A. Mission Description and Budget Item Justification

The Bomber Armament Tester will ensure that our USAF bomber fleet can conduct nuclear deterrence, global power projection and global strike operations to support the President of the United States and Combatant Commanders by having a reliable, cyber secure, and sustainable tester. The tasks are to develop a common bomber armament tester and the Test Program Sets (Software, Hardware, and Documentation) to test the armament release equipment on the bombers.

RDT&E efforts support development, testing, and producibility of the Bomber Armament Tester and Test Program Sets. The program will utilize an incremental development approach with B-2 plus most complex B-1 and B-52 test program sets as Increment 1, B-1 as Increment 2, and B-52 as Increment 3.

B. Program Change Summary (\$ in Millions)

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	0.000	14.563	14.545	0.000	14.545
Current President's Budget	0.000	14.563	19.062	0.000	19.062
Total Adjustments	0.000	0.000	4.517	0.000	4.517
• 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	4.517	0.000	4.517

Change Summary Explanation

-\$4.5M increase in FY 17 is to begin increment two of the Bomber Armament Tester program. Increment one includes core tester and test program sets for B-2 aircraft and the most complex B-1 and B-52 test program sets. Increment two will begin the test program set development for the B-1 aircraft and B-52 test program sets.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0701212F / <i>Automated Test Systems</i>	Project (Number/Name) 6506TE / <i>Test And Evaluation Support Budget Authority</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
6506TE: <i>Test And Evaluation Support Budget Authority</i>	-	0.000	14.563	19.062	0.000	19.062	11.800	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Bomber Armament Tester will ensure that our USAF bomber fleet can conduct nuclear deterrence, global power projection and global strike operations to support the President of the United States and Combatant Commanders by having a reliable, cyber secure, and sustainable tester. The tasks are to develop a common bomber armament tester and the Test Program Sets (Software, Hardware, and Documentation) to test the armament release equipment on the bombers.

RDT&E efforts support development, testing, and producibility of the Bomber Armament Tester and Test Program Sets. The program will utilize an incremental development approach with B-2 as Increment 1, B-1 as Increment 2, and B-52 as Increment 3.

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

	FY 2015	FY 2016	FY 2017
Title: Bomber Armament Tester	0.000	14.563	19.062
Description: New Common Bomber Armament Tester for B-1, B-2, and B-52.			
FY 2015 Accomplishments: N/A			
FY 2016 Plans: - Develop Bomber Armament Tester and Test Program Sets for use with B-2 - Conduct initial test with B-2. -Beginning requirement analysis of the next increments which are B-1 and B-52. This will include the most complex B-1 and B-52 test program set development. -An independent cost analysis is being conducted to verify the program cost inputs.			
FY 2017 Plans: - Develop Bomber Armament Tester and Test Program Sets for use with B-2 - Conduct initial test with B-2 - Requirements analysis for increments 1 and 2. This will include the most complex B-1 and B-52 test program set development.			
Accomplishments/Planned Programs Subtotals	0.000	14.563	19.062

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0701212F / <i>Automated Test Systems</i>	Project (Number/Name) 6506TE / <i>Test And Evaluation Support Budget Authority</i>

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

N/A

Remarks

D. Acquisition Strategy

Acquisition Strategy for the Bomber Armament Tester (BAT) was approved by AFPEO/ Agile Combat Support on 12 November 2016 . The BAT program will use an increment approach based on customer needs to fill this requirement. Increment 1 includes the development of the core test set, the B-2A requirements and development of the most complex B-1B and B-52 test program sets. Increment 2 consist of the B-1B development and Increment 3 consists of the B-52H requirements. The BAT program requirement will be utilize full and open competition to award the contract.

E. Performance Metrics

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

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0701212F / Automated Test Systems	Project (Number/Name) 6506TE / Test And Evaluation Support Budget Authority
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Product Development (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development	TBD	Not specified. : TBD	-	0.000		10.133	Nov 2016	11.302	Jan 2017	0.000		11.302	Continuing	Continuing	-
Subtotal			-	0.000		10.133		11.302		0.000		11.302	-	-	-

Remarks
Product Development Cost include the development of the Bomber Armament Test Sets (Units under test Software, hardware and Technical Data), Technical Data and maintenance of Government Furnished Equipment.

Support (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Logistic Support	TBD	Not specified. : TBD	-	0.000		1.580	Jun 2016	3.160	Jan 2017	0.000		3.160	Continuing	Continuing	-
Subtotal			-	0.000		1.580		3.160		0.000		3.160	-	-	-

Remarks
Support Cost include Independent verification and validation support, Nuclear Certification Support and Cyber Security authority support.

Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Development and Operation Testing support	TBD	Not specified. : TBD	-	0.000		1.250	Nov 2016	2.500	Jan 2017	0.000		2.500	Continuing	Continuing	-
Subtotal			-	0.000		1.250		2.500		0.000		2.500	-	-	-

Remarks
Environmental testing of the Bomber Armament Tester and operational testing of the test program sets for the B-2 and most complex B-1 and B-52

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force											Date: February 2016				
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0701212F / Automated Test Systems					Project (Number/Name) 6506TE / Test And Evaluation Support Budget Authority				

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 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
Travel	Various	Not specified. : TBD	-	0.000		0.100	Sep 2016	0.100	Sep 2017	0.000		0.100	Continuing	Continuing	-
Program Management Support	TBD	Not specified. : TBD	-	0.000		1.500	Jun 2016	2.000	Mar 2017	0.000		2.000	Continuing	Continuing	-
Subtotal			-	0.000		1.600		2.100		0.000		2.100	-	-	-

Remarks
PMA costs include travel to support the development of the Bomber Armament Tester. PMA cost also include an Information Assurance expert and Assistance and advisory service contractors to provide support to the program office during the development of the program.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	0.000	14.563	19.062	0.000	19.062	-	-	-

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0701212F / <i>Automated Test Systems</i>	Project (Number/Name) 6506TE / <i>Test And Evaluation Support Budget Authority</i>

FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
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

Request for Proposal Release	■																											
Milestone B Decision	■																											
Contract Award	■																											
Initial Nuclear Certification Impact Statement	■																											
System Functional Review	■																											
Preliminary Design Review	■																											
Critical Design Review	■																											
System Verification Review	■																											
Developmental Testing	■																											
Operational Testing	■																											
Final Nuclear Certification Impact Statement	■																											
Completed Prototype	■																											
Authority To Operate Issued	■																											
Operational Test and Readiness Review	■																											
Physical Configuration Audit	■																											
Production Readiness Review	■																											
Milestone C Decision	■																											
B-1B Requirements Analysis	■																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0701212F / <i>Automated Test Systems</i>	Project (Number/Name) 6506TE / <i>Test And Evaluation Support Budget Authority</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Request for Proposal Release	2	2016	2	2016
Milestone B Decision	1	2017	1	2017
Contract Award	1	2017	1	2017
Initial Nuclear Certification Impact Statement	1	2017	1	2017
System Functional Review	1	2018	1	2018
Preliminary Design Review	2	2018	2	2018
Critical Design Review	1	2017	1	2017
System Verification Review	4	2018	2	2019
Developmental Testing	4	2018	1	2019
Operational Testing	2	2019	2	2019
Final Nuclear Certification Impact Statement	4	2018	4	2018
Completed Prototype	4	2018	4	2018
Authority To Operate Issued	2	2019	2	2019
Operational Test and REadiness Review	2	2019	2	2019
Physical Configuration Audit	2	2019	2	2019
Production Readiness Review	2	2019	2	2019
Milestone C Decision	2	2019	2	2019
B-1B Requirements Analysis	4	2018	4	2018

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0604256F / <i>Threat Simulator Development</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	24.318	23.844	21.630	0.000	21.630	22.038	22.426	22.839	23.245	Continuing	Continuing
662907: <i>Electronic Combat Intel Support</i>	-	2.628	3.196	2.481	0.000	2.481	2.540	2.574	2.621	2.668	Continuing	Continuing
663321: <i>Electronic Warfare Ground Test Resources</i>	-	13.091	12.675	12.133	0.000	12.133	12.355	12.560	12.791	13.018	Continuing	Continuing
667500: <i>Foreign Materiel Acquisition/Analysis</i>	-	8.599	7.973	7.016	0.000	7.016	7.143	7.292	7.427	7.559	Continuing	Continuing

A. Mission Description and Budget Item Justification

This PE provides funding for the elements necessary to support the Air Force Electronic Warfare (EW) Test Process, including Directed Energy (DE). This test process provides a scientific methodology to ensure the effective disciplined and efficient testing of EW and avionics systems. Each capability or facility improvement is pursued in concert with the others to avoid duplicate capabilities while at the same time producing the proper mix of test resources needed to support the AF EW Test Process and testing of EW systems which can be used in any action involving the use of electromagnetic and DE to control the electromagnetic spectrum or to attack the enemy. This PE provides funding for the management and technical oversight of implementation activities, development and improvement of digital EW models, measurement facilities improvements, hardware-in-the-loop test facilities improvements, and installed system test facility improvements. Support includes requirements definition and analysis, project planning, programming and budgeting, technical oversight, and application of T&E facility Improvement & Modernization (I&M). Products include studies, analyses, improved Modeling & Simulation (M&S) of threat sources, improved or new T&E capabilities to support EW testing and related documentation. Additionally, this PE provides funding to support the acquisition and analysis efforts of the Foreign Materiel Program and EW intelligence efforts.

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0604256F / <i>Threat Simulator Development</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	24.418	23.844	21.846	0.000	21.846
Current President's Budget	24.318	23.844	21.630	0.000	21.630
Total Adjustments	-0.100	0.000	-0.216	0.000	-0.216
• 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	0.000	-0.216	0.000	-0.216

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 6					R-1 Program Element (Number/Name) PE 0604256F / <i>Threat Simulator Development</i>				Project (Number/Name) 662907 / <i>Electronic Combat Intel Support</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
662907: <i>Electronic Combat Intel Support</i>	-	2.628	3.196	2.481	0.000	2.481	2.540	2.574	2.621	2.668	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides funding to support Foreign Materiel Operational Test and Evaluation (FMOT&E), which ensures the ability of operational commands to test and develop effective Electronic Attack/Electronic Protection (EA/EP) techniques and tactics. Funds are required for: deployment of systems to test facilities; travel of personnel to the test sites to evaluate and validate test results; range and laboratory costs; test consumables; costs for instrumentation of systems; and contracted engineering support for the conduct of tests and subsequent reporting. Funding for this program is required to prevent future aircraft losses due to improper and inaccurate aircrew tactics (e.g., lack of evasive action or proper tactics training to avoid missile attack).

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

	FY 2015	FY 2016	FY 2017
Title: FMOT&E	2.628	3.196	2.481
Description: Supports Foreign Materiel Operational Test and Evaluation (FMOT&E)			
FY 2015 Accomplishments: Conducted foreign material operational analysis (FMOA) for fighter and bomber testing; mobility/special operations transport/helicopter testing; classified operational assessments; and extensive evaluations and reporting of system effectiveness.			
FY 2016 Plans: Continue to conduct foreign material operational analysis (FMOA) for fighter and bomber testing; mobility/special operations transport/helicopter testing; classified operational assessments; and extensive evaluations and reporting of system effectiveness.			
FY 2017 Plans: Continue to conduct foreign material operational analysis (FMOA) for fighter and bomber testing; mobility/special operations transport/helicopter testing; classified operational assessments; and extensive evaluations and reporting of system effectiveness.			
Accomplishments/Planned Programs Subtotals	2.628	3.196	2.481

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

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• RDTE: BA 06: PE 0604759F: <i>Major T&E Investment</i>	45.985	73.302	66.385	0.000	66.385	65.706	66.001	67.265	68.464	Continuing	Continuing

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016	
Appropriation/Budget Activity 3600 / 6				R-1 Program Element (Number/Name) PE 0604256F / <i>Threat Simulator Development</i>				Project (Number/Name) 662907 / <i>Electronic Combat Intel Support</i>			

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

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• RDTE: BA 06: PE 0605807F: <i>Test and Evaluation Support</i>	691.977	683.308	661.417	0.000	661.417	672.180	680.576	693.772	706.945	Continuing	Continuing
• RDTE: BA 06: PE 0605976F: <i>Facility Restoration and Modernization - T&E</i>	46.955	40.518	134.111	0.000	134.111	135.116	125.388	89.071	69.807	Continuing	Continuing
• RDTE: BA 06: PE 0605978F: <i>Facility Sustainment - T&E Support</i>	32.965	27.895	28.091	0.000	28.091	28.637	29.093	29.633	30.158	Continuing	Continuing

Remarks

D. Acquisition Strategy

Not applicable.

E. Performance Metrics

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

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 6					R-1 Program Element (Number/Name) PE 0604256F / <i>Threat Simulator Development</i>				Project (Number/Name) 663321 / <i>Electronic Warfare Ground Test Resources</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
663321: <i>Electronic Warfare Ground Test Resources</i>	-	13.091	12.675	12.133	0.000	12.133	12.355	12.560	12.791	13.018	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The AF requires a comprehensive set of test facilities to implement the Air Force Electronic Warfare (EW) Test Process in order to test EW systems, including Directed Energy (DE). To manage program risk effectively throughout the weapons system acquisition process, and conduct T&E effectively and efficiently, a broad multi-spectrum, integrated set of T&E capabilities for Modeling and Simulation (M&S) through open-air ranges (OAR) is required. The EW Test Process Support task provides for investment management, coordinated technical oversight, and application of EW T&E facilities, including studies, analyses, and related documentation. The National Radar Cross Section (RCS) Test Facility (NRTF) at Holloman AFB, NM, provides timely, accurate, and secure RCS and antenna measurements for tri-service and joint program offices, DoD laboratories, Defense Advanced Research Projects Agency (DARPA) and industry. The NRTF tests fielded and developmental systems and technologies to meet Low Observable (a.k.a. stealth) and EW customer requirements. The Guided Weapons Evaluation Facility (GWEF), 412 EWG/OL-HN and the Digital Integrated Air Defense System (DIADS) provide the ability to realistically evaluate hardware components and simulated weapon systems against manned hardware threat representations throughout the acquisition process. GWEF and 412 EWG/OL-HN provide simulations of advanced Infrared (IR) semi-active Surface-to-Air Missiles (SAMs), Air-to-Air Missiles (AAMs), IR and Laser countermeasure functions; integration of actual threat hardware and ground clutter into advanced threat IR missile simulations. DIADS provides algorithm based enemy command and control (C2) capabilities plus early warning radar detection, limited ground control intercept features and also allows man-in-the-loop interaction for the enemy C2 positions. The Advanced Warfare Test and Evaluation Capability (AWTEC) will replace 90's technology with state-of-the-art stimulators to upgrade the Benefield Anechoic Facility (BAF) at Edwards AFB, CA and provides Electromagnetic Interference/ Electromagnetic Compatibility (EMI/EMC) capabilities at the BAF. Improvement and modernization efforts within this PE are identified for the EW mission area. EW provides planning, improvements, and modernization needed for test capabilities to conduct and support the AF EW Test Process, including DE. This test process provides a scientific methodology to ensure the effective disciplined and efficient testing of EW and avionics systems.

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

	FY 2015	FY 2016	FY 2017
Title: I&M	11.606	11.103	10.503
Description: Provides for planning and improvement & modernization (I&M) of test capabilities to conduct and support the AF EW test process, including DE.			
FY 2015 Accomplishments:			
The 96 TW continued development of IR threat simulator capabilities to include hardware and software upgrades to the IR developmental test lab and the 5-axis test areas. The 96 TW completed initial installation of hardware and software into the developmental test lab, including the integration of nine IR threats (software only). DIADS continued software conversion to C++ and design, development, architecture validation and simulation upgrades to simulate evolving threats, including improvements to			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600 / 6	R-1 Program Element (Number/Name) PE 0604256F / <i>Threat Simulator Development</i>	Project (Number/Name) 663321 / <i>Electronic Warfare Ground Test Resources</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>command and control models, Electronic Attack/Electronic Protection (EA/EP), and advanced threat tracking capabilities. AWTEC continued development and procurement of advanced threat signal generation capabilities for the BAF to support F-35 and other aircraft platforms. AWTEC completed verification and validation testing of the Advanced Global Navigation System, acceptance testing of a new EMI/EMC test capability, and began design, development, and integration of significant upgrades to the BAF threat signal generation system - Combat Electromagnetic Environment Simulator (CEESIM). NRTF completed upgrades to the machine/supply shops and the insertion of an X and Ku band sensitivity capability. NTRF also completed studies to consolidate and enhance efficiency of operations and accuracy for measuring the RCS of Low Observable platforms and antennas, and has begun initial ground preparation for facility upgrades and the relocation and refurbishment of the 40-foot in-ground turntable used to support full size fighter class platform testing.</p> <p>FY 2016 Plans: The 96 TW will continue development of hardware and software upgrades to 5-axis IR threat simulator capabilities, as well as the development and the transition of the developmental test lab to operational capability. DIADS will continue software conversion to C++ and develop and validate architecture and simulation upgrades, including improvements to command and control, sensor reactivity, and jamming models. AWTEC will continue development, procurement and integration of new state-of-the-art stimulators, CEESIM enhancements and modifications, instrumentation, and environment monitoring and measuring capabilities for the BAF. NRTF will continue facility upgrades to consolidate and enhance operations efficiency and improve the RCS measurement accuracy of Low Observable platforms and antennas, including completing the construction of the Research Diagnostic and Integration (REDI) range.</p> <p>FY 2017 Plans: The 96 TW will continue development of hardware and software upgrades to 5-axis IR threat simulator capabilities. DIADS will continue to develop and validate architecture and simulation upgrades, including improvements to command and control, sensor reactivity, and jamming models. AWTEC will continue development, procurement and integration of new state-of-the-art stimulators and threat signal generation capabilities for the BAF. NRTF will continue facility upgrades to consolidate and enhance operations efficiency and improve RCS measurement accuracy of Low Observable platforms and antennas, including design studies of next generation radar and RCS metrology requirements.</p>				
<p>Title: EC Test Process Support</p> <p>Description: Electronic Combat (EC) Test Process Support. Conduct requirements analyses and other studies in support of Air Force T&E investments in test infrastructure and capabilities.</p> <p>FY 2015 Accomplishments:</p>		1.485	1.572	1.630

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 6	R-1 Program Element (Number/Name) PE 0604256F / <i>Threat Simulator Development</i>	Project (Number/Name) 663321 / <i>Electronic Warfare Ground Test Resources</i>

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

	FY 2015	FY 2016	FY 2017
<p>Provided SETA support needed to implement planned Air Force test processes and infrastructure I&M capabilities. Team members continued support to tri-service monitoring and analysis teams established to identify emerging joint investment needs and requirements development. Team members helped manage and monitor I&M program elements and activities.</p> <p>FY 2016 Plans: Continue to provide SETA support needed to implement planned Air Force test processes and infrastructure I&M capabilities. Team members will continue support to tri-service monitoring and analysis teams established to identify emerging joint investment needs and requirements development. Team members will help manage and monitor I&M program elements and activities.</p> <p>FY 2017 Plans: Continue to provide SETA support needed to implement planned Air Force test processes and infrastructure I&M capabilities. Team members will continue support to tri-service monitoring and analysis teams established to identify emerging joint investment needs and requirements development. Team members will help manage and monitor I&M program elements and activities.</p>			
Accomplishments/Planned Programs Subtotals	13.091	12.675	12.133

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>			<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u>	
			<u>Base</u>	<u>OCO</u>	<u>Total</u>					<u>Complete</u>	<u>Total Cost</u>
• RDTE: BA 06: PE 0604759F: <i>Major T&E Investment</i>	45.985	73.302	66.385	0.000	66.385	65.706	66.001	67.265	68.464	Continuing	Continuing
• RDTE: BA 06: PE 0605807F: <i>Test and Evaluation Support</i>	691.977	683.308	661.417	0.000	661.417	672.180	680.576	693.772	706.945	Continuing	Continuing
• RDTE: BA 06: PE 0605976: <i>Facility Restoration & Modernization - T&E</i>	46.955	40.518	134.111	0.000	134.111	135.116	125.388	89.071	69.807	Continuing	Continuing
• RDTE: BA 06: PE 0605978F: <i>Facilities Sustainment - T&E Support</i>	32.965	27.895	28.091	0.000	28.091	28.637	29.093	29.633	30.158	Continuing	Continuing

Remarks

D. Acquisition Strategy

NA

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 6	R-1 Program Element (Number/Name) PE 0604256F / <i>Threat Simulator Development</i>	Project (Number/Name) 663321 / <i>Electronic Warfare Ground Test Resources</i>

E. Performance Metrics

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

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 6					R-1 Program Element (Number/Name) PE 0604256F / <i>Threat Simulator Development</i>				Project (Number/Name) 667500 / <i>Foreign Materiel Acquisition/ Analysis</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
667500: <i>Foreign Materiel Acquisition/Analysis</i>	-	8.599	7.973	7.016	0.000	7.016	7.143	7.292	7.427	7.559	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project's specific purpose is to support USAF Foreign Materiel Program requirements through the acquisition and analysis of foreign materiel. Items considered for these Foreign Materiel Acquisition (FMA) funds are included in the prioritized Air Force FMA Top 20 list established each year. Each Major Command (MAJCOM) prepares and approves a Foreign Materiel - Mission Requirements Statement for each requirement. Annually, the MAJCOM commanders establish a list of their top 20 requirements. The MAJCOMs' requirements lists are integrated and prioritized into a classified Air Force requirement list. Each MAJCOM then approves the FMA Top 20 List and final validation comes from the Air Force Vice Chief of Staff. System analyses are based on and driven by acquisitions. The USAF provides assessments and data for threat systems to all DoD components.

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

	FY 2015	FY 2016	FY 2017
Title: FMP	8.599	7.973	7.016
Description: Supports USAF Foreign Materiel Program (FMP) Requirements through the acquisition and analysis of foreign materiel.			
FY 2015 Accomplishments: Continued to fund acquisition of available Foreign Materiel in accordance with the prioritized Air Force Foreign Materiel List; analysis of acquired Foreign Materiel; and operations and maintenance of the specialized Foreign Materiel assets.			
FY 2016 Plans: Continue to fund acquisition of available Foreign Materiel in accordance with the prioritized Air Force Foreign Materiel List; analysis of acquired Foreign Materiel; and operations and maintenance of the specialized Foreign Materiel assets.			
FY 2017 Plans: Continue to fund acquisition of available Foreign Materiel in accordance with the prioritized Air Force Foreign Materiel List; analysis of acquired Foreign Materiel; and operations and maintenance of the specialized Foreign Materiel assets.			
Accomplishments/Planned Programs Subtotals			7.016

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 6	R-1 Program Element (Number/Name) PE 0604256F / <i>Threat Simulator Development</i>	Project (Number/Name) 667500 / <i>Foreign Materiel Acquisition/ Analysis</i>

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

Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To	
			Base	OCO	Total					Complete	Total Cost
• RDTE: BA 06: PE 0604759F: <i>Major T&E Investment</i>	45.985	73.302	66.385	0.000	66.385	65.706	66.001	67.265	68.464	Continuing	Continuing
• RDTE: BA 06: PE 0605807F: <i>Test and Evaluation Support</i>	691.977	683.308	661.417	0.000	661.417	672.180	680.576	693.772	706.945	Continuing	Continuing
• RDTE: BA 06: PE 0605976F: <i>Facility Restoration & Modernization - T&E</i>	46.955	40.518	134.111	0.000	134.111	135.116	125.388	89.071	69.807	Continuing	Continuing
• RDTE: BA 06: PE 0605978F: <i>Facilities Sustainment -T&E Support</i>	32.965	27.895	28.091	0.000	28.091	28.637	29.093	29.633	30.158	Continuing	Continuing

Remarks

D. Acquisition Strategy

Not applicable.

E. Performance Metrics

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0604759F / <i>Major T&E Investment</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	45.985	73.302	66.385	0.000	66.385	65.706	66.001	67.265	68.464	Continuing	Continuing
664597: <i>Air Force Test Investments</i>	-	45.985	73.302	66.385	0.000	66.385	65.706	66.001	67.265	68.464	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This PE provides planning, improvements, and modernization for test capabilities at three Air Force Test Center (AFTC) organizations: 96 Test Wing at Eglin AFB FL (to include 96 Test Group at Holloman AFB NM and operating locations at Wright-Patterson AFB OH), Arnold Engineering Development Complex (AEDC) at Arnold AFB TN, and the 412 Test Wing at Edwards AFB CA. The purpose is to help test organizations improve and develop their test infrastructure and capabilities to keep pace with improvements in weapon system technologies.

The improvement and modernization (I&M) requirements are defined through the AF Test Investment Planning & Programming (TIPP) Process. All projects have been reviewed through the Tri-Service Reliance process (to communicate AF efforts to the other Services and avoid unwarranted duplication of effort) and are documented in the Technology Development Acquisition Program (TDAP) database. Each project has its own planning, development, equipment acquisition, equipment installation, and checkout phases which often require significant differences in funding from one year to the next. As such, the changes in category funding from year to year do not necessarily indicate program growth, but rather a planned phasing of improvement and modernization efforts. The test capabilities at these locations enable testing through all phases of weapon system acquisition, from system concept exploration through component and full-scale integrated weapon system testing to operational testing. These test organizations are a part of the Major Range and Test Facility Base (MRTFB), operated and maintained by the Air Force for DoD Test and Evaluation (T&E). These national test assets are available to others requiring their unique capabilities.

The 96 TW, at Eglin AFB FL, conducts and supports developmental test and evaluation (DT&E) of non-nuclear air armaments; Command, Control, Communications, Computers, Intelligence, Surveillance, Reconnaissance (C4ISR) systems; target acquisition and weapon delivery systems; navigation systems; provides a climatic simulation capability; determines target/test item spectral signatures; and provides Cyber testing capabilities as part of the Joint Information Operations (IO) Range. The 96 TG at Holloman AFB, NM provides independent test and evaluation of inertial navigation systems, Global Positioning System (GPS) and integrated systems used for aircraft navigation and missile guidance systems, including vulnerability to electronic interference; provides the liaison function for coordinating and scheduling all US Air Force test operations at White Sands Missile Range; provides subsonic through hypersonic ground testing of aircraft and missiles in a flight-representative environment under highly instrumented conditions; and executes flight test and test support for advanced avionics and weapons development of joint, international and commercial test programs. The 96 TG, OL-AC at Wright-Patterson AFB, OH provides independent T&E in support of aircraft survivability and full-scale aircraft landing gear T&E. These T&E activities include the development, T&E of aircraft landing gear components supporting engineering acquisition, design, safety, and performance evaluations. In addition, they provide an independent T&E capability for component qualification.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0604759F / <i>Major T&E Investment</i>	
<p>AEDC, at Arnold AFB TN, provides pre-flight and reliability ground environmental test support for DoD aeropropulsion, flight systems, and space and missile programs. The center has 53 test facilities providing: aerodynamic testing of scale model aircraft, missiles, and space systems; testing of large and full-scale satellites, sensors, and space vehicles in a simulated space environment; altitude environmental testing for aircraft, missile, and spacecraft propulsion systems; and testing of large-scale models such as space boosters together with their propulsion systems.</p> <p>The 412th Test Wing, at Edwards AFB CA, conducts and supports DT&E and Operational Test and Evaluation (OT&E) of aircraft and aircraft systems, aerospace research vehicles, unmanned aerial vehicles, cruise missiles, parachute delivery/recovery/systems, and cargo handling systems.</p> <p>I&M efforts within this PE are identified in four mission area categories: Airframe/Propulsion/Avionics (APA); Armament/Munitions (A/M); Command, Control, Communications, Computers, Intelligence, Surveillance, Reconnaissance (C4ISR)/Cyber; and Space. These categories describe general types of effort that will be conducted in this PE. APA provides planning, improvements, and modernization needed for test capabilities to conduct and support DT&E and OT&E of aircraft and aircraft systems, aerospace research vehicles, unmanned aerial vehicles, cruise missiles, parachute delivery/recovery systems, cargo handling systems, and turbine engines. APA focuses on evaluation of the vehicle airframe, propulsion system, and avionics systems, as well as overall systems integration testing. It encompasses both ground test facilities, on-board test aircraft systems, and open-air range infrastructure, including instrumentation and data processing. A/M provides planning, improvements, and modernization to conduct DT&E of air-to-ground and air-to-air armaments and munitions, which include gun, chaff and flare systems, as well as aerial decoy and target systems. The A/M category encompasses the full range of DT&E from digital modeling and simulation, to precision measurement testing, to hardware-in-the-loop and installed systems testing, to open-air range testing. Elements of A/M DT&E include environmental, warhead effectiveness, arena blast/fragmentation, guidance navigation and control, aerodynamics, propulsion, electromagnetic interference and compatibility, mass properties, seeker and signature measurement, survivability, lethality, integration, reliability, net-centric and terminal effects testing. A/M also involves the design and development of systems needed to support A/M DT&E including the design and development of high speed sleds, targets, range support systems and various instrumentation and measurement systems. C4ISR provides planning, improvements and modernization to conduct DT&E of systems that support Command and Control (C2) functions which range from air campaign planning at the theater level to wing level C2 operations, to planning individual missions, to putting weapons on target using concepts such as machine to machine targeting. C4ISR includes ground and flight performance testing of airborne C2 networks and tactical data links, air operation centers, mission planning systems, multi-level security systems, radio and communication systems, ISR systems, information assurance systems, and radar systems such as those used by Joint Surveillance Target Attack Radar Systems (JSTARS) and air traffic control systems. C4ISR conducts DT&E on a full range of systems covering the sensor (detection) to the shooter (weapon), including functional and environmental testing of these systems. C4ISR/Cyber also includes DT&E for offensive and defensive Cyber capabilities. Space provides planning, improvements, and modernization needed for test capabilities to perform developmental and operational testing for space and launch acquisition and sustainment programs. Test capabilities include launch vehicle, satellite, missile, sensor, thermal protection system, signature, hardness, and interface testing. The capabilities reside at Vandenberg, Kirtland, Arnold, Patrick, Schriever, Peterson, Holloman Air Force Bases and others. Infrastructure includes launch sites, mobile control units, thermal vacuum chambers, sled tracks, arc heated wind tunnels, ballistic test ranges, signature collection, and the requisite personnel.</p> <p>This program is in Budget Activity 6, RDT&E Management Support, because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.</p>		

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0604759F I Major T&E Investment
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	47.232	68.302	66.845	0.000	66.845
Current President's Budget	45.985	73.302	66.385	0.000	66.385
Total Adjustments	-1.247	5.000	-0.460	0.000	-0.460
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	5.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	-1.247	0.000	-0.460	0.000	-0.460

Change Summary Explanation

FY15: \$1.247M decrease for SBIRs' tax.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
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Title: Airframe/Propulsion/Avionics T&E I&M	32.864	48.962	52.182
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Description: Improvement and modernization of the AF capability to test and evaluate Airframe/Propulsion/Avionics (APA)

FY 2015 Accomplishments:

The Joint Airborne Instrumentation Integration (JAI) Project completed multiple modifications and instrumentation upgrades on T-38, F-16, and F-15 test support aircraft and began modification of KC-10 aircraft for instrumentation installation. The Telemetry Systems Integration Support (TSIS) Project completed remote control upgrades to the telemetry (TM) antenna systems, C-band capability modifications to ground-based TM receivers, and installed antennae to provide TM frequency coverage on the flight line and taxiways at Edwards AFB.

The Advanced Large Military Engine Capability (ALMEC) Project completed the replacement of the Main Drive Exciters; completed Phase 1 efforts to upgrade the Engine Test Facility (ETF) plant control systems, including installation outage and validations tests; completed installation of multiple auto-strainers and other components, including 48" isolation valves, for the Aeropropulsion System Test Facility (ASTF) air supply water system; awarded a GFE contract for the A3B switchgear and unit substation upgrade project; completed the SOW and began the RFP process for the H1 heater tube procurement and H1 Heater Bank 1 upgrade; and completed modifications of the exhaust intercooler for the C1 and C2 test cells.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force</i> / BA 6: <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0604759F / <i>Major T&E Investment</i>
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C. Accomplishments/Planned Programs (\$ in Millions)

	FY 2015	FY 2016	FY 2017
<p>The Improved Transonic Test Capability (IMTTC) Project completed the Critical Design Review (CDR) for the steady state Data Acquisition System (DAS); completed fabrication of the Test Article Control System (TACS), Carts 1 and 3; procured four high-speed cameras for integration test of “dynamic” and “lifetime” Pressure Sensitive Paint (PSP) technology at NASA AMES; and delivered the large model wings-level yaw capability.</p> <p>The Test Instrumentation, Data Systems and Control (TIDSC) Project completed the J2 test cell upgrades (Temperature Measurement Subsystems [DTS] and Voltage Measurement Subsystems [DVS]); completed the C1 test cell upgrade (replacement of the primary data distribution network [PDNe]); completed detailed designs and the CDR for the Arcs facility upgrade (H1/H2/H3 test cells); and initiated detailed design efforts for the J1 facility (turbine engine test cell) upgrade.</p> <p>The Ultra-High Accuracy Reference System (UHARS) Project is complete.</p> <p>The Common Range Integrated Instrumentation System (CRIIS) Production project began three Analysis of Alternative (AoA) studies (Sensor, Data Link, and Long Range) to address Time, Space, Position Information (TSPI) gaps and address design, development and procurement options for upgrading range TSPI instrumentation capabilities. A Technical Requirements Document (TRD) for the Sensor AoA was completed and an RFI was issued; a TRD for the Data Link Analysis of Alternatives (AoA) is in work.</p> <p>The Landing Gear Test Facility (LGTF) Modernization Program held an Industry Day to discuss preliminary designs with potential vendors. A draft design specification has been completed and work on the acquisition strategy initiated.</p> <p>FY 2016 Plans: JAII will complete instrumentation systems upgrades on Edwards AFB T-38 support fleet aircraft, replace outdated range radar systems, and complete ground infrastructure upgrades to enhance network instrumentation, which will complete this project.</p> <p>ALMEC will complete the H1 Heater Bank 1 upgrade; complete installation and checkout of the A3B switchgear and unit substation 9; complete the H1 Heater Bank 1 Roof installation, which will complete the scope of this project; procure the tube material required for the final exhaust intercooler upgrade to be performed in FY17; and begin upgrades for the Engine Test Facility (ETF) Controls Project.</p> <p>IMTTC will complete final detailed design for wind tunnel 16T TACS and begin fabrication and installation; complete acceleration of major procurements that will reduce potential schedule impacts for MDAP test customers in FY16-18; and will complete design and develop procurement documents for the Test Conditions Controls (TCC) and PSP.</p>			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force</i> / BA 6: <i>RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0604759F / <i>Major T&E Investment</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>TIDSC will complete the Arcs facility (H1, H2, and H3 test cells) upgrade; complete the J2 measurement system upgrade; complete the detailed design and hardware procurement for the C2 facility upgrade; and begin the J1 and J2 facility upgrades.</p> <p>CRIIS Production will complete the AoA studies to address TSPI gaps and address design, development and procurement options for upgrading range TSPI instrumentation capabilities. CRIIS Production will also begin Lot 1 procurement of OSD Central Test and Evaluation Investment Program (CTEIP) developed CRIIS TSPI Increment 2 pods, aircraft internal mounts, and ground support infrastructure. Purchase and delivery of initial CRIIS equipment will focus on Eglin AFB IOC.</p> <p>AFMC will initiate improvement and modernization projects to support the AF vision 2023 strategy prioritized by the AF Test Investment Planning & Programming (TIPP) process; these may include Advanced Frequency Control & Analysis, DoD Transonic Test improvements, Mission Control/Communications Upgrades, and Radar TSPI modifications.</p> <p>The LGTF Modernization Program will complete performance specifications, evaluate proposals and begin contract negotiations.</p> <p>The Next Generation Turbine Engine Test Capability (NGTETC) project revitalizes capability to existing AEDC infrastructure to make it more effective and efficient, as well as expands the test envelope to accommodate next generation turbine engine performance characteristics. NGTETC will initiate discussions with contractors on possible exhaust cooler designs; complete preliminary designs on the compressor inbleed, thermal management, and power management systems; and begin hardware procurement for the test cell inlet venture system.</p> <p>The Improved Plant Reliability and Efficiency/Transonic Aero Propulsion Test Capability project will restore specific components and sub-systems in AEDC Wind Tunnel 16T (and to some extent Wind Tunnel 16S) primary drive systems to provide a reliable and fully capable tunnel asset for future test customers. The project will determine requirements and design modifications for the compressor C1 blades, and initiate component analysis and new design integration for the main drive and sub-systems, the C1 compressor sub-systems (refurbish/replace), and the electrical support systems (refurbish/replace).</p> <p>The T&E Board of Directors will continue to lead tri-service investment planning and joint T&E Reliance efforts as directed by the Service Secretaries.</p> <p>FY 2017 Plans: ALMEC will complete upgrades for the ETF controls and restoration of the C Plant H1 heater.</p> <p>IMTTC will continue to install and integrate hardware and software enhancements for TCC and 16T TACS.</p>				

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0604759F / <i>Major T&E Investment</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>TIDSC will complete the C2 facility upgrades.</p> <p>CRIIS Production will continue Lot 1 procurement of OSD CTEIP developed CRIIS TSPI Increment 2 pods, aircraft internal mounts, and ground support infrastructure. Purchase and delivery of initial CRIIS equipment will focus on Eglin AFB IOC.</p> <p>The LGTF Modernization Program will continue design and fabrication (Phase II) efforts and system integration (Phase III).</p> <p>Integrated Network Enhanced Telemetry (iNET) Systems Integration and Support (ISIS) will begin in FY17 by supporting and complementing the CTEIP-funded iNET Program. FY17 efforts will start by implementing the ground command and control (C2) linkages required to support TM between ground stations and aircraft. In FY17, ISIS will begin procuring and installing command transmitters for TM antennas and command transceivers for aircraft, and developing C2 integration with the ground infrastructure. The C2 integration will include upgrading control rooms to support required C2 functions (i.e., display and front end software) and establishing security and network management measures.</p> <p>Common Airborne Networked Instrumentation System (CANIS) will begin by supporting and complementing the CTEIP-funded iNET Program by implementing the airborne solutions. FY17 activity will include implementing spirals 0, 1, and 2 of the CANIS acquisition approach. Spiral 0 modifies Air Force Test Center (AFTC) telemetry policies and procedures and makes use of tier 1 waveforms; Spiral 1 implements multi-band and C-Band transmitter and transceiver conversions; and Spiral 2 establishes a test asset networked data gathering package.</p> <p>NGTETC will continue upgrades to exhaust coolers, compressor inbleed, power and thermal management systems.</p> <p>Modular Mission Control Room Upgrade (MMCRU) will begin in FY17. The initial studies will be undertaken to support the hardware integration (spiral 1), situational awareness integration (spiral 2), and applications migration of the MMCRU implementation. MMCRU establishes a "cloud type" mission control room architecture to enable user friendly access to and distribution of data through Internet Protocol (IP) networks.</p> <p>Improved Plant Reliability and Efficiency/Transonic Aero Propulsion Test Capability will restore the capabilities of the main drive motors (rewind main drive motors M1 and M4), C1 compressor (replace both C1 compressor rotor blades and spacers), main drive motor sub-systems (refurbish/replace), C1 compressor sub-systems (refurbish/replace), and the electrical support systems (refurbish/replace primary Propulsion Wind Tunnel [PWT] facility main drive electrical utilities) to original specifications.</p>			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force</i> / BA 6: <i>RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0604759F / <i>Major T&E Investment</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
The T&E Board of Directors will continue to lead tri-service investment planning and joint T&E Reliance efforts as directed by the Service Secretaries.				
Title: Armament/Munitions T&E I&M		10.295	20.965	7.809
Description: Improvement and modernization of the AF capability to test and evaluate Armament/Munitions (A/M)				
FY 2015 Accomplishments: The Gulf Range Test and Training Control Center (GRTTCC) completed integration and checkout of next generation TM processing systems and upgrades to mission control room computer systems and fiber data links at the 96 TW's Central Control Facility (CCF). The Joint Gulf Range Area Network Development (JGRAND) awarded a contract to develop the Alternative Range Network Operational Control Center (Alt RNOCC) facility at Eglin test site C-3; completed installation of fiber optical cable to connect test sites D-84 to D-1B and D-84 to Building 44; and proceeded with plans to acquire HD video transport equipment for the eastern side of the range. The Combined High-Speed/High Resolution (CHSHR) EO/IR Imaging completed filed verification of upgraded Cinetheodolites (CTs), software and hardware integration testing, modernization of the long-range optical tracker at the Eglin Test and Training Complex (ETTC), as well as deployed five modernized CTs to Test Area (TA) B-70. The project initiated conversion of TA C-72 CTs, investigation of encryption implementation for data security, and the procurement of several high definition cameras for the HHSTT. The Next Generation Munitions Test Environment (NGMTE) Project completed installation of C-80 arena cable infrastructure; completed acceptance testing of 8300fps Gun Design Prototype Common Data Acquisition System; and conducted a site survey for the replacement of the chambers and cooling towers for the Static Test Environment for Munitions (STEM) facility.				
FY 2016 Plans: JGRAND will acquire and begin installation of equipment in the Alt RNOCC; begin implementation of data encryption across the Eglin Range Information Grid (RIG); and acquire and implement optical fiber paths to improve range communication capabilities at the ETTC. CHSHR EO/IR Imaging will implement autonomous designs to B-70 and C-72; acquire and modernize mobile optical tracking systems; and complete evaluation of ultra-high speed camera options for hypersonic speed testing on the high-speed test track.				

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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0604759F / <i>Major T&E Investment</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>NGMTE will continue to upgrade aging gun and munitions test infrastructure, develop and procure common data instrumentation and acquisition systems, and replace environmental test chambers/facilities supporting gun and arena test capabilities.</p> <p>Start the Airborne Sensor Data Correlation effort. This effort is a research project to prototype fusing unmanned aerial system electro-optical and infrared full motion video to support accurate over-water weapons impact scoring. The results of this effort will help future testing of hypersonic and long-range weapons that require large test areas and larger hazard areas.</p> <p>FY 2017 Plans: CHSHR EO/IR Imaging will complete procurement and delivery of the high-speed digital camera systems and the infrared camera systems; will complete modernization of IR and long-range Cine-T optical tracking systems; and will complete the remote C2 operation upgrades to provide improved tracking capabilities at Eglin AFB.</p> <p>NGMTE will continue to upgrade aging gun and munitions test infrastructure, develop and procure common data instrumentation and acquisition systems, and replace environmental test chambers/facilities supporting gun and arena test capabilities.</p>				
<p>Title: C4ISR T&E I&M</p> <p>Description: Improvement and modernization of the AF capability to test and evaluate C4ISR</p> <p>FY 2015 Accomplishments: The Improved Command and Control (C2) Test Operations Center (I-C2TOC) Project provided for improved capabilities to represent any level of Air Force Operations Centers, including the Squadron Ops Center, Wing Ops Center, and Air Ops Center, to support C4ISR testing at Eglin AFB. I-C2TOC began acquiring computer and network equipment to replace outdated network infrastructure and upgrade servers and workstations.</p> <p>Cyber Defense Test Capability (CDTC) completed the first phase of a Federally-Funded Research and Development Center (FFRDC) study that will provide a detailed analysis of the draft six-step DoD cybersecurity test and evaluation process and determine its adequacy in testing cyber vulnerabilities of acquisition systems under test; the project also initiated the second phase of the study which is to identify manpower requirements and test infrastructure investments.</p> <p>FY 2016 Plans: I-C2TOC will continue C4ISR test network upgrades to C4ISR system hardware and software and replace outdated network infrastructure.</p>		2.826	3.375	6.394

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
The CDTC project will complete the study to develop a detailed implementation methodology for the DoD cybersecurity T&E process and identify manpower requirements and develop a test investment roadmap. FY 2017 Plans: I-C2TOC will continue development of secure network infrastructure and initiate procurement of software and hardware servers and workstations needed to enhance net-centric C2 battle management operations and test control capabilities, and improve communication interfaces and data collection, handling, analysis and display capabilities supporting C4ISR end-to-end weapon system testing at Eglin AFB. The CDTC project will continue in FY17. During this phase, implementation of the plan for acquiring and training the workforce necessary for executing the cybersecurity T&E process will begin.			
Accomplishments/Planned Programs Subtotals	45.985	73.302	66.385

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• RDTE: BA 06: PE 0604256F: <i>Threat Simulator Development</i>	24.318	23.844	21.630	0.000	21.630	22.038	22.426	22.839	23.245	Continuing	Continuing
• RDTE: BA 06: PE 0605807F: <i>Test and Evaluation Support</i>	691.977	683.308	661.417	0.000	661.417	672.180	680.576	693.772	706.945	Continuing	Continuing
• RDTE: BA 06: PE 0605976F: <i>Facility Restoration & Modernization - T&E</i>	46.955	40.518	134.111	0.000	134.111	135.116	125.388	89.071	69.807	Continuing	Continuing
• RDTE: BA 06: PE 0605978F: <i>Facility Sustainment - T&E Support</i>	32.965	27.895	28.091	0.000	28.091	28.637	29.093	29.633	30.158	Continuing	Continuing

Remarks

E. Acquisition Strategy

N/A

F. Performance Metrics

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605101F / <i>RAND Project Air Force</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	31.164	34.918	34.641	0.000	34.641	34.247	34.860	35.507	36.137	Continuing	Continuing
661110: <i>Project Air Force</i>	-	31.164	34.918	34.641	0.000	34.641	34.247	34.860	35.507	36.137	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program provides for continuing analytical research across a broad spectrum of aerospace issues and concerns. The Project AIR FORCE (PAF) research agenda is focused primarily on mid to long-term problems; in addition, PAF provides quick response assistance for senior Air Force officials on high priority, near term issues. Within these areas, PAF addresses difficult and complex, far-reaching and inter-related questions linked to future strategies, approaches and policies, in order to enhance Air Force senior leadership's deliberations and decisionmaking on major issues. The Air Force Steering Group, chaired by the Vice Chief of Staff, reviews, monitors, and approves PAF annual research efforts. Each project is initiated, processed, and approved in accordance with PAF Sponsoring Agreement which requires General Officer (or SES equivalent) sponsorship and involvement on a continuing basis.

PAF is organized in four primary research program areas: strategy and doctrine; force modernization employment; manpower, personnel and training; and resource management. Integrative research projects are also conducted at the division level with direct support provided through the most applicable program. Research programs address organizational crosscutting issues as defined by specific research themes approved by the Air Force Steering Group. These research themes encompass a wide spectrum of topics including external challenges to national security; terrorism and homeland defense; joint and coalition operations; integrated roadmap for ISR capabilities; enhancing, tailoring and reducing infrastructure to meet new force requirements; potential changes to the Active/Reserve/National Guard/Civilian/Contractor manpower mix; and improved weapon system costing.

The research program will continue to build upon research foundations, examining the evolving security environment, emerging threats, national and military strategy, transformation approaches including investment strategies to provide capabilities within changing Defense budgets, operational concepts to meet evolving and increasingly joint missions, exploiting advanced technologies, increasing the effectiveness and efficiency of combat support, and developing the total force (Active/Reserve/National Guard/Civilian/Contractor). These efforts will continue to inform and support the senior Air Force leadership regarding personnel management and training; improving logistical efficiencies and force sustainment; ongoing conflicts and joint operations; force structure capabilities, limitations, and operational concepts; and making force structure tradeoffs within resource constraints to meet future national security and Air Force needs.

Future research will build upon earlier work to continue to help the Air Force to rapidly and appropriately adapt to the changing world environment and emerging threats; continue to modernize and employ its force structure to provide capabilities within changing DoD budgets; assess lessons learned from recent and ongoing conflicts; develop and utilize its total force; and enhance the support of our aerospace forces, ranging from sustainment of the force structure to agile combat support.

PAF research spans functional and organizational boundaries and is managed in a manner to facilitate independence and freedom from organizational bias thereby providing perspectives and insights to senior Air Force leaders free from parochial influences not necessarily in the best interest of the Air Force at large. Benefits of

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independent non-Department of Defense analysis of complex present day and emerging issues are shared beyond the immediacy of the Air Force. PAF study results are given wide dissemination within the DOD on a routine basis and are deposited with the Defense Technical Information Center available to a broad range of qualified government and commercial-sector individuals and activities.

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	30.443	34.918	34.985	0.000	34.985
Current President's Budget	31.164	34.918	34.641	0.000	34.641
Total Adjustments	0.721	0.000	-0.344	0.000	-0.344
• 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	1.754	0.000			
• SBIR/STTR Transfer	-1.033	0.000			
• Other Adjustments	0.000	0.000	-0.344	0.000	-0.344

Change Summary Explanation

FY15: Funds reprogrammed to support VCSAF directed research.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Title: Strategy & Doctrine</p> <p>Description: Provides for continuing analytical research across a broad spectrum of aerospace issues and concerns--strategy and doctrine.</p> <p>FY 2015 Accomplishments: Provide for continuing analytical research across a broad spectrum of aerospace issues and concerns--strategy and doctrine.</p> <p>FY 2016 Plans: Will provide for continuing analytical research across a broad spectrum of aerospace issues and concerns--strategy and doctrine.</p> <p>N/A</p> <p>FY 2017 Plans:</p>	7.486	8.265	8.232

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Will provide for continuing analytical research across a broad spectrum of aerospace issues and concerns--strategy and doctrine.				
Title: Force Development		7.486	8.265	8.232
Description: Provides analytical research across a broad spectrum of aerospace issues and concerns--force development employment.				
FY 2015 Accomplishments: Provide for continuing analytical research across a broad spectrum of aerospace issues and concerns--force development employment.				
FY 2016 Plans: Will provide for continuing analytical research across a broad spectrum of aerospace issues and concerns--force development employment.				
FY 2017 Plans: Will provide for continuing analytical research across a broad spectrum of aerospace issues and concerns--force development employment.				
Title: Manpower, Personnel & Training		7.486	8.265	8.232
Description: Provides analytical research across a broad spectrum of aerospace issues and concerns--manpower, personnel and training.				
FY 2015 Accomplishments: Conduct continuing analytical research across a broad spectrum of aerospace issues and concerns--manpower, personnel and training.				
FY 2016 Plans: Will conduct continuing analytical research across a broad spectrum of aerospace issues and concerns--manpower, personnel and training.				
FY 2017 Plans: Will conduct continuing analytical research across a broad spectrum of aerospace issues and concerns--manpower, personnel and training.				
Title: Resource Management		7.486	8.265	8.232
Description: Provides analytical research across a broad spectrum of aerospace issues and concerns--resource management.				

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Conduct analytical research across a broad spectrum of aerospace issues and concerns--manpower, personnel and training.</p> <p><i>FY 2016 Plans:</i> Will conduct continuing analytical research across a broad spectrum of aerospace issues and concerns--manpower, personnel and training.</p> <p><i>FY 2017 Plans:</i> Will conduct continuing analytical research across a broad spectrum of aerospace issues and concerns--manpower, personnel and training.</p>				
<p><i>Title:</i> Integrative Research/Direct Support</p> <p><i>Description:</i> Provides for continuing analytical research across a broad spectrum of aerospace issues and concerns--integrative research/direct support.</p> <p><i>FY 2015 Accomplishments:</i> Conduct continuing analytical research across a broad spectrum of aerospace issues and concerns--integrative research/direct support.</p> <p><i>FY 2016 Plans:</i> Will conduct continuing analytical research across a broad spectrum of aerospace issues and concerns--integrative research/direct support.</p> <p><i>FY 2017 Plans:</i> Will conduct continuing analytical research across a broad spectrum of aerospace issues and concerns--integrative research/direct support.</p>		1.220	1.858	1.713
Accomplishments/Planned Programs Subtotals		31.164	34.918	34.641
D. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
E. Acquisition Strategy				
N/A				

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

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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605502F / <i>Small Business Innovation Research</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	324.371	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
663005: <i>Small Business Innovation Research</i>	-	324.371	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Implementation of 15 U.S.C., Section 638 to maximize the creative, innovative, and entrepreneurial spirit of small businesses to solve technological problems.

B. Program Change Summary (\$ in Millions)

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	324.371	0.000	0.000	0.000	0.000
Total Adjustments	324.371	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	324.371	0.000			
• Other Adjustments	0.000	0.000		0.000	0.000

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

	FY 2015	FY 2016	FY 2017
Title: Small Business Innovation Research	324.371	0.000	0.000
Description: Small Business Innovation Research			
FY 2015 Accomplishments: Implemented the provisions of 15 U.S.C., Section 638, to maximize the creative, innovative, and entrepreneurial spirit of small businesses to solve technological problems. Integrated Air Force needs and requirements into research and development topics to enhance military and commercial potential. Applied pilot administration funding for enhanced outreach and communications in the form of Small Business Industry Days and participation in Small Business Administration national road shows. Utilized Direct to Phase II SBIR authority in the solicitation process to focus on potential rapid response solutions for warfighters.			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>SBIR supported many small business matured technologies during 2015. For example, one SBIR investment yielded a super-hot (5,000F) metal vapor jet that cuts through 1/2' steel in less than a second. This handheld breaching tool is useful for military special forces and for civilian first responders. Another SBIR project resulted in a rapid battery charging system which allows multiple battery packs to be recharged in vehicles in as little as 10 minutes. This system now powers over 3,500 vehicles in the Nation's airports, keeping them operating 24 hours a day every day. The system is also used in more than 10,000 vehicles in factories and distribution centers, resulting in significant energy cost savings.</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Plans: N/A</p>			
Accomplishments/Planned Programs Subtotals	324.371	0.000	0.000

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

Remarks

E. Acquisition Strategy
N/A

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

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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	8.916	10.476	11.529	0.000	11.529	11.985	11.673	11.890	12.101	Continuing	Continuing
660191: <i>Initial Operational Test and Eval</i>	-	8.916	10.476	11.529	0.000	11.529	11.985	11.673	11.890	12.101	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program element funds Congressionally mandated Initial Operational Test and Evaluation (IOT&E) to support major weapon system acquisition decisions beyond Low-Rate Initial Production (LRIP), Milestone C, full rate production, fielding, and declaration of Initial Operational Capability (IOC). For major defense acquisition programs, the law requires IOT&E be completed under realistic operating conditions before proceeding beyond LRIP. IOT&E will be planned to completely and unambiguously answer all critical operational issues (COI) as thoroughly as possible. IOT&E is conducted to determine the operational effectiveness and suitability and resolve overall mission capability of systems undergoing research and development (R&D) efforts. It is an evaluation of a system's performance when the complete system is tested and evaluated against operational criteria by personnel with the same qualifications as those who will operate, maintain and support the system when deployed. In general, IOT&E is performed on new systems in development, major modifications, and other systems as directed. This PE funds the Air Force Operational Test Agency's participation in Integrated Test and Evaluation (IT&E), Multiservice Operational Test and Evaluation (MOT&E), and Follow-on Operational Test and Evaluation (FOT&E) when it is the continuation of IOT&E activities past the full rate production decision. FOT&E answers specific questions about unresolved COIs and test issues or completes areas not finished during the IOT&E. This PE funds related operational test and evaluation (OT&E) activities such as Early Influence, Operational Utility Evaluations (OUE), Early Operational Assessments (EOA), Operational Assessments (OA), and independent IOT&E which support major milestones and decision points prior to Milestone C, full rate production, fielding, or declaration of IOC. IOT&E programs are identified in several system categories: Air; Space; Weapons; Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR); and Combat Support. This is a level of effort program element driven by Congressionally and DoD acquisition mandated requirements for operational testing.

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	10.266	10.476	12.090	0.000	12.090
Current President's Budget	8.916	10.476	11.529	0.000	11.529
Total Adjustments	-1.350	0.000	-0.561	0.000	-0.561
• 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	-1.350	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-0.561	0.000	-0.561

Change Summary Explanation

FY15: Reduction of \$1.350M due to higher AF priorities

FY17: Reduction of \$446K due to higher OSD priorities; and AF inflation rates reduction of \$115K

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
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Title: Air Systems OT&E	4.045	2.875	4.218
Description: Plan, execute and report OT&E for Air Systems			
FY 2015 Accomplishments:			
-Advanced Pilot Training (APT T-X): Conducted early influence			
-AWACS Block 40/45: Planned for FOT&E			
-B-2 Flex Strike P6.2 Block Upgrade: Planned for OA			
-C-130J Block Upgrade 8.1: Planned for OA			
-Combat Rescue Helicopter (CRH): Planned for OA1			
-(Diminishing Manufacturing Sources) Replacement of Avionics for Global Operations and Navigation (E-3 DRAGON): Planned for OA			
-F-15 Eagle Passive and Active Warning and Survivability System (F-15 EPAWSS): Conducted early influence			
-F-22A 3.2A: Conducted FOT&E			
-F-22A 3.2B: Conducted OA			
-Global Hawk Ground Segment Modernization Program GH GSMP): Conducted early influence			
-Joint Mission Planning System RQ-4 Mission Planning Element (JMPS RQ-4 MPE): Conducted early influence			
-JSTARS Recap: Conducted early influence			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> -KC-46A: Conducted OA -Miniature Air Launched Decoy - Jammer (MALD-J): Conducted FOT&E -MQ-9 Increment 1: Planned for FOT&E -Presidential Aircraft Recapitalization (PAR): Conducted early influence -RQ-4B Global Hawk Block 30 Multi-Spectral Intelligence (MSI): Conducted early influence -UH-1N Replacement: Conducted early influence <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> -Advanced Pilot Training (APT T-X): Conduct early influence -AWACS Block 40/45: Conduct FOT&E -B-2 Flex Strike P6.2 Block Upgrade: Conduct OA -C-130J Block Upgrade 8.1: Conduct OA -Combat Rescue Helicopter (CRH): Conduct OA1 -(Diminishing Manufacturing Sources) Replacement of Avionics for Global Operations and Navigation (E-3 DRAGON): Conduct OA -F-15 Eagle Passive and Active Warning and Survivability System (F-15 EPAWSS): Conduct early influence -F-22A 3.2B: Complete OA -Global Hawk Ground Segment Modernization Program GH GSMP): Conduct early influence -Joint Mission Planning System RQ-4 Mission Planning Element (JMPS RQ-4 MPE): Plan for IOT&E -JSTARS Recap: Plan for EOA -KC-46A: Complete OA -Miniature Air Launched Decoy - Jammer (MALD-J): Complete FOT&E -MQ-9 Increment 1: Conduct FOT&E -Presidential Aircraft Recapitalization (PAR): Plan for OA -RQ-4B Global Hawk Block 30 Multi-Spectral Intelligence (MSI): Plan for OA and OUE -UH-1N Replacement: Plan for OUE -Conduct other planning and operational testing for new air programs as the requirement becomes known to AFOTEC <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> -Advanced Pilot Training (APT T-X): Plan for OA -B-2 Flex Strike P6.2 Block Upgrade: Conduct IOT&E -C-130J Block Upgrade 8.1: Conduct IOT&E -Combat Rescue Helicopter (CRH): Plan for OA2 -(Diminishing Manufacturing Sources) Replacement of Avionics for Global Operations and Navigation (E-3 DRAGON): Plan for IOT&E 			

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> -F-15 Eagle Passive and Active Warning and Survivability System (F-15 EPAWSS): Plan for OA -F-22A 3.2B: Conduct IOT&E -Global Hawk Ground Segment Modernization Program GH GSMP): Plan for OA -Joint Mission Planning System RQ-4 Mission Planning Element (JMPS RQ-4 MPE): Conduct IOT&E -JSTARS Recap: Conduct EOA -KC-46A: Conduct IOT&E -Presidential Aircraft Recapitalization (PAR): Conduct OA -RQ-4B Global Hawk Block 30 Multi-Spectral Intelligence (MSI): Conduct OA and OUE -UH-1N Replacement: Conduct OUE -Conduct other planning and operational testing for new air programs as the requirement becomes known to AFOTEC 				
<p>Title: Space Systems OT&E</p> <p>Description: Plan, execute and report OT&E for Space Systems OT&E</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> -Advanced Extremely High Frequency Satellite Communications (Advanced EHF): Conducted MOT&E -Airborne Launch Control System (ALCS): Conducted early influence -Enhanced Polar System (EPS): Planned for MOT&E -Global Broadcast Service (GBS): Planned for FOT&E -Global Positioning System Block III (GPS III): Conducted early influence -Military GPS User Equipment (GPS MGUE): Conducted OA -GPS Next Generation Control Segment (GPS OCX): Conducted early influence -Inter-Continental Ballistic Missile Fuze (ICBM FUZE): Conduct early influence -Integrated Strategic Planning and Analysis Network Increment 4 (ISPAN Inc IV): Conducted OA -Joint Space Operations Center (JSpOC) Mission System (JMS): Planned for OUE 1 and 2 -Space Based Infrared System (SBIRS): Planned for OUE -Space Fence: Conducted early influence -Weather System Follow-on (WSF): Conducted early influence <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> -Advanced Extremely High Frequency Satellite Communications (Advanced EHF): Plan for FOT&E -Airborne Launch Control System (ALCS): Conduct early influence -Enhanced Polar System (EPS): Plan for MOT&E -Global Broadcast Service (GBS): Conduct FOT&E -Global Positioning System Block III (GPS III): Conduct early influence 		1.057	1.483	1.076

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> -Military GPS User Equipment (GPS MGUE): Complete OA -GPS Next Generation Control Segment (GPS OCX): Conduct early influence -Inter-Continental Ballistic Missile Fuze (ICBM FUZE): Conduct early influence -Integrated Strategic Planning and Analysis Network Increment 4 (ISPAN Inc IV): Conduct OUE -Joint Space Operations Center (JSpOC) Mission System (JMS): Conduct OUE 1 and 2 -Space Based Infrared System (SBIRS): Conduct OUE -Space Fence: Conduct early influence -Weather System Follow-on (WSF): Conduct early influence -Conduct other planning and operational testing for new space system programs as the requirement becomes known to AFOTEC <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> -Advanced Extremely High Frequency Satellite Communications (Advanced EHF): Plan for FOT&E -Airborne Launch Control System (ALCS): Plan for EOA -Enhanced Polar System (EPS): Plan for MOT&E -Global Positioning System Block III (GPS III): Plan for OA -Military GPS User Equipment (GPS MGUE): Conduct OUE -GPS Next Generation Control Segment (GPS OCX): Plan for OA -Inter-Continental Ballistic Missile Fuze (ICBM FUZE): Plan for OA -Integrated Strategic Planning and Analysis Network Increment 4 (ISPAN Inc IV): Plan for IOT&E -Joint Space Operations Center (JSpOC) Mission System (JMS): Conduct IOT&E -Space Based Infrared System (SBIRS): Conduct IOT&E -Space Fence: Plan for IOT&E -Weather System Follow-on (WSF): Conduct early influence -Conduct other planning and operational testing for new space system programs as the requirement becomes known to AFOTEC 				
Title: Weapons OT&E		0.833	3.283	4.643
Description: Plan, execute and report OT&E for Weapons OT&E				
FY 2015 Accomplishments:				
<ul style="list-style-type: none"> -AIM-120C Advanced Electronic Protection Improvement Program (AIM-120C Advanced EPIP): Planned for MOT&E -AIM-120C Electronic Protection Improvement Program (AIM-120C EPIP): Completed MOT&E -AIM-9X Block II: Completed MOT&E -AIM-9X Block II 9.4xx (AIM-9X Blk II 9.4xx): Conducted early influence -B-61 Life Extension Program (B-61 LEP): Conducted early influence -Hard Target Void Sensing Fuze (HTVSF): Planned for MOT&E 				

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> -Long-Range Stand-Off Weapon (LRSO): Conducted early influence -Offensive Anti-Surface Warfare Increment I (OASuW INC 1): Conducted early influence -Small Diameter Bomb II (SDB II): Completed OA <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> -AIM-120C Advanced Electronic Protection Improvement Program (AIM-120C Advanced EPIP): Conduct MOT&E -AIM-9X Block II 9.4xx (AIM-9X Blk II 9.4xx): Conduct early influence -B-61 Life Extension Program (B-61 LEP): Plan for OA -Hard Target Void Sensing Fuze (HTVSF): Conduct MOT&E -Long-Range Stand-Off Weapon (LRSO): Conduct early influence -Offensive Anti-Surface Warfare/Increment I (OASuW Inc I): Plan for OUE -Small Diameter Bomb II (SDB II): Plan for MOT&E -Conduct other planning and operational testing for new weapons system programs as the requirement becomes known to AFOTEC <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> -AIM-120C Advanced Electronic Protection Improvement Program (AIM-120C Advanced EPIP): Conduct MOT&E 2 -AIM-9X Block II 9.4xx (AIM-9X Blk II 9.4xx): Plan for MOT&E -B-61 Life Extension Program (B-61 LEP): Conduct OA -Long-Range Stand-Off Weapon (LRSO): Conduct early influence -Offensive Anti-Surface Warfare/Increment I (OASuW Inc I): Conduct OUE -Small Diameter Bomb II (SDB II): Conduct MOT&E -Conduct other planning and operational testing for new weapons system programs as the requirement becomes known to AFOTEC 				
Title: C4ISR OT&E		2.853	2.244	1.279
Description: Plan, execute and report OT&E for C4ISR OT&E				
FY 2015 Accomplishments:				
<ul style="list-style-type: none"> -Three Dimensional Expeditionary Long Range Radar (3DELRR): Conducted early influence -Air Force Distributed Common Ground System SR 3.0 (AF DCGS SR 3.0): Conducted OUE -Air Force Integrated Personnel and Pay System (AF-IPPS): Conducted early influence -Air Operations Center (AOC WS Inc 10.2): Conducted OA -Command and Control Air Operations Suite/Command and Control Information Services (C2AOS-C2IS): Conducted early influence 				

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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605712F / <i>Initial Operational Test & Evaluation</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> -Enclave Control Node (ECN): Conducted OUE -Enhanced Technical Information Management System (ETIMS): Conducted OUE -F-22A Tactical Mandates Program (TACMAN): Conducted early influence -Family of Advanced Beyond Line Of Sight Terminals (FAB T): Conducted OA -Ground Based Strategic Deterrence (GBSD): Conducted early influence -RQ-4 Global Hawk Block 30/Airborne Signals Intelligence Payload (ASIP): Planned for FOT&E -RQ-4B Global Hawk Block 40: Conducted IOT&E -Wide Area Surveillance (WAS): Conducted early influence <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> -Three Dimensional Expeditionary Long Range Radar (3DELRR): Conduct early influence -Air Force Distributed Common Ground System SR 3.0 (AF DCGS SR 3.0): Plan for IOT&E -Air Force Integrated Personnel and Pay System (AF-IPPS): Conduct early influence -Air Operations Center (AOC WS Inc 10.2): Conduct IOT&E -Command and Control Air Operations Suite/Command and Control Information Services (C2AOS-C2IS): Conduct early influence -Enclave Control Node (ECN): Conduct OUE -F-22A TACMAN: Conduct early influence -Family of Advanced Beyond Line Of Sight Terminals (FAB T): Plan for IOT&E -Ground Based Strategic Deterrence (GBSD): Conduct early influence -Presidential National Voice Conferencing: Conduct early influence -RQ-4 Global Hawk Block 30/Airborne Signals Intelligence Payload (ASIP): Plan for FOT&E -RQ-4B Global Hawk Block: Complete IOT&E -Wide Area Surveillance (WAS): Conduct early influence -Conduct other planning and operational testing for new C4ISR programs as the requirement becomes known to AFOTEC <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> -Three Dimensional Expeditionary Long Range Radar (3DELRR): Plan for OA -Air Force Distributed Common Ground System SR 3.0 (AF DCGS SR 3.0): Conduct IOT&E -Air Force Integrated Personnel and Pay System (AF-IPPS): Conduct early influence -Air Operations Center (AOC WS Inc 10.2): Complete IOT&E -Command and Control Air Operations Suite/Command and Control Information Services (C2AOS-C2IS): Plan for MOT&E -Enclave Control Node (ECN): Plan for OUE2 -F-22A TACMAN: Plan for OA -Family of Advanced Beyond Line Of Sight Terminals (FAB T): Conduct IOT&E -Ground Based Strategic Deterrence (GBSD): Conduct early influence 			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0605712F / <i>Initial Operational Test & Evaluation</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<ul style="list-style-type: none"> -Presidential National Voice Conferencing: Conduct early influence -RQ-4 Global Hawk Block 30/Airborne Signals Intelligence Payload (ASIP): Plan for FOT&E -Wide Area Surveillance (WAS): Plan for OA -Conduct other planning and operational testing for new C4ISR programs as the requirement becomes known to AFOTEC 				
<p>Title: Combat Support OT&E</p> <p>Description: Plan, execute and report OT&E for Combat Support OT&E</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> -Integrated Aircrew Ensemble (IAE): Conducted OA -Joint Mission Planning System B-2 (JMPS B-2): Planned for IOT&E -Joint Mission Planning System B-52 (JMPS B-52): Conducted IOT&E -Modular Handgun System (MHS): Planned for OA -Mission Planning System Increment 5 (MPS Inc 5): Plan for IOT&E <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> -Integrated Aircrew Ensemble (IAE): Plan for IOT&E -Joint Mission Planning System B-2 (JMPS B-2): Plan for IOT&E -Modular Handgun System (MHS): Conduct OA -Mission Planning System Increment 5 (MPS Inc 5): Conduct IOT&E -Conduct other planning and operational testing for new combat support programs as the requirement becomes known to AFOTEC <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> -Integrated Aircrew Ensemble (IAE): Conduct IOT&E -Joint Mission Planning System B-2 (JMPS B-2): Conduct IOT&E -Modular Handgun System (MHS): Plan for MOT&E -Mission Planning System Increment 5 (MPS Inc 5): Conduct IOT&E 2 -Conduct other planning and operational testing for new combat support programs as the requirement becomes known to AFOTEC 		0.128	0.591	0.313
Accomplishments/Planned Programs Subtotals		8.916	10.476	11.529
D. Other Program Funding Summary (\$ in Millions)				
N/A				

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force Date: February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605712F / <i>Initial Operational Test & Evaluation</i>
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D. Other Program Funding Summary (\$ in Millions)

Remarks

E. Acquisition Strategy

N/A

F. Performance Metrics

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>					R-1 Program Element (Number/Name) PE 0605807F / <i>Test and Evaluation Support</i>							
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	691.977	683.308	661.417	0.000	661.417	672.180	680.576	693.772	706.945	Continuing	Continuing
6606TG: <i>96th Test Group</i>	-	36.413	35.797	36.680	0.000	36.680	37.442	38.036	38.707	39.438	Continuing	Continuing
6606TS: <i>Test and Evaluation Support</i>	-	655.564	647.511	624.737	0.000	624.737	634.738	642.540	655.065	667.507	Continuing	Continuing

A. Mission Description and Budget Item Justification

Test facilities, capabilities and resources operated through this program include wind tunnels, rocket and jet engine test cells, armament test ranges, hardware-in-the-loop test facilities, climatic test facilities, avionics test facilities, aircraft testbeds, dry lakebed landing sites, instrumented test ranges, civilian payroll, and contractor services. It also provides resources for maintaining and modifying as required Air Force Materiel Command (AFMC) assigned test and test support coded aircraft. No acquisition contracts are funded from this program; test support contracts for services and supplies and equipment are predominantly awarded on the basis of full and open competition.

This program is in Budget Activity 6, RDT&E Management Support, because this budget activity includes research, development, test, and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	689.509	673.908	666.993	0.000	666.993
Current President's Budget	691.977	683.308	661.417	0.000	661.417
Total Adjustments	2.468	9.400	-5.576	0.000	-5.576
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	9.400			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	2.468	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-5.576	0.000	-5.576

Change Summary Explanation

FY15: \$2.468M increase for unscheduled emergency F-15 heavy maintenance.

FY16: \$9.400M congressional increase.

FY17: \$5.576M decrease for pricing adjustments; for non-flying/flying spares, aviation fuel, and civilian pay.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 6					R-1 Program Element (Number/Name) PE 0605807F / <i>Test and Evaluation Support</i>				Project (Number/Name) 6606TG / <i>96th Test Group</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
6606TG: <i>96th Test Group</i>	-	36.413	35.797	36.680	0.000	36.680	37.442	38.036	38.707	39.438	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Project infrastructure support is provided for the unique capabilities of the 96th Test Group (TG) facilities: Central Inertial and Global Positioning System (GPS) Test Facility (CIGTF/746th Test Squadron), the Holloman High Speed Test Track (HHSTT/846th Test Squadron) and the National Radar Cross Section (RCS) Test Facility (NRTF/96 TG Det 2), the 586th Flight Test Squadron including Detachment 1 (Det 1), 96 TG Operating Location (96 TG OL-AA) at Kirtland AFB, and 96 TG Operation Location (96 TG OL-AC) at Wright-Patterson AFB.

CIGTF provides independent test and evaluation of inertial, Global Positioning System, and integrated systems used for aircraft navigation and missile guidance systems, including vulnerability to electronic interference.

HHSTT capabilities include full-scale testing in flight representative environments, realistic live-fire simulations, test item and target fragment recovery, precision trajectory analysis and high speed photography.

NRTF provides radar cross section (RCS) monostatic and bistatic amplitude and phase measurements, antenna pattern measurements, glint and near field measurements for low observable targets.

The 586th Flight Test Squadron executes flight test and test support for advanced avionics and weapons development of joint, international and commercial test programs. Det 1 provides the liaison function for coordinating and scheduling all US Air Force test and training operations at White Sands Missile Range (WSMR). OL-AA provides test support for the Air Force Research Lab (AFRL) Directed Energy Division.

The 96 TG OL-AC includes the Landing Gear Test Facility (LGTF) with capabilities such as variable and fixed inertia dynamometers, compression/tension load applicators, 4 drop towers, a burst pit and a dynamic load simulator. The 96 TG OL-AC also includes the Air Vehicle Survivability Office that provides support for Air Force aircraft acquisition programs. The 96th TG support services contracts are awarded on the basis of full and open competition.

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

	FY 2015	FY 2016	FY 2017
Title: 96th Test Group	36.413	35.797	36.680
Description: Provide infrastructure at the 96th Test Group (TG) to support testing of DoD, other Government Agencies, foreign military sales, and commercial weapon systems.			
FY 2015 Accomplishments:			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 6	R-1 Program Element (Number/Name) PE 0605807F / <i>Test and Evaluation Support</i>	Project (Number/Name) 6606TG / <i>96th Test Group</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Total consists of utilities, contractor services, and civilian pay.			
<i>FY 2016 Plans:</i> Total consists of utilities, contractor services, and civilian pay.			
<i>FY 2017 Plans:</i> Total consists of utilities, contractor services, and civilian pay.			
Accomplishments/Planned Programs Subtotals	36.413	35.797	36.680

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• NA: NA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

D. Acquisition Strategy

Not applicable

E. Performance Metrics

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

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 6					R-1 Program Element (Number/Name) PE 0605807F / <i>Test and Evaluation Support</i>				Project (Number/Name) 6606TS / <i>Test and Evaluation Support</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
6606TS: <i>Test and Evaluation Support</i>	-	655.564	647.511	624.737	0.000	624.737	634.738	642.540	655.065	667.507	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides resources to operate the Air Force Test Center (AFTC) test activities which are included in the Department of Defense (DoD) Major Range and Test Facility Base (MRTFB). Test facilities/capabilities operated through this program include wind tunnels, rocket and jet engine test cells, hypersonic and subsonic testing, modeling and simulation, technology, limited space environmental simulation chambers, armament test ranges, hardware-in-the-loop test facilities, climatic test facilities, avionics test facilities, aircraft testbeds, dry lakebed landing sites, instrumented test ranges, and test aircraft maintenance, as well as USAF Test Pilot School.

Test and Evaluation (T&E) Support funds institutional test infrastructure activities including: Command and supervisory staffs; supply stocks; maintenance, repair, and replacement of worn or obsolete test equipment and facilities; test infrastructure for data collection, transmission, reduction, and analysis; civilian salaries; temporary duty travel; range operations and material support contract costs for hardware and software engineering and maintenance; and minor improvement and modernization projects. It also funds institutional test aircraft depot level maintenance such as: Programmed Depot Maintenance (PDM), the calendar-based cyclic scheduling of aircraft into depots for update/inspection; modifications and any other depot level repairs required by the aircraft System Program Directors (SPD); engine overhauls; depot-provided area assistance; and assorted ground support equipment overhauls.

The AFTCs two test wings and single test complex are supported by this project: (1) Arnold Engineering and Development Complex (AEDC), located at Arnold Air Force Base (AFB), TN, whose institutional test infrastructure supports operations of the largest complex of ground test facilities in the world (includes transonic, supersonic, and hypersonic wind tunnels; rocket motor and turbine engine test cells; space environmental test chambers, hyperballistic ranges; and other specialized facilities). Included are operations at the National Full-Scale Aerodynamic Complex (NFAC) located at NASA's AMES Research Center, California as well as operations at Tunnel 9 located at White Oak, Maryland. (2) 412 Test Wing (TW), located at Edwards AFB, CA, whose institutional test infrastructure supports weapons system development and operational test and evaluation for aircraft, aircraft subsystems and aircraft weapon systems, aerospace research vehicles, unmanned miniature vehicles, cruise missiles, parachute delivery/recovery systems, cargo handling systems, communications, information operations, and Electronic Warfare (EW) systems for DoD and allied forces. The 412TW mission includes the USAF Test Pilot School. (3) 96TW, located at Eglin AFB, FL, is a joint test and training complex of 724 square miles of land area, and approximately 123,000 square miles of water area. 96TW provides the institutional test infrastructure required to conduct developmental and operational test and evaluation of non-nuclear air armaments (including aircraft guns, ammunition, and air-to-surface and air-to-air guided munitions); Command, Control, Communications, Computers and Intelligence/Surveillance/Reconnaissance (C4ISR) systems; target acquisition and weapon delivery systems; multi-service climatic simulation capability; and special operations aircraft systems. 96TW provides a scientific test process that supports the development, production, sustainment, and enhancement of munitions systems that support tri-service digital weapons development. T&E support services contracts are awarded on the basis of full and open competition.

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

	FY 2015	FY 2016	FY 2017
Title: AEDC, 412TW, 96TW	655.564	647.511	624.737

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600 / 6	R-1 Program Element (Number/Name) PE 0605807F / <i>Test and Evaluation Support</i>	Project (Number/Name) 6606TS / <i>Test and Evaluation Support</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: Provide infrastructure to support testing at Arnold Engineering and Development Complex (AEDC), the 412TW and USAF Test Pilot School at Edwards AFB, and the 96TW at Eglin AFB.</p> <p>FY 2015 Accomplishments: Total consists of utilities, contractor services, civilian pay, and the test and evaluation flying hour program.</p> <p>FY 2016 Plans: Total consists of utilities, contractor services, civilian pay, and the test and evaluation flying hour program.</p> <p>FY 2017 Plans: Total consists of utilities, contractor services, civilian pay, and the test and evaluation flying hour program.</p>			
Accomplishments/Planned Programs Subtotals	655.564	647.511	624.737

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• NA: NA	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

D. Acquisition Strategy

Not applicable.

E. Performance Metrics

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605860F / <i>Rocket Systems Launch Program (SPACE)</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	33.420	21.792	11.198	0.000	11.198	20.914	19.861	17.817	18.133	Continuing	Continuing
661023: <i>Rocket System Launch Program (RSLP)</i>	-	33.420	21.792	11.198	0.000	11.198	20.914	19.861	17.817	18.133	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Rocket Systems Launch Program (RSLP) provides responsive space and Research, Development, Test and Evaluation (RDT&E) launch vehicle support to DoD and other government agencies using commercial launch systems and excess ballistic missile assets. The RSLP mission was established by the Secretary of Defense in 1972. It provides mission planning, payload integration, vehicle acquisition, processing, launch operations, booster storage and disposition, aging surveillance, maintenance and logistics support for selected DoD responsive space and RDT&E launches. Costs directly attributable to a specific launch or program (e.g. reliability of flight testing, maintenance of launch vehicle processing infrastructure) are paid by the user (Air Force, Navy, Army, Missile Defense Agency (MDA), Defense Advanced Research Project Agency (DARPA), National Reconnaissance Office (NRO), etc.). RSLP maintains exclusive control of deactivated Minuteman and Peacekeeper assets used in testing to include refurbishment, transportation and handling, storage, and launch services. RSLP also funds general research, development, and supplemental reliability of flight testing efforts for launch to enhance the reliability of the Minotaur and other fleet vehicles (e.g., updates to the Modular Mechanical Ordnance Destruct System).

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	34.364	21.858	17.295	0.000	17.295
Current President's Budget	33.420	21.792	11.198	0.000	11.198
Total Adjustments	-0.944	-0.066	-6.097	0.000	-6.097
• Congressional General Reductions	0.000	-0.066			
• 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	-0.944	0.000			
• Other Adjustments	0.000	0.000	-6.097	0.000	-6.097

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0605860F / <i>Rocket Systems Launch Program (SPACE)</i>		
Change Summary Explanation FY2016: -\$0.066M for FFRDC FY2017: -\$6.097M for higher priority DoD programs				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Title: Storage/Refurbishment/Demil		16.614	16.943	6.457
Description: Storage, refurbishment, inventory control, and demil/disposal of deactivated Minuteman, Peacekeeper and other missile flight test assets				
FY 2015 Accomplishments: Continued storage, refurbishment, inventory control, and demil/disposal of deactivated Minuteman, Peacekeeper and other missile flight test assets and performed research and development support operations as required. Replaced an aging Arm/Disarm switch with a new design that reduces component count and failure modes. Fully accounted for all RSLP rockets and equipment via item unique identification. Continued support activities such as, but not limited to sustainment and refurbishment of support equipment, mission support, special studies, etc.				
FY 2016 Plans: Continue storage, refurbishment, inventory control, and demil/disposal of deactivated Minuteman, Peacekeeper and other missile flight test assets and perform research and development support operations as required. Investigate and develop shipping throughput capacity to maximize opportunity for motor disposal. Continue support activities such as, but not limited to sustainment and refurbishment of support equipment, mission support, special studies, etc.				
FY 2017 Plans: Continue storage, refurbishment, inventory control, and demil/disposal of deactivated Minuteman, Peacekeeper and other missile flight test assets and perform research and development support operations as required. Investigate and develop shipping throughput capacity to maximize opportunity for motor disposal. Continue support activities such as, but not limited to sustainment and refurbishment of support equipment, mission support, special studies, etc.				
Title: Aging Surveillance		4.726	4.749	4.741
Description: Perform aging surveillance-related activities on stored motors				
FY 2015 Accomplishments: Continued performing aging surveillance-related activities on stored motors; continued performing analyses/studies to identify and evaluate potential safety-related issues affecting stored motors; continued program office support and related support activities				

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0605860F / <i>Rocket Systems Launch Program (SPACE)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
such as, but not limited to mission support, special studies, etc. Successfully conducted one Minuteman and two Peacekeeper motor static firings. FY 2016 Plans: Continue performing aging surveillance-related activities on stored motors; continue performing analyses/studies to identify and evaluate potential safety-related issues affecting stored motors; continue program office support and related support activities such as, but not limited to mission support, special studies, etc. FY 2017 Plans: Continue performing aging surveillance-related activities on stored motors; continue performing analyses/studies to identify and evaluate potential safety-related issues affecting stored motors; continue program office support and related support activities such as, but not limited to mission support, special studies, etc.				
Title: Other Launch Support Services Description: Perform launch services activities FY 2015 Accomplishments: Completed vehicle acquisition, processing, launch services support, mission assurance, and launch operations to successfully launch NOAA's Deep Space Climate Observatory (DSCOVR) mission on February 11, 2015. Began launch vehicle acquisition, processing, launch services support, mission assurance, and operations to launch RDT&E payloads. FY 2016 Plans: Complete SR19 requalification effort. Defer launch vehicle acquisition, processing, launch services support, mission assurance, and operations to launch RDT&E payloads. FY 2017 Plans: Defer launch vehicle acquisition, processing, launch services support, mission assurance, and operations to launch RDT&E payloads. Defer use of motors for commercial rideshare of RDT&E payloads and to offset commercial data costs.		12.080	0.100	0.000
Accomplishments/Planned Programs Subtotals		33.420	21.792	11.198
D. Other Program Funding Summary (\$ in Millions) N/A				
Remarks				
E. Acquisition Strategy N/A				

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605860F / <i>Rocket Systems Launch Program (SPACE)</i>
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F. Performance Metrics

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605864F / <i>Space Test Program (STP)</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	20.552	28.143	27.070	0.000	27.070	25.325	25.802	26.281	26.748	Continuing	Continuing
662617: <i>Free-Flyer Spacecraft Missions</i>	-	20.552	28.143	27.070	0.000	27.070	25.325	25.802	26.281	26.748	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Space Test Program (STP) conducts space test missions for the purpose of accelerating DoD space technology transformation while lowering developmental risk. The program flies an optimally selected number of DoD-sponsored experiments consistent with Space Experiments Review Board (SERB) priority, opportunity, and funding. STP missions provide a cost-effective way to flight test new militarily relevant space system technologies, concepts, and designs, providing a way to:

- Support the acquisition block development approach
- Demonstrate and develop responsive research and development (R&D) space capabilities
- Provide early operational capabilities to quickly react to new developments
- Perform operational risk reduction through direct flight test of prototype components
- Improve operational design by characterizing the space environment, event, or sensor physics proposed for an operational system/system upgrade
- Develop, integrate, test, and acquire advanced payload support hardware for launch vehicles (LV) and human-rated spaceflight vehicles

The Deputy Secretary of Defense Space Test Program Management & Funding Policy, issued in July 2002, reaffirmed STP as the primary provider of spaceflight for the DoD space research community. The July 2002 policy statement also reaffirmed STP's role as the single manager for all DoD payloads on the International Space Station (ISS).

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force</i> / BA 6: <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605864F / <i>Space Test Program (STP)</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	21.161	28.228	27.339	0.000	27.339
Current President's Budget	20.552	28.143	27.070	0.000	27.070
Total Adjustments	-0.609	-0.085	-0.269	0.000	-0.269
• Congressional General Reductions	0.000	-0.085			
• 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	-0.609	0.000			
• Other Adjustments	0.000	0.000	-0.269	0.000	-0.269

Change Summary Explanation

FY15 -\$.609M SBIR

FY16 -\$.085M FFRDC FY16 Mark

FY17 -\$.269M Inflation Rates For Non-Pay/Non-Fuel

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
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Title: Payload Integration	9.277	18.485	15.965
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Description: Integrate payloads onto spaceflight missions, including free-flyer payloads, hosted payloads, sounding rockets, experiments on the International Space Station, and commercial missions. Includes acquisition of associated spacecraft and integration hardware. Provide the unique program costs required for the operation of the Space Test Program in its management and oversight role including program management, administrative, information technology, travel and supply support. This effort includes program support.

FY 2015 Accomplishments:

Continued support to the STP-2 launch mission carrying ~16 Space Experiment Review Board (SERB) experiments (see remarks). Continued the integration of the Eagle Spacecraft Platform to host five SERB experiments from the Air Force Research Laboratory (AFRL) including Hyper Temporal-Spectrometer Imager (HTI) missile detection (2013 #1), MYCROFT (2013 #5), Compact Environmental Anomaly Sensor III Risk Reduction Payload (CEASE III RR) (2014 #9), Inverse Synthetic Aperture Ladar (ISAL)(2014 #14), and AFRL - 1201 Resilient Spacecraft Bus Development Experiment (ARMOR) (2012 #32) requiring flight to geo-synchronous orbit (GEO). Continuing development of STP Satellite #4 (STPSat-4) to host three SERB payloads for launch and deployment from the ISS in 2016 and STP Satellite #5 (STPSat-5) to host four SERB payloads for a polar orbit launch in 2017. Continue to integrate the STP H-5 experiment payload pallet for flight on the ISS; STP H-5 will carry the Rad-Hardened

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0605864F / <i>Space Test Program (STP)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Electronic Memory Experiment (RHEME) (2014 #4), Limb-Imaging Ionospheric and Thermospheric Extreme UV Spectrographs (LITES) (2014 #15), GPS Radio Occultation and Ultraviolet Photometry - Colocated GROUP-C) (2014 #23), Automated Plume Sentry (APS) (2013 #54), Spacecraft Structural Health Monitoring (Spacecraft SHM) (2014 #33), and for rapid Anomaly Resolution Integrated Miniaturized Electrostatic Analyzer-Reflight (iMESA-R) (2013 #57) SERB payloads.</p> <p>Completed the design of STPSat-6 to serve as the prime payload for the STP-3 medium launch mission to GEO, hosting a minimum of six SERB payloads. Provided the unique program costs required for the operation of the Space Test Program (STP) in its management and oversight role including program management, administrative, information technology, travel and supply support.</p> <p>FY 2016 Plans: Continue payload integration efforts onto spaceflight missions (STPSat-4 and STPSat-5). Begin acquisition and integration of STPSat-6, and STP-H6 for the ISS. STP will fund operations for NASA's Green Propellant Infusion Mission carrying Space Object Self-tracker(2013 #41), Small Wind And Temperature Spectrometer (SWATS) (2014 #11) and iMESA-R (2013 #57) SERB experiments. Continue to provide the unique program costs required for the operation of the STP in its management and oversight role including program management, administrative, information technology, travel and supply support.</p> <p>FY 2017 Plans: Continue payload integration on to STPSat-6, STP-H6, and other efforts onto spaceflight missions. Continue to provide the unique program costs required for the operation of the Space Test Program in its management and oversight role including program management, administrative, information technology, travel and supply support.</p>				
<p>Title: Launch Vehicle and Launch Services</p> <p>Description: Purchase launch services, launch vehicles and launch vehicle support for free-flyer payloads, hosted payloads, sounding rockets, experiments on the ISS, and commercial spaceflight missions.</p> <p>FY 2015 Accomplishments: Continued integration efforts for the Kestrel Eye II spacecraft for a commercial launch/deployment via NASA's NanoRacks contract. Finalized and launched the Charged Aerosol Release Experiment #2 (CARE-2) sounding rocket missions from Andoya Norway using NASA Wallops Flight Facility's sounding rocket capability. Coordinated support from AFSPC for the next medium launch mission, STP-3, as a direct inject to GEO launch.</p> <p>FY 2016 Plans:</p>		9.609	8.764	9.652

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605864F / <i>Space Test Program (STP)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
Continue purchase of launch services for STPSat-5, launch vehicles, and launch vehicle support for free-flyer payloads, hosted payloads, sounding rockets, experiments on the ISS, and commercial spaceflight missions. Forecasted launch STP-2 medium launch mission and launch Kestrel Eye II. FY 2017 Plans: Continue purchase of launch services, launch vehicles, and launch vehicle support for free-flyer payloads, hosted payloads, sounding rockets, experiments on the ISS, and commercial spaceflight missions. Plans to launch STPSat-5, EAGLE on the AFSPC-11, and additional payloads to the ISS in FY17.			
Title: On Orbit Satellite Operations Description: Execute first-year operations and operations support for STP-sponsored missions. FY 2015 Accomplishments: Executed first-year operations and operations support for STP-sponsored missions, including operations for the STP Satellite #3 (STPSat-3). STPSat-3 hosted six payloads including the Air Force Research Lab (AFRL) Strip Sensor Unit (Space Experiment Review Board (SERB) #10), Naval Research Laboratory small Wind and Temperature Spectrometer (SERB #26), the US Air Force Academy's Integrated Miniaturized Electrostatic Analyzer Re-Flight (SERB #72), NASA/NOAA's Total Solar Irradiance Calibration Transfer Equipment, AFLR Joint Component Research (SERB Unranked), and the STP/AFRL De-orbit Module (Enabling Technology) and completed the first year of operations of the Automated Navigation and Guidance Experiment for Local Space (ANGELS). FY 2016 Plans: Complete forecasted launch and early-orbit checkout of the Demonstrations and Sciences experiment (DSX) (#1 2008) on STP-2. Execute first-year operations and/or operations support for STP-sponsored missions. FY 2017 Plans: Continued support of forecasted launch and early orbit checkout of the DSX mission on STP-2. Execute first-year operations and/or operations support for STP-sponsored missions, e.g. DSX, GPIM.	1.666	0.894	1.453
Accomplishments/Planned Programs Subtotals	20.552	28.143	27.070

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDT&E: BA03: PE0603401F: <i>Advanced Spacecraft Technology</i>	10.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605864F / <i>Space Test Program (STP)</i>
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D. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
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Remarks
STP-2 is a dedicated research and development launch mission that also supports the commercial new entrant launch strategy. STP-2 will carry multiple Space Experiments Review Board approved payloads.

E. Acquisition Strategy

N/A

F. Performance Metrics

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605976F / <i>Facilities Restoration and Modernization - Test and Evaluation Support</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	46.955	40.518	134.111	0.000	134.111	135.116	125.388	89.071	69.807	Continuing	Continuing
6606MC: <i>Facility Restoration and Modernization - T&E</i>	-	46.955	40.518	134.111	0.000	134.111	135.116	125.388	89.071	69.807	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Restoration includes repair and replacement work to restore damaged facilities due to accident or failure attributable to inadequate sustainment, excessive age, or other causes. Modernization includes alteration of facilities to implement a new, higher standard (including regulatory changes), to accommodate new functions, or to replace building components that typically last more than 50 years (such as foundations and structural components). Other tasks associated with facilities operations (such as custodial services, grass cutting, and the provision of central utilities) are not included. These restoration/modernization funds support the following Air Force test organizations and their associated test and evaluation facilities, including: remote locations, 96th Test Group (TG) at Holloman AFB, NM, the 96th Test Wing (TW) at Eglin AFB, FL, the Arnold Engineering and Development Complex (AEDC) at Arnold AFB, TN, the 412th TW at Edwards AFB, CA, 96 TG Landing Gear Test Facility (LGTf) at Wright-Patterson AFB, OH, Hypersonic Wind Tunnel 9 at White Oak, MD, and the National Full-Scale Aerodynamics Complex (NFAC) at Moffett Field, CA.

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	46.955	40.518	42.978	0.000	42.978
Current President's Budget	46.955	40.518	134.111	0.000	134.111
Total Adjustments	0.000	0.000	91.133	0.000	91.133
• 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	91.133	0.000	91.133

Change Summary Explanation

FY17: \$91.133M increase reflects AF focus on recapitalizing and modernizing test infrastructure to support future warfighting capability acquisition efforts.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0605976F / <i>Facilities Restoration and Modernization - Test and Evaluation Support</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Title: Facility restoration and modernization at the 96 TG</p> <p>Description: Facility restoration and modernization at the 96th TG.</p> <p>FY 2015 Accomplishments: Upgraded and remodeled calibration pit at National Radar Cross Section Test Facility (NRTF). Restored and modernized 168i Dynamometer at the Landing Gear Test Facility (LGTF). Installed structures to shelter High Power Jammers at Central Inertial Guidance Test Facility (CIGTF). Upgraded trackside rainfield system to include pressure control points and monitors as needed to better maintain constant pressures at nozzles at Holloman High Speed Test Track; Began design of Radar Cross Section Advanced Measurement System Fiber Optic replacement; Replaced the hydraulic package that powers the Landing Gear Test Facility (LGTF) Baldwin Load Press; Continued effort to replace the obsolete mandrel carrier control system component of the 120 Dynamometer SC test system.</p> <p>FY 2016 Plans: Implement plan to replace Radar Cross Section Advanced Measurement System Fiber Optics. Install a new uninterruptable power system (UPS) and connect it to the existing UPS wiring infrastructure in the Advanced Inertial Test Lab portion of the Central Inertial Guidance Test Facility (CIGTF).</p> <p>FY 2017 Plans: Continue to implement plan to replace Radar Cross Section Advanced Measurement System Fiber Optics. Continue to install a new uninterruptable power system (UPS) and connect it to the existing UPS wiring infrastructure in the Advanced Inertial Test Lab portion of the Central Inertial Guidance Test Facility (CIGTF).</p>		1.766	1.563	1.661
<p>Title: Facility restoration and modernization at the 96 TW</p> <p>Description: Facility restoration and modernization at the 96th TW.</p> <p>FY 2015 Accomplishments: Conducted many small R&M projects throughout Range complex (Safety, Security, Electrical, Plumbing upgrades, Minor construction Test Building replacement, etc.).</p> <p>FY 2016 Plans: Continue Range Environmental Protection and small Restoration and Modernization (R&M) efforts across the range complex.</p> <p>FY 2017 Plans:</p>		3.532	3.125	11.267

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0605976F / <i>Facilities Restoration and Modernization - Test and Evaluation Support</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Continue Range Environmental Protection and small Restoration and Modernization (R&M) efforts across the range complex. Begin effort to restore and modernize McKinnley Climatic Lab facility components. Replace solar array, replace HVAC air makeup unit heat exchanger, modernize facility monitoring and control system.				
<p>Title: Facility restoration and modernization at AEDC</p> <p>Description: Facility restoration and modernization at AEDC.</p> <p>FY 2015 Accomplishments: Continued FY14 efforts not completed or that were multiyear. Continued upgrading control systems from analog to digital in the Exhaust Test Facility. Continued planning to improve the exhaust plant cooling systems. Continued work to improve the 16T wind tunnel Foreign Object Damage (FOD) fix effort. Improved balances and calibration systems. Began planning for AB Exhaust plant system life extension program - ensured A/B exhaust system was operational until strategic direction is executed relative to replacement; Refurbished C Plant mechanical and electrical systems; Continued effort to replace H2 diffuser; Rewound and upgraded Propulsion Wind Tunnel 83,000 HP Motors M4 and M1.</p> <p>FY 2016 Plans: Continue FY15 efforts not completed or that were multiyear, including major service life extension efforts on wind tunnels and exhaust plants.</p> <p>FY 2017 Plans: Begin effort to restore and modernize the Medium Turbine Engine A&B Plant and the Large Turbine Engine C-Plant mechanical systems, control valves, electrical systems, temperature controls and automate the control systems. Begin service life extension program effort for the High Speed Wind Tunnels (4T, 16T, 16S, Tunnel 9 and associated infrastructure).</p>		35.995	30.820	113.162
<p>Title: Facility restoration and modernization at 412 TW</p> <p>Description: Facility restoration and modernization at the 412 TW.</p> <p>FY 2015 Accomplishments: Upgraded BAF electrical hydraulics and cooling to support the B-2 program; Repaired asphalt between Hangars 1207 and 1210 (Main Base Airfield); Rebuilt Pad 20 (Main Base airfield); Removed 100 identified obstructions in Main Base airfield infield areas; Installed lights on Ramp 9, shelter included conduit, boring if required, all wiring and hardware to make a complete and useable system.</p> <p>FY 2016 Plans:</p>		5.662	5.010	8.021

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605976F / <i>Facilities Restoration and Modernization - Test and Evaluation Support</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
412 TW will continue projects for Electronic Warfare, Range, and other test and evaluation facilities including, but not limited to, roofing, heating and air conditioning, windows, doors, and floors, work area rezoning, transformers and power systems, fire suppression systems, seismic upgrades, and RAM replacement.			
<i>FY 2017 Plans:</i> Begin effort to restore and modernize Benefield Anechoic Facility components. Replace facility auxiliary cooling system, and replace the electrical substation.			
Accomplishments/Planned Programs Subtotals	46.955	40.518	134.111

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• RDTE: BA06: PE 0604256F: <i>Threat Simulator Development</i>	24.318	23.844	21.630	0.000	21.630	22.038	22.426	22.839	23.245	Continuing	Continuing
• RDTE: BA06: PE 0604759F: <i>Major T&E Investment</i>	45.985	73.302	66.385	0.000	66.385	65.706	66.001	67.265	68.464	Continuing	Continuing
• RDTE: BA06: PE 0605807F: <i>Test and Evaluation Support</i>	691.977	683.308	661.417	0.000	661.417	672.180	680.576	693.772	706.945	Continuing	Continuing
• RDTE: BA06: PE 0605978F: <i>Facility Sustainment - T&E Support</i>	32.965	27.895	28.091	0.000	28.091	28.637	29.093	29.633	30.158	Continuing	Continuing

Remarks

E. Acquisition Strategy
N/A

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605978F / <i>Facilities Sustainment - Test and Evaluation Support</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	32.965	27.895	28.091	0.000	28.091	28.637	29.093	29.633	30.158	Continuing	Continuing
6606MR: <i>Facility Sustainment-T&E Support</i>	-	32.965	27.895	28.091	0.000	28.091	28.637	29.093	29.633	30.158	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Provides resources for sustainment activities required for an inventory of Air Force Material Command (AFMC) Test and Evaluation (T&E) facilities. Facility sustainment includes regularly scheduled adjustments and inspections, preventative maintenance tasks, and emergency response and service calls for minor repairs. It also includes major repairs or replacement of facility components that are expected to occur periodically. In addition to standard facility sustainment, such as roof replacement, refinishing of wall and floor surfaces, and repairing and replacing of heating and cooling systems, this work includes inspections and repairs of heavy plant machinery in large industrial facilities. This work includes, but is not limited to, inspection and repair of high-power electrical switching gear, hydraulic, lubrication, forced-air and fluid cooling systems, high pressure vessel health monitoring, facility control and remote monitoring systems, liquid oxygen systems, steam systems, test instrumentation, and fire detection and suppression systems. Other tasks associated with facilities operations (such as custodial services, grass cutting, and landscaping, waste disposal, and the provision of central utilities) are not included. These sustainment funds support the following Air Force organizations and their associated test and evaluation facilities, including: remote locations, 96th Test Group (TG) at Holloman AFB, NM, the 96th Test Wing (TW) at Eglin AFB, FL, the Arnold Engineering and Development Complex (AEDC) at Arnold AFB, TN, the 412 Test Wing (TW) at Edwards AFB, CA, 96 TG Landing Gear Test Facility (LGTF) at Wright-Patterson AFB, OH, Hypersonic Wind Tunnel 9 at White Oak, MD, and the National Full-Scale Aerodynamics Complex (NFAC) at Moffett Field, CA.

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	32.965	27.895	28.372	0.000	28.372
Current President's Budget	32.965	27.895	28.091	0.000	28.091
Total Adjustments	0.000	0.000	-0.281	0.000	-0.281
• 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	-0.281	0.000	-0.281

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Title: Facility sustainment at the 96 TG.</p> <p>Description: Facility sustainment at the 96 TG.</p> <p>FY 2015 Accomplishments: Sustainment projects included painting buildings, carpet replacement, heating, ventilation, and air conditioning (HVAC) repairs and roof repairs throughout the 96 TG.</p> <p>FY 2016 Plans: Sustainment projects include painting buildings, carpet replacement, heating, ventilation, and air conditioning (HVAC) repairs and roof repairs throughout the 96 TG.</p> <p>FY 2017 Plans: Sustainment projects include painting buildings, carpet replacement, heating, ventilation, and air conditioning (HVAC) repairs and roof repairs throughout the 96 TG.</p>		0.324	0.322	0.324
<p>Title: Facility sustainment at the 96 TW.</p> <p>Description: Facility sustainment at the 96 TW.</p> <p>FY 2015 Accomplishments: Worked through several hundred Direct Scheduled Work Orders (DSWs) within the test infrastructure.</p> <p>FY 2016 Plans: Continue to work through several hundred Direct Scheduled Work Orders (DSWs) within the test infrastructure.</p> <p>FY 2017 Plans: Continue to work through several hundred Direct Scheduled Work Orders (DSWs) within the test infrastructure.</p>		2.110	1.302	1.311
<p>Title: Facility sustainment at the AEDC.</p> <p>Description: Facility sustainment at the AEDC.</p> <p>FY 2015 Accomplishments: Performed calendar based scheduled preventative maintenance on Engine Test Facility Plant and associated engine test cells, Propulsion Wind Tunnel Plant and associated wind tunnels, Von Karman Facility (VKF) Plant Core and associated test cells, arc heaters, rocket test facility, space chambers, and hypersonic engine test facilities, along with associated infrastructure that</p>		28.082	23.838	24.006

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605978F / <i>Facilities Sustainment - Test and Evaluation Support</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>supports all test operations. Executed the project to disassemble, inspect, evaluate, refurbish and/or repair and test one helium rotary screw compressor unit for the cryogenic cooling system for space chambers.</p> <p>FY 2016 Plans: Perform calendar based scheduled preventative maintenance on Engine Test Facility Plant and associated engine test cells, Propulsion Wind Tunnel Plant and associated wind tunnels, Von Karman Facility (VKF) Plant Core and associated test cells, arc heaters, rocket test facility, space chambers, and hypersonic engine test facilities, along with associated infrastructure that supports all test operations.</p> <p>FY 2017 Plans: Continue to perform calendar based scheduled preventative maintenance on Engine Test Facility Plant and associated engine test cells, Propulsion Wind Tunnel Plant and associated wind tunnels, Von Karman Facility (VKF) Plant Core and associated test cells, arc heaters, rocket test facility, space chambers, and hypersonic engine test facilities, along with associated infrastructure that supports all test operations.</p>			
<p>Title: Facility sustainment at the 412 TW.</p> <p>Description: Facility sustainment at the 412 TW.</p> <p>FY 2015 Accomplishments: Continued sustainment of test unique infrastructure in 412 TW Electronic Warfare, Range, and other T&E facilities located at Edwards AFB, CA.</p> <p>FY 2016 Plans: Continue sustainment of test unique infrastructure in 412 TW Electronic Warfare, Range, and other T&E facilities located at Edwards AFB, CA.</p> <p>FY 2017 Plans: Continue sustainment of test unique infrastructure in 412 TW Electronic Warfare, Range, and other T&E facilities located at Edwards AFB, CA.</p>	2.449	2.433	2.450
Accomplishments/Planned Programs Subtotals	32.965	27.895	28.091

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2015	FY 2016	FY 2017	FY 2017	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
			Base	OCO	Total						
• RDTE: BA06: PE 0604256F: <i>Threat Simulator Development</i>	24.318	23.844	21.630	0.000	21.630	22.038	22.426	22.839	23.245	Continuing	Continuing

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0605978F / <i>Facilities Sustainment - Test and Evaluation Support</i>
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D. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE: BA06: PE 0604759F: <i>Major T&E Investment</i>	45.985	73.302	66.385	0.000	66.385	65.706	66.001	67.265	68.464	Continuing	Continuing
• RDTE: BA06: PE 0605807F: <i>Test & Evaluation Support</i>	691.977	683.308	661.417	0.000	661.417	672.180	680.576	693.772	706.945	Continuing	Continuing
• RDTE: BA06: PE 0605976F: <i>Facility Restoration and Modernization-T&E</i>	46.955	40.518	134.111	0.000	134.111	135.116	125.388	89.071	69.807	Continuing	Continuing

Remarks

E. Acquisition Strategy

N/A

F. Performance Metrics

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0606017F / <i>Requirements Analysis and Maturation</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	18.673	22.507	29.100	0.000	29.100	35.348	33.565	33.985	34.388	Continuing	Continuing
666157: <i>Development Planning</i>	-	18.673	13.030	8.731	0.000	8.731	12.906	12.020	12.338	12.587	Continuing	Continuing
666158: <i>INTEGRATED SIMULATION AND ANALYSIS</i>	-	0.000	9.477	20.369	0.000	20.369	22.442	21.545	21.647	21.801	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Requirements Analysis and Maturation (RAM) program funds development planning (DP) to include early systems engineering and integrated simulation and analysis. These activities include requirements analysis, capability decomposition and trade space characterization, concept development (system of systems, air, space, and cyber), cost analysis, modeling and simulation of representative or prototype systems, and costs associated with these activities to include analytical tools and travel. Outcomes of these activities are fiscally and technologically informed requirements, mature concepts that are technically feasible, and areas for science and technology (S&T) investment to reduce technology risks. These activities provide the analytic basis for cost and capability trades to inform weapon systems requirements and acquisition milestones, decision points, and phases. A number of Department of Defense (DoD), Government Accountability Office (GAO), and independent studies point to a need for more disciplined, early-phase systems engineering and pre-systems acquisition planning and analysis to produce decision-quality acquisition information that previously did not surface until after the initiation of a program. Early-phase systems engineering and technical planning activities funded by this program provide the foundation for informed investment decisions leading to successful acquisition programs. Specific efforts are determined each year based upon the highest Air Force priorities.

This program is in Budget Activity 6, RDT&E Management Support, because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	16.350	16.507	16.759	0.000	16.759
Current President's Budget	18.673	22.507	29.100	0.000	29.100
Total Adjustments	2.323	6.000	12.341	0.000	12.341
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	6.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	2.800	0.000			
• SBIR/STTR Transfer	-0.477	0.000			
• Other Adjustments	0.000	0.000	12.341	0.000	12.341

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0606017F / <i>Requirements Analysis and Maturation</i>
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Congressional Add Details (\$ in Millions, and Includes General Reductions)	FY 2015	FY 2016
Project: 666157: <i>Development Planning</i> Congressional Add: <i>Program Increase</i>	2.500	-
Congressional Add Subtotals for Project: 666157	2.500	-
Project: 666158: <i>INTEGRATED SIMULATION AND ANALYSIS</i> Congressional Add: <i>Program Increase</i>	-	6.000
Congressional Add Subtotals for Project: 666158	-	6.000
Congressional Add Totals for all Projects	2.500	6.000

Change Summary Explanation

Increase in FY 2015 for Reprogramming due to increased analysis on future airborne battle management and surveillance capability and cyber resiliency needs.
 Increase in FY 2017 due to emphasis on integrated modeling and simulation capabilities to support Air Force development planning and experimentation.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600 / 6	R-1 Program Element (Number/Name) PE 0606017F / <i>Requirements Analysis and Maturation</i>	Project (Number/Name) 666157 / <i>Development Planning</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
<i>666157: Development Planning</i>	-	18.673	13.030	8.731	0.000	8.731	12.906	12.020	12.338	12.587	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Development Planning project funds activities to analyze Air Force capability needs and requirements to identify potential materiel shortfalls and opportunities; formulate candidate concepts and solution options to address Air Force capability needs and shortfalls; and conduct coordinated analysis and assessment activities to address requirements, technology needs, capability trades, schedule, cost, and pre-systems acquisition planning.

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

	FY 2015	FY 2016	FY 2017
<p>Title: Long-range Capability Analyses</p> <p>Description: Conduct long-range capability analyses by analyzing warfighter capability needs and requirements to identify potential materiel shortfalls and opportunities.</p> <p>FY 2015 Accomplishments: Developed capability roadmaps, advanced concept studies and analyses, and derived technology needs required to realize future materiel solutions to warfighter capability needs.</p> <p>FY 2016 Plans: Continue to develop capability roadmaps, advanced concept studies and analyses, and derive technology needs required to realize future materiel solutions to warfighter capability needs.</p> <p>FY 2017 Plans: Continue to develop capability roadmaps, advanced concept studies and analyses, and derive technology needs required to realize future materiel solutions to warfighter capability needs.</p>	4.539	2.085	2.358
<p>Title: Concept Development</p> <p>Description: Conduct concept development activities, including early-phase systems engineering, by devising candidate materiel solution options to address Air Force air, space, and cyber capability needs and shortfalls.</p> <p>FY 2015 Accomplishments: Executed concept development activities, to include requirements support and analysis, early-phase systems engineering, early concept characterization and technical descriptions, market research, budget estimates, and technology assessments.</p> <p>FY 2016 Plans:</p>	9.280	8.730	5.105

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600 / 6	R-1 Program Element (Number/Name) PE 0606017F / <i>Requirements Analysis and Maturation</i>	Project (Number/Name) 666157 / <i>Development Planning</i>
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
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Continue to execute concept development activities, to include requirements support and analysis, early-phase systems engineering, early concept characterization and technical descriptions, market research, budget estimates, and technology assessments. FY 2017 Plans: Continue to execute concept development activities, to include requirements support and analysis, early-phase systems engineering, early concept characterization and technical descriptions, market research, budget estimates, and technology assessments.			
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Title: Pre-systems Acquisition Planning Description: Conduct coordinated pre-systems acquisition planning activities that address requirements, schedule, cost, technology, and acquisition strategy. FY 2015 Accomplishments: Performed pre-systems acquisition planning activities, to include concept refinement, cost estimates, acquisition courses of action, and acquisition milestone documentation. FY 2016 Plans: Continue to perform pre-systems acquisition planning activities, to include concept refinement, cost estimates, acquisition courses of action, and acquisition milestone documentation. FY 2017 Plans: Continue to perform pre-systems acquisition planning activities, to include concept refinement, cost estimates, acquisition courses of action, and acquisition milestone documentation.	2.354	2.215	1.268
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Accomplishments/Planned Programs Subtotals	16.173	13.030	8.731
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	FY 2015	FY 2016
Congressional Add: Program Increase	2.500	-
FY 2015 Accomplishments: Conducted Congressionally-directed effort.		
Congressional Adds Subtotals	2.500	-

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

N/A

Remarks

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 6	R-1 Program Element (Number/Name) PE 0606017F / <i>Requirements Analysis and Maturation</i>	Project (Number/Name) 666157 / <i>Development Planning</i>

D. Acquisition Strategy

All contracts funded in this program element will be awarded using competitive procedures.

E. Performance Metrics

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

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 6					R-1 Program Element (Number/Name) PE 0606017F / <i>Requirements Analysis and Maturation</i>				Project (Number/Name) 666158 / <i>INTEGRATED SIMULATION AND ANALYSIS</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
666158: <i>INTEGRATED SIMULATION AND ANALYSIS</i>	-	0.000	9.477	20.369	0.000	20.369	22.442	21.545	21.647	21.801	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Integrated Simulation and Analysis project provides system-of-systems synthetic environments for modeling, simulation, and analysis of systems and concepts under assessment. This effort accomplishes development of software, system performance representations and models, environments, architectures, and tools that underpin variable fidelity; stand-alone, interactive, and distributed simulations; and virtual prototyping using high performance computing for rapid assessment of warfighting capabilities. Integrated simulation and analyses combines real-time and constructive simulations, operators-in-the-loop, experimental and operational software and hardware engineered in synthesized environments to conduct air, space, and cyber capabilities assessments in support of development planning, experimentation, and related activities.

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

Title: Integrated Simulation and Analysis	FY 2015	FY 2016	FY 2017
Description: Develop cross-domain system-of-systems modeling, simulation, and analysis capabilities to support development planning, capabilities assessment, and acquisition decisions.	0.000	3.477	20.369
FY 2015 Accomplishments: N/A			
FY 2016 Plans: Develop and mature models and toolsets to provide integrated simulation capabilities with variable levels of fidelity and realistic representation of battlespace environments.			
FY 2017 Plans: Continue to develop and mature models and toolsets to provide integrated simulation capabilities with variable levels of fidelity and realistic representation of battlespace environments. Develop a core set of composable models and a common suite of cross-domain, reusable frameworks at the engineering, engagement, mission, and campaign levels that can be used to support robust development planning and experimentation for high-priority capability gaps, needs, and warfighting challenges identified by Air Force leadership.			
Accomplishments/Planned Programs Subtotals	0.000	3.477	20.369

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016
Appropriation/Budget Activity 3600 / 6	R-1 Program Element (Number/Name) PE 0606017F / <i>Requirements Analysis and Maturation</i>	Project (Number/Name) 666158 / <i>INTEGRATED SIMULATION AND ANALYSIS</i>

	FY 2015	FY 2016
Congressional Add: Program Increase	-	6.000
FY 2016 Plans: Conduct Congressionally-directed effort.		
Congressional Adds Subtotals	-	6.000

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

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

D. Acquisition Strategy

All contracts will be awarded using competitive procedures.

E. Performance Metrics

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0606116F / <i>Space Test and Training Range Development</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	22.724	18.940	18.528	0.000	18.528	19.317	19.721	20.083	20.439	Continuing	Continuing
666156: <i>SPACE TEST AND TRAINING RANGE DEVELOPMENT</i>	-	22.724	18.940	18.528	0.000	18.528	19.317	19.721	20.083	20.439	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
 In FY2015, PE 0606116F, Space Test and Training Range Development, Project 666156 Space Test and Training Range Development efforts were transferred from PE 0603438F, Space Control Technology, Project 64A007, Space Range in order to provide transparency in acquisition funding.

A. Mission Description and Budget Item Justification

Supports the development of Space Test and Training Range (STTR) capabilities critical for developmental and operational test, training, exercises and tactics development for Space Control systems and Joint National Space architecture. Includes development, demonstration and delivery of test assets, special test equipment, capabilities and systems required to test, validate, and verify performance of integrated space control systems. Provides a safe, secure, controllable and repeatable environment for the testing and training of Space Control mission systems and operators that is both realistic and relevant. Additionally, this program develops test range assets for both the fixed node Space Range Operation Center (SROC) at Schriever AFB and a deployable capability to support complex Joint and AF exercises. The virtual range as part of the Family of Systems (FoS), called Big Top, is being developed to accomplish the STTR mission. Big Top integrates to a Distributed Mission Architecture, tying into both the Information Operations (IO) and Air ranges for increased realism and complexity required to prepare space operators for real-world threats. This technology will allow for the first-ever use of a realistic signal environment to increase the realism and efficiency of space control squadron training.

This program is in Budget Activity 6, RDT&E Management Support, because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0606116F / <i>Space Test and Training Range Development</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	19.512	18.997	19.167	0.000	19.167
Current President's Budget	22.724	18.940	18.528	0.000	18.528
Total Adjustments	3.212	-0.057	-0.639	0.000	-0.639
• Congressional General Reductions	0.000	-0.057			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	3.212	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-0.639	0.000	-0.639

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Title: Range Control</p> <p>Description: Development and acquisition of mobile, transportable, and fixed range monitoring and communications capabilities for the space range.</p> <p>FY 2015 Accomplishments: Completed SROC technical refresh activities for Spiral 0. Continued development and completed initial deliveries of advanced live, virtual and constructive environment and closed loop training capabilities and advanced software simulation tools.</p> <p>FY 2016 Plans: Finalizing test activities for Spiral 1 capability Developmental Testing (DT) and Operational Testing (OT). Continue development and deliveries of advanced live, virtual and constructive environment, closed loop training and advanced software simulation tools.</p> <p>FY 2017 Plans: Development and acquisition of mobile, transportable, signal monitoring and communications capabilities. Continue advanced live virtual and constructive environment, closed loop training and advanced software for the Space Test and Training Range.</p>	22.224	18.022	17.583
<p>Title: Bandwidth Support</p> <p>Description: Provides for leased SATCOM bandwidth for STTR operations.</p> <p>FY 2015 Accomplishments:</p>	0.500	0.918	0.945

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0606116F / <i>Space Test and Training Range Development</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Provided required space range satellite communications bandwidth for exercise, testing and training of both offensive and defensive space control systems on the space range. FY15 added an additional band required in the testing of Spiral 1 capabilities, increasing overall bandwidth requirements.</p> <p>FY 2016 Plans: Provide required space range satellite communications bandwidth for exercise, testing and training of both offensive and defensive space control systems on the space range. Small amounts of Ka bandwidth will be utilized at the end of FY15 for testing. More extensive testing to be accomplished in FY16.</p> <p>FY 2017 Plans: Provide required space range satellite communications bandwidth for exercise, testing and training of both offensive and defensive space control systems on the space range.</p>			
Accomplishments/Planned Programs Subtotals	22.724	18.940	18.528

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

N/A

Remarks

E. Acquisition Strategy

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

F. Performance Metrics

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0606392F / <i>Space and Missile Center (SMC) Civilian Workforce</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	166.727	176.196	176.666	0.000	176.666	188.532	192.221	195.971	197.051	Continuing	Continuing
664280: <i>SMC Civilian Pay</i>	-	166.727	176.196	176.666	0.000	176.666	188.532	192.221	195.971	197.051	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Space and Missile Systems Center (SMC) equips US and allied forces with operational space and missile systems, launch systems, and command and control infrastructure in support of global military and national security operations. SMC operates with over 6,300 people and an annual budget exceeding \$6.1B providing joint warfighters navigation, communication, weather, warning, force application, and space control capabilities. In FY12, as an AF pilot initiative, SMC acquisition workforce civilian personnel funding was transferred from O&M to RDT&E, AF funds.

SMC is authorized to employ approximately 1,574 civilian acquisition professionals. This includes all existing acquisition workforce civilian personnel, continued contractor to civilian conversions and Acquisition Improvement Program hiring. The funding does not include the costs for the base operating support civilian personnel supporting the Los Angeles AFB air base group. Funding SMC civilian payroll from the RDT&E appropriation provides program managers the flexibility to hire additional civilian personnel with program dollars versus additional contractors in concert with Air Force initiatives in response to the Defense Acquisition Workforce Improvement Act.

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	176.727	185.305	188.028	0.000	188.028
Current President's Budget	166.727	176.196	176.666	0.000	176.666
Total Adjustments	-10.000	-9.109	-11.362	0.000	-11.362
• Congressional General Reductions	0.000	-0.531			
• Congressional Directed Reductions	0.000	-8.578			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-10.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-11.362	0.000	-11.362

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0606392F / <i>Space and Missile Center (SMC) Civilian Workforce</i>
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Change Summary Explanation

FY 2015 (\$9.999M) realigned to higher Air Force priorities

FY 2016 (\$8.578M) Congressional mark

FY 2017 (\$11.362M) accounts for three significant changes: -\$8.000M availability of prior year execution balances; -\$7.836M reduction due to Air Force re-pricing of Civilian Personnel; +\$4.474M increase due to transfer of funding for 41 acquisition civilian authorizations from O&M to RDT&E at SMC (this included 8 authorizations from the Operationally Responsive Space Program & 33 authorizations from the Space Sensors Program).

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

	FY 2015	FY 2016	FY 2017
Title: SMC Acquisition Workforce	166.727	176.196	176.666
Description: Provide professional government civilian acquisition workforce in support of all Space and Missile Systems Center programs.			
FY 2015 Accomplishments: Provided professional government civilian acquisition workforce in support of all Space and Missile Systems Center programs.			
FY 2016 Plans: Provide professional government civilian acquisition workforce in support of all Space and Missile Systems Center programs.			
FY 2017 Plans: Provide professional government civilian acquisition workforce in support of all Space and Missile Systems Center programs.			
Note: Includes 41 acquisition civilian manpower authorizations transferred to this PE.			
Accomplishments/Planned Programs Subtotals	166.727	176.196	176.666

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

N/A

Remarks

N/A

E. Acquisition Strategy

N/A

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0606392F / <i>Space and Missile Center (SMC) Civilian Workforce</i>
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F. Performance Metrics
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force</i> / BA 6: <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0308602F / <i>ENTEPRISE INFORMATION SERVICES (EIS)</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	4.912	3.841	4.410	0.000	4.410	0.000	0.000	0.000	0.000	0.000	13.163
66ACSI: <i>ACQ and Command Support Integration</i>	-	4.912	3.841	4.410	0.000	4.410	0.000	0.000	0.000	0.000	0.000	13.163
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Enterprise Information Services (EIS) is a portfolio of integrated programs/technologies/services that enables and sustains Air Force Information Management and Knowledge Operations. EIS provides Air Force personnel access to, and management of, timely, accurate, and trusted mission data, information, and knowledge supporting information/decision superiority. The environment will utilize the services provided by the Common Computing Environment (CCE).

CCE provides standardized platforms, common application support services, data center migration strategy, and security services for hosting AF mission applications. This acquisition is critical for multiple hosting environments leveraging DoD Joint Information Environment (JIE) Core Data Centers (CDC) and DISA brokered cloud capabilities in compliance with the Air Force Information Technology (AF IT) baselines. This effort also provides technical expertise, programmatic guidance, and policy navigation that supports AF approved application rationalization processes to multiple hosting environments and enterprise IT Lifecycle Capability for integration testing of CCE services.

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts to sustain and/or modernize the installations or operations required for general research , development, test and evaluation.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	4.938	4.841	4.838	0.000	4.838
Current President's Budget	4.912	3.841	4.410	0.000	4.410
Total Adjustments	-0.026	-1.000	-0.428	0.000	-0.428
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-1.000			
• 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	-0.026	0.000			
• Other Adjustments	0.000	0.000	-0.428	0.000	-0.428

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force</i> / BA 6: <i>RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0308602F / <i>ENTEPRISE INFORMATION SERVICES (EIS)</i>		
<u>Change Summary Explanation</u> Forward financing				
<u>C. Accomplishments/Planned Programs (\$ in Millions)</u>		FY 2015	FY 2016	FY 2017
<p>Title: Platform Provisioning / TB Aligned Platform Configuration</p> <p>Description: This task provides the engineering analysis of the Target Baseline platform configurations leading to development of design patterns and templates to be used at the enterprise level by Air Force Information Technology capabilities. These standards will be developed against multiple hosting environments to include DISA MilCloud, commercial cloud, and Installation Processing Nodes.</p> <p>FY 2015 Accomplishments:</p> <ul style="list-style-type: none"> - Established initial version of the Common Computing Environment platforms in DISA MilCloud environment; supported successful migration of 2 pathfinder applications to new platform - Performed initial engineering analysis of Target Baseline and developed Implementation Baseline establishing standardized platforms and application support services - Developed Change Management Process for future Implementation Baseline releases <p>FY 2016 Plans:</p> <ul style="list-style-type: none"> - Will develop Common Computing Environment platforms and services into commercial cloud environments providing pathway for reduced infrastructure sustainment costs - Will establish standardized process for providing engineering analysis of platform and services updates to support the 200+ applications requiring migration to new cloud environments complying with Federal Data Center Consolidation Initiative - Will provide engineering analysis of Target Baseline updates ensuring updates and changes integrated into Implementation Baseline <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Will develop Common Computing Environment platforms and services into Installation Processing Nodes ensuring standardization and compliance across all infrastructure hosting environments - Will provide engineering analysis of applications requiring migration to all infrastructure hosting environments 		2.000	1.000	0.526
<p>Title: Managed Service Office (MSO) / Information Technology Lifecycle Center (ITLC) / Implementation Baseline Process Stand-up</p> <p>Description: This task develops the process flows for engaging mission application program offices, gathering infrastructure requirements and performing engineering analysis to determine optimum hosting platforms for Air Force IT capabilities. This provides the foundation for initial capabilities supporting the JIE stand-up.</p>		2.912	2.438	2.938

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force</i> / BA 6: <i>RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 0308602F / <i>ENTEPRISE INFORMATION SERVICES (EIS)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i></p> <ul style="list-style-type: none"> - Developed and tested initial engagement process flows with pathfinder set of applications; developed tool-set for application tracking and requirements gathering and analysis - Established Configuration Control Board to manage platforms across multiple cloud infrastructure hosting environments <p><i>FY 2016 Plans:</i></p> <ul style="list-style-type: none"> - Will continue building out engagement processes and begin including automation capabilities to capture mission application infrastructure requirements and also develop application migration tracking tools - Will develop virtual data center management capabilities to be utilized across multiple infrastructure hosting environments; optimizes ordering and consumption of cloud services driving down application storage and compute costs - Will develop solutions to accelerate migration events to drastically reduce IT costs across the AF IT portfolio <p><i>FY 2017 Plans:</i></p> <ul style="list-style-type: none"> - Will provide engineering analysis and support to 100+ applications requiring migration to data centers in compliance with Federal Data Center Consolidation Initiative mandates - Will refine engagement process to provide more efficient application migration support process - Will develop automated platform provisioning tools to be used across multiple infrastructure hosting environments 				
<p><i>Title:</i> Enterprise Services Extended to the Commercial Cloud</p> <p><i>Description:</i> This effort develops the design patterns and templates for taking the standardized platforms and enterprise application support services to commercial cloud environments. As more commercial cloud environments receive certifications for hosting DoD applications, this ensures the proper tools are developed and integrated for use in the commercial cloud environments.</p>		0.000	0.403	0.000
<p><i>FY 2015 Accomplishments:</i> N/A</p> <p><i>FY 2016 Plans:</i></p> <ul style="list-style-type: none"> - Will develop the tools to provide automated provisioning of standardized platforms into commercial cloud hosting - Will develop design patterns and standardized templates for application to integrate enterprise application support services in commercial cloud environments <p><i>FY 2017 Plans:</i> N/A</p>				
<p><i>Title:</i> Common Tool Development</p>		0.000	0.000	0.946

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0308602F / <i>ENTEPRISE INFORMATION SERVICES (EIS)</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p>Description: Develop and deploy a common set of enterprise tools to support application development and testing. These tools allow the Common Computing Environment to provide Test as a Service to mission application development teams; allowing for standardize development and test environments.</p> <p>FY 2015 Accomplishments: N/A</p> <p>FY 2016 Plans: N/A</p> <p>FY 2017 Plans:</p> <ul style="list-style-type: none"> - Will research and evaluate available development and test tools and perform analysis of alternatives of the various tools - Will develop testing processes and procedures to be used by application developers migrating capabilities to the Joint Information Environment infrastructure - Will develop and implement Test as a Service capabilities for use by application development teams 			
Accomplishments/Planned Programs Subtotals	4.912	3.841	4.410

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

N/A

Remarks

E. Acquisition Strategy

N/A

F. Performance Metrics

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force</i> / BA 6: <i>RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0702806F / <i>Acquisition and Management Support</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	16.115	15.357	14.613	0.000	14.613	18.682	19.649	20.232	20.647	Continuing	Continuing
662906: <i>ELECTRONIC ACQUISITION SERV ENVIRONMENT (EASE)</i>	-	1.063	1.910	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
66ACSI: <i>ACQ and Command Support Integration</i>	-	15.052	13.447	14.613	0.000	14.613	18.682	19.649	20.232	20.647	Continuing	Continuing

Note

This program, BA 06 PE 0702806F, project 66ACSI, Civilian Pay, is a new start.

In FY17, PE 0702806F Acquisition and Management Support, Project 662906 Electronic Acquisition Service Environment (EASE - in which CON-IT was funded) efforts were transferred to PE 0901410F CON-IT, Project 643483 CON-IT, to enhance transparency, reporting and execution activities.

A. Mission Description and Budget Item Justification

The FY17 funding was reduced by \$2.774M to account for the availability of prior year execution balances.

The program funds efforts to meet the Defense Acquisition Workforce Improvement Act (DAWIA), as well as Congressional, SECDEF, and SECAF mandates to provide program management execution tools, systems integration and architectural analysis, information technology infrastructure development, and technical workforce management. Funding also provides the framework for Air Force business and acquisition transformation in analyzing and developing capabilities-based architectures, re-engineering and enabling technologies, integrating robust systems engineering into early acquisition processes, and developing and managing a technical workforce with the expertise to uniformly implement OSD and Air Force engineering guidance and policies. These efforts provide stability in Air Force Acquisition by integrating major processes to reverse trends toward unpredictable program cost, schedule, and performance to facilitate quick response to urgent operational needs from across the entire spectrum of potential conflicts. These integrated capabilities will provide OSD and AF acquisition leadership insights needed to effectively manage a complex portfolio of acquisition programs through more timely and reliable access to authoritative acquisition data.

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0702806F / <i>Acquisition and Management Support</i>
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B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	18.644	15.357	19.466	0.000	19.466
Current President's Budget	16.115	15.357	14.613	0.000	14.613
Total Adjustments	-2.529	0.000	-4.853	0.000	-4.853
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	-1.900	0.000			
• SBIR/STTR Transfer	-0.629	0.000			
• Other Adjustments	0.000	0.000	-4.853	0.000	-4.853

Change Summary Explanation

FY17 reductions due to higher Air Force priorities.

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 6					R-1 Program Element (Number/Name) PE 0702806F / <i>Acquisition and Management Support</i>				Project (Number/Name) 662906 / <i>ELECTRONIC ACQUISITION SERV ENVIRONMENT (EASE)</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
662906: <i>ELECTRONIC ACQUISITION SERV ENVIRONMENT (EASE)</i>	-	1.063	1.910	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY17, PE 0702806F Acquisition and Management Support, Project 662906 Electronic Acquisition Service Environment (EASE - in which CON-IT was funded) efforts were transferred to PE 0901410F CON-IT, Project 643483 CON-IT, in order to create a unique PE for the CON-IT acquisition activities.

A. Mission Description and Budget Item Justification

EASE provides a contract writing solution for 8000 AF contracting professionals supporting base operations, logistics, contingency and weapons system contracting world-wide, enabling strategic sourcing and other acquisition efficiencies by standardizing data, business rules, and milestone tracking.

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

	FY 2015	FY 2016	FY 2017
Title: EASE	0.123	-	-
Description: Develop a single contract writing solution, EASE, to support AF contracting professionals.			
FY 2015 Accomplishments: Continue development of information technology framework and production of prototype development.			
Title: CON-IT	0.940	1.910	-
Description: Develop a comprehensive electronic contracting capability to include contract preparation, records management, electronic filing, electronic ordering and other capabilities.			
FY 2015 Accomplishments: Analyze alternate solutions, perform key cost, schedule and performance trades, affordability analysis, risk analysis, and risk mitigation planning.			
FY 2016 Plans: Analyze alternate solutions, perform key cost, schedule and performance trades, affordability analysis, risk analysis, and risk mitigation planning.			
Accomplishments/Planned Programs Subtotals	1.063	1.910	-

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600 / 6	R-1 Program Element (Number/Name) PE 0702806F / <i>Acquisition and Management Support</i>	Project (Number/Name) 662906 / <i>ELECTRONIC ACQUISITION SERV ENVIRONMENT (EASE)</i>
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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u> <u>Base</u>	<u>FY 2017</u> <u>OCO</u>	<u>FY 2017</u> <u>Total</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• N/A: N/A	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	-	-

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

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

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force										Date: February 2016		
Appropriation/Budget Activity 3600 / 6					R-1 Program Element (Number/Name) PE 0702806F / <i>Acquisition and Management Support</i>				Project (Number/Name) 66ACSI / <i>ACQ and Command Support Integration</i>			
COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
66ACSI: <i>ACQ and Command Support Integration</i>	-	15.052	13.447	14.613	0.000	14.613	18.682	19.649	20.232	20.647	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 06 PE 0702806F, project 66ACSI, Civilian Pay, is a new start.

A. Mission Description and Budget Item Justification

The program funds efforts to meet the Defense Acquisition Workforce Improvement Act (DAWIA), as well as Congressional, SECDEF, and SECAF mandates to provide program management execution tools, systems integration and architectural analysis, information technology infrastructure development, and technical workforce management. Funding also provides the framework for Air Force business and acquisition transformation in developing capabilities-based architectures, re-engineering and enabling technologies, integrating robust systems engineering into early acquisition processes, acquisition process improvement analysis, and developing and managing a technical workforce with the expertise to uniformly implement OSD and Air Force engineering guidance and policies. These efforts provide stability in Air Force Acquisition by integrating major processes to reverse trends toward unpredictable program cost, schedule, and performance to facilitate quick response to urgent operational needs from across the entire spectrum of potential conflicts. These integrated capabilities will provide OSD and AF acquisition leadership insights needed to effectively manage a complex portfolio of acquisition programs through more timely and reliable access to authoritative acquisition data.

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

	FY 2015	FY 2016	FY 2017
Title: Acquisition Mandates	3.457	1.698	1.155
Description: Supporting Congressional, SECDEF, and SECAF mandates. Program funding provides the framework for Air Force business and acquisition.			
FY 2015 Accomplishments: Conduct program management and resources management oversight.			
FY 2016 Plans: Continue program management and resources management oversight.			
FY 2017 Plans: Continue program management and resources management oversight.			
Title: Performance Measurements	1.991	1.950	0.600
Description: Develops and upgrades performance measures for capability-based planning constructs.			

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600 / 6	R-1 Program Element (Number/Name) PE 0702806F / <i>Acquisition and Management Support</i>	Project (Number/Name) 66ACSI / <i>ACQ and Command Support Integration</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Developed and analyzed acquisition processes to provide process improvement and efficiencies.</p> <p><i>FY 2016 Plans:</i> Continue to develop and analyze acquisition processes to provide process improvement and efficiencies.</p> <p><i>FY 2017 Plans:</i> Continue to develop and analyze acquisition processes to provide process improvement and efficiencies.</p>				
<p><i>Title:</i> Technical and Analytical Support</p> <p><i>Description:</i> Supports Acquisition Domain-level effort (via the Acquisition Domain Capabilities Integration (ADCI) activities) to integrate existing acquisition business systems/services, data, and process supporting key Acquisition capabilities at the enterprise level. Supports analysis required to architect an integrated environment built on DISA's MilCloud infrastructure supporting the portfolio of acquisition business systems and implements standards for data management and service-oriented design methodology to facilitate efficiency and interoperability. Supports analysis aimed at solving problems across or outside of individual system boundaries with the goal of reducing redundancy, improving systems operations, and improving management of data resulting in dramatically improved transparency, efficiency, and effective management of the Acquisition process. Includes the creation and support of domain-level requirements and governance processes as well as the creation of domain-wide data standards.</p> <p><i>FY 2015 Accomplishments:</i> Created and documented process to establish a data CONOPs for AQ metadata; supported consolidation of Acquisition Domain infrastructure in DISA MilCloud; prototyped the Air Worthiness Certification/Flight Authorization Process; acted as the Responsible Test Organization for Acquisition Workbench/Acquisition Application Store; created and managed the Acquisition Domain's onboarding process for new customers; created and began management of the Acquisition Domain's Requirements Traceability Matrix. These activities support the automation of key Life Cycle Management Center (LCMC) and Space & Missile Systems Center (SMC) acquisition processes.</p> <p><i>FY 2016 Plans:</i> Continuation of work supporting the automation of key Life Cycle Management Center (LCMC) and Space & Missile Systems Center (SMC) acquisition processes. Includes analytical support, process work, governance, requirements definition, analysis, test & evaluation and configuration control. Continuation of work supporting the onboarding of new capabilities for the Acquisition Workbench/Acquisition Application Store.</p> <p><i>FY 2017 Plans:</i></p>		1.934	1.500	2.044

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600 / 6	R-1 Program Element (Number/Name) PE 0702806F / <i>Acquisition and Management Support</i>	Project (Number/Name) 66ACSI / <i>ACQ and Command Support Integration</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Continuation of work supporting the automation of key Life Cycle Management Center (LCMC) and Space & Missile Systems Center (SMC) acquisition processes. Continuation of work supporting the onboarding of new capabilities for the Acquisition Workbench/Acquisition Application Store.				
<p>Title: System Metric and Reporting Tool (SMART) and Associated Tool Development</p> <p>Description: Upgrade the enterprise tools that assists PMs and acquisition professionals with the day-to-day tasking involved in defining, managing, and reporting health and status information throughout an Acquisition program's lifecycle.</p> <p>FY 2015 Accomplishments: Re-hosted SMART and associated tools in MilCloud, creation and deployment of a common user interface, and development of several core Acquisition business services (e.g. data publishing service, analytics foundation services).</p> <p>FY 2016 Plans: Complete creation of an integrated IT operational environment (Acquisition Workbench/Acquisition Application Store) and further develop applications for Acquisition Program Offices. In addition, assess appropriate metrics and alternative tools to enhance data collection and data visibility on all acquisition programs.</p> <p>FY 2017 Plans: Continue expansion of the integrated IT operational environment (Acquisition Workbench/Acquisition Application Store) to include additional Acquisition Program Office automation and additional application development. Continue assessment of appropriate tools.</p>		2.845	4.008	4.052
<p>Title: Project Management Resource Tools (PMRT)</p> <p>Description: Upgrade enterprise PMRT tools that provide program/project resource management support to the Acquisition community.</p> <p>FY 2015 Accomplishments: Implementation of PMRT enhancements to budget submission, financial management, program oversight and acquisition program control processes including (a) development of capabilities to better track all acquisition programs and have cradle-to-grave oversight of all service programs within the portfolio, (b) automation of key reports (e.g Small Business tracking, Should-Cost), and integration with important contracting data sources.</p> <p>FY 2016 Plans: Development of the capability required to provide enhanced visibility of acquisition program and financial information for all AF Acquisition Investment programs. Continued development of critical PMRT interfaces to include the Defense Enterprise Accounting Management System (DEAMS). Upgrades required to (a) address new CyberSpace security requirements due</p>		2.540	1.987	1.964

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600 / 6	R-1 Program Element (Number/Name) PE 0702806F / <i>Acquisition and Management Support</i>	Project (Number/Name) 66ACSI / <i>ACQ and Command Support Integration</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>to increased security threats and (b) implement changes to fix weaknesses in audit controls needed to address financial audit findings and to protect Air Force data. Upgrades to provide additional capability to enable and track Air Force's implementation of initiatives associated with OSD's Better Buying Power (BBP) mandates.</p> <p>FY 2017 Plans: Continued enhancement of PMRT to allow increased visibility to acquisition programmatic and financial information for all AF Acquisition Investment programs. Re-engineering and implementation of process improvements in PMRT supporting acquisition reporting. Development of additional acquisition dashboard data visualizations. Migration PMRT to a Core Data Center (CDC) in order to comply with the Federal Data Center Consolidation Initiative (FDCCI).</p>				
<p>Title: Capabilities Integration Environment (CIE)</p> <p>Description: Provides a development, testing and integration environment for Information Technology (IT) system development, prototypes and proofs of concept.</p> <p>FY 2015 Accomplishments: Continues a secure, scalable environment to support Research and Development (R&D), Development Test/Operational Test (DT/OT), integration, exercises, experimentation, acquisition development and direct Warfighter support.</p> <p>FY 2016 Plans: Continues a secure, scalable environment to support Research and Development (R&D), Development Test/Operational Test (DT/OT), integration, exercises, experimentation, acquisition development and direct Warfighter support.</p> <p>FY 2017 Plans: Continues a secure, scalable environment to support Research and Development (R&D), Development Test/Operational Test (DT/OT), integration, exercises, experimentation, acquisition development and direct Warfighter support.</p>		1.956	1.804	1.805
<p>Title: Development and Retention</p> <p>Description: Supports activities to develop, manage and retain the acquisition workforce.</p> <p>FY 2015 Accomplishments: Performs activities to develop, manage, and retain the acquisition workforce by providing training on enhanced business and engineering processes that enable the effective management of complex acquisition processes, and allows continued interface with the academic community.</p> <p>FY 2016 Plans:</p>		0.329	0.500	0.500

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Exhibit R-2A, RDT&E Project Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600 / 6	R-1 Program Element (Number/Name) PE 0702806F / <i>Acquisition and Management Support</i>	Project (Number/Name) 66ACSI / <i>ACQ and Command Support Integration</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Performs activities to develop, manage, and retain the acquisition workforce by providing training on enhanced business and engineering processes that enable the effective management of complex acquisition processes, and allows continued interface with the academic community.</p> <p>FY 2017 Plans: Performs activities to develop, manage, and retain the acquisition workforce by providing training on enhanced business and engineering processes that enable the effective management of complex acquisition processes, and allows continued interface with the academic community.</p>				
<p>Title: Civilian Pay</p> <p>Description: This program supports Civilian Full-Time Equivalents (FTEs) to administer Federally Funded Research and Development Center (FFRDC) contracts at the Massachusetts Institute of Technology Lincoln Laboratory (MIT-LL) and the Carnegie Mellon University Software Engineering Institute (CMU-SEI). The FFRDCs enable the Air Force to use private sector resources to accomplish tasks that are integral to Air Force's mission and operation.</p> <p>FY 2017 Plans: This program supports Civilian Full-Time Equivalents (FTEs) to administer Federally Funded Research and Development Center (FFRDC) contracts at the Massachusetts Institute of Technology Lincoln Laboratory (MIT-LL) and the Carnegie Mellon University Software Engineering Institute (CMU-SEI).</p>		-	-	2.493
Accomplishments/Planned Programs Subtotals		15.052	13.447	14.613
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
N/A				
E. Performance Metrics				
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.				

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0804731F / <i>General Skill Training</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	1.425	1.315	1.404	0.000	1.404	1.430	1.458	1.485	1.511	Continuing	Continuing
665297: <i>Technical Training Information Systems</i>	-	1.425	1.315	1.404	0.000	1.404	1.430	1.458	1.485	1.511	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

TECHNICAL TRAINING MANAGEMENT SYSTEM (TTMS): TTMS provides AETC organizations with a world class commercial-off-the-shelf (COTS) / government-off-the-shelf (GOTS) learning management system which supports six functions: course design and development; student evaluation; instructor management; student management; data analysis; and resource administration. TTMS is a centralized web-based system which provides productivity enhancements and higher degree of efficiency to AETC. The primary requirement objectives currently under development are: 1) Integration of Basic Training Management System (BTMS) capabilities and student records into the TTMS.

This program is in Budget Activity 6, RDT&E Management Support because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation.

B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	1.425	1.315	1.418	0.000	1.418
Current President's Budget	1.425	1.315	1.404	0.000	1.404
Total Adjustments	0.000	0.000	-0.014	0.000	-0.014
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	-0.014	0.000	-0.014

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

	FY 2015	FY 2016	FY 2017
Title: Technical Training Management System (TTMS)	1.425	1.315	1.404
Description: Provide TTMS productivity enhancements and higher degree of efficiency to AETC (i.e., Military Training Leader and Basic Training Management System).			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0804731F / <i>General Skill Training</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Enhanced TTMS productivity focusing on Military Training Leader and Basic Training Management capabilities.</p> <p><i>FY 2016 Plans:</i> Continue to enhance TTMS productivity focusing on Military Training Leader and Basic Training Management Capabilities.</p> <p><i>FY 2017 Plans:</i> Will continue to enhance TTMS productivity focusing on Military Training Leader and Basic Training Management Capabilities.</p>			
Accomplishments/Planned Programs Subtotals	1.425	1.315	1.404

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

N/A

Remarks

E. Acquisition Strategy

Not applicable

F. Performance Metrics

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support	R-1 Program Element (Number/Name) PE 0909999F I Financing for Cancelled Account Adjustments
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	0.150	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
664277: Financing for Canceled Account Adj	-	0.150	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Funds cancelled year bill adjustments

B. Program Change Summary (\$ in Millions)

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017 Base</u>	<u>FY 2017 OCO</u>	<u>FY 2017 Total</u>
Previous President's Budget	0.000	0.000	0.000	0.000	0.000
Current President's Budget	0.150	0.000	0.000	0.000	0.000
Total Adjustments	0.150	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	0.150	0.000			
• SBIR/STTR Transfer	0.000	0.000			
• Other Adjustments	0.000	0.000	0.000	0.000	0.000

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

	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2017</u>
Title: Cancelled year bill adjustments	0.150	0.000	0.000
Description: Cancelled year bill adjustments			
FY 2015 Accomplishments: Cancelled year bill adjustments			
FY 2016 Plans: N/A			
FY 2017 Plans:			

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force	Date: February 2016
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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 0909999F / <i>Financing for Cancelled Account Adjustments</i>
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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017
N/A			
Accomplishments/Planned Programs Subtotals	0.150	0.000	0.000

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

N/A

Remarks

E. Acquisition Strategy

N/A

F. Performance Metrics

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

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force **Date:** February 2016

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>	R-1 Program Element (Number/Name) PE 1001004F / <i>International Activities</i>
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COST (\$ in Millions)	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
Total Program Element	-	3.790	2.315	4.784	0.000	4.784	4.556	4.026	4.100	4.173	Continuing	Continuing
664645: <i>International Cooperative Research & Development</i>	-	3.790	2.315	4.784	0.000	4.784	4.556	4.026	4.100	4.173	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The mission of this program is to establish, sustain, expand, and enhance mutually beneficial international partnerships through the implementation of air, space, and cyber international armament cooperation (IAC) agreements thereby supporting USAF and DoD goals and objectives. These International Agreements (IAs) will: significantly improve US and allied conventional defense capacity and capabilities; accelerate the availability of defense systems; realize solutions to meet capability gaps; acquire, upgrade, sustain, and/or support common or interoperable equipment with our allies; create cooperative acquisition, production, or logistic partnerships; promote mutual and equitable sharing of effort, cost, information, and risk; provide operational access; leverage economies of scale; and promote interoperability and commonality with our allies.

The USAF is party to numerous air, space, and cyber bilateral and multilateral IAs to solve common US and allied military capability gaps, develop materiel solutions, harmonize requirements, and build interoperability with our international partners. This program element funds the USAF to identify, develop, process, negotiate, conclude, implement, and manage IAs in compliance with statutory provisions, legal authorities, fiscal constraints, technology transfer controls, intellectual property rights, third party transfer provisions, equitability criteria, industrial base factors, and political-military interests. Included in this budget are: air, space, and cyber IAC IAs activities; technology assessments; specialized working groups; Air Senior National Representative (ASNR) activities; IAC program and project reviews; bilateral and multilateral staff talks; Engineering and Scientist Exchange Program (ESEP); and Administrative and Professional Exchange Program (APEP).

This program is in Budget Activity 6, Management and Support, because this budget activity includes research, development, test and evaluation efforts and funds to sustain and/or modernize the installations or operations required for general research, development, test and evaluation. These funds are not to be used for civilian salaries or the construction of permanent facilities.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force				Date: February 2016	
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force</i> / BA 6: <i>RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 1001004F / <i>International Activities</i>			
B. Program Change Summary (\$ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	3.790	2.315	4.831	0.000	4.831
Current President's Budget	3.790	2.315	4.784	0.000	4.784
Total Adjustments	0.000	0.000	-0.047	0.000	-0.047
• 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	-0.047	0.000	-0.047
C. Accomplishments/Planned Programs (\$ in Millions)	FY 2015	FY 2016	FY 2017		
Title: Engineer and Scientist Exchange Program/Administrative and Professional Exchange Program (ESEP/APEP)	0.300	0.200	0.450		
Description: Funds the USAF execution and management oversight of ESEP and APEP programs and personnel. Funds eight to ten field level military and civilian personnel from Air Force Materiel Command (AFMC) Facilities, Product Centers, Test Centers, and Logistic Centers for tours at selected allied partner government laboratories and facilities.					
FY 2015 Accomplishments: Continue USAF execution and management oversight of the ESEP and APEP programs and personnel.					
FY 2016 Plans: Will continue USAF execution and management oversight of the ESEP and APEP programs and personnel.					
FY 2017 Plans: Will continue USAF execution and management oversight of the ESEP and APEP programs and personnel.					
Title: International Partnership Activities	1.905	1.540	2.253		
Description: Funds USAF management, support, and oversight of IAC goals and objectives to build global partnerships in support of national security objectives. Funds USAF participation in NATO forums to promote harmonization and interoperability. Funds USAF support and participation in OSD bi-lateral IAC forums. Funds SAF/IA Australian liaison office. Funds technical assessments and discussions that support technology development activities and interoperability. Funds USAF efforts to enhance existing relationships with: Australia, Canada, Denmark, France, Germany, Israel, Italy, Japan, NATO, Netherlands, Norway, South Korea, Singapore, Spain, Sweden, and UK. Funds USAF efforts to strengthen/build IAC relationships with: Czech					

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 6: RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 1001004F / <i>International Activities</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p>Republic, Hungary, Poland, India, Finland, and Turkey. Funds USAF efforts to establish IAC relationships with: South Africa, Egypt, Brazil, Chile, and Taiwan.</p> <p>FY 2015 Accomplishments: Continue ongoing management, support, and oversight of IAC goals and objectives to establish, sustain, expand and enhance mutually beneficial partnerships between the US and coalition partners to meet current and emerging global strategic challenges through optimization of interoperability, integration, and interdependence between coalition forces. Efforts will have an enhanced focus on mutually beneficial partnerships within Asia.</p> <p>FY 2016 Plans: Will continue ongoing management, support, and oversight of IAC goals and objectives to establish, sustain, expand and enhance mutually beneficial partnerships between the US and coalition partners to meet current and emerging global strategic challenges through optimization of interoperability, integration, and interdependence between coalition forces. Continuing efforts will have an enhanced focus on mutually beneficial partnerships within Asia.</p> <p>FY 2017 Plans: Will continue ongoing management, support, and oversight of IAC goals and objectives to establish, sustain, expand and enhance mutually beneficial partnerships between the US and coalition partners to meet current and emerging global strategic challenges through optimization of interoperability, integration, and interdependence between coalition forces. Continuing efforts will have an enhanced focus on mutually beneficial partnerships within Asia.</p>				
<p>Title: International Armaments Cooperation (IAC) Agreement Activities</p> <p>Description: Funds the USAF's ability to identify, develop, process, negotiate, conclude, implement, and manage an increasing number of research, development, test, and evaluation (RDT&E) bilateral and multilateral IAC Agreements that meet the goals, objectives, and mission of the USAF and DoD in the Air Domain. IAC activities will meet warfighter needs and enhance interoperability by exploring cooperation with our partners in the areas of: materials and composites, human effectiveness, robotics, nanotechnology, coalition information sharing, biometrics, munitions design, hypersonics, alternative energy, improvised explosive devices (IED) defeat, weapons of mass destruction (WMD) defeat, autonomous control, distributed missions, training systems, lasers, weapon systems, remotely piloted aircraft, armaments interface, intelligence, surveillance and reconnaissance (ISR) capabilities, sustainment, gap analysis, simulators, combined logistics, software updates, mission planning systems, world-wide flight requirements, electronic warfare, safety, aging aircraft, airlift, tankers, trainers, system modifications, directed energy, weapon stores, acquisition, development, co-production, interoperability, maintenance, system development, and upgrades.</p> <p>FY 2015 Accomplishments:</p>		0.750	0.300	1.131

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force		Date: February 2016		
Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force</i> / BA 6: <i>RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 1001004F / <i>International Activities</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
Continue to identify, develop, process, negotiate, conclude, implement, and manage the increasing number of RDT&E bilateral and multilateral IAs that meet the goals, objectives, and mission of the USAF and DoD in the Air Domain. Development and negotiation will continue on IAs not concluded during FY14. FY 2016 Plans: Will continue to identify, develop, process, negotiate, conclude, implement, and manage the increasing number of RDT&E bilateral and multilateral IAs that meet the goals, objectives, and mission of the USAF and DoD in the Air Domain. Development and negotiation will continue on IAs not concluded during FY15. New Air Domain agreements and amendments will be initiated. FY 2017 Plans: Will continue to identify, develop, process, negotiate, conclude, implement, and manage the increasing number of RDT&E bilateral and multilateral IAs that meet the goals, objectives, and mission of the USAF and DoD in the Air Domain. Development and negotiation will continue on IAs not concluded during FY16. New Air Domain agreements and amendments will be initiated.				
Title: Air Force Materiel Command (AFMC) Description: Funds AFMC's ability to support IAC RDT&E activities which directly promotes international collaboration. Funds field level technical assessments and discussions that support technology identification and development activities in support of interoperability. FY 2015 Accomplishments: Continue support of AFMC's ability to identify, assess, and develop new and continuing RDT&E activities which support interoperability and relationship building efforts with our international partners. FY 2016 Plans: Will continue support of AFMC's ability to identify, assess, and develop new and continuing RDT&E activities which support interoperability and relationship building efforts with our international partners. FY 2017 Plans: Will continue support of AFMC's ability to identify, assess, and develop new and continuing RDT&E activities which support interoperability and relationship building efforts with our international partners.		0.150	0.075	0.150
Title: International Space Cooperation Description: Funds the USAF's RDT&E efforts in the area of space cooperation with our international partners. Space cooperation with our allies enables the USAF access to critical geography for distributed ground systems, and remote test ranges for test and evaluation of space capabilities in electronically challenged environments, joint development and acquisition of space systems, and provides a foundation for long-term, full spectrum operational cooperation.		0.190	0.100	0.500

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Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force</i> / BA 6: <i>RDT&E Management Support</i>		R-1 Program Element (Number/Name) PE 1001004F / <i>International Activities</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2015	FY 2016	FY 2017
<p><i>FY 2015 Accomplishments:</i> Continue to identify, develop, process, negotiate, conclude, implement, and manage the bilateral and multilateral RDT&E IAs that meet the goals, objectives, and mission of the USAF and DoD in the Space Domain. Development and negotiation will continue on IAs not concluded during FY14.</p> <p><i>FY 2016 Plans:</i> Will continue to identify, develop, process, negotiate, conclude, implement, and manage the bilateral and multilateral RDT&E IAs that meet the goals, objectives, and mission of the USAF and DoD in the Space Domain. Development and negotiation will continue on IAs not concluded during FY15. New Space Domain agreements and amendments will be initiated.</p> <p><i>FY 2017 Plans:</i> Will continue to identify, develop, process, negotiate, conclude, implement, and manage the bilateral and multilateral RDT&E IAs that meet the goals, objectives, and mission of the USAF and DoD in the Space Domain. Development and negotiation will continue on IAs not concluded during FY16. New Space Domain agreements and amendments will be initiated.</p>				
<p><i>Title:</i> International Cyberspace Cooperation</p> <p><i>Description:</i> Funds the USAF's ability to establish cooperative relationships with allies in the Cyberspace Domain to ensure interoperability, sharing of information on threats, and developing new capabilities to defeat threats to our critical information systems. Cyberspace requires significant research and development efforts and responsiveness to avoid technological surprises.</p> <p><i>FY 2015 Accomplishments:</i> Continue to establish cooperative relationships with allies in the Cyberspace Domain initiated in FY14.</p> <p><i>FY 2016 Plans:</i> Will continue to establish relationships and identify, develop, process, negotiate, conclude, implement, and manage bilateral and multilateral RDT&E IAs that meet the goals, objectives, and mission of the USAF and DoD in the Cyberspace Domain. Development and negotiation will continue on IAs not concluded during FY15. New Cyberspace Domain agreements and amendments will be initiated.</p> <p><i>FY 2017 Plans:</i> Will continue to establish relationships and identify, develop, process, negotiate, conclude, implement, and manage bilateral and multilateral RDT&E IAs that meet the goals, objectives, and mission of the USAF and DoD in the Cyberspace Domain. Development and negotiation will continue on IAs not concluded during FY16. New Cyberspace Domain agreements and amendments will be initiated.</p>		0.495	0.100	0.300
Accomplishments/Planned Programs Subtotals		3.790	2.315	4.784

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Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Air Force Date: February 2016

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

Remarks

E. Acquisition Strategy
This program element is the only source of USAF funds to identify, develop, process, negotiate, conclude, implement, and manage IAC opportunities to: (a) acquire, develop, upgrade, sustain, and support common or interoperable equipment with our allies; (b) leverage USAF resources through cost sharing and economies of scale with our partners; (c) exploit the best US and allied technologies for equipping coalition forces; and (d) foster interoperability and commonality with our allies. We obtain these benefits only after IAC opportunities are identified, explored, assessed, developed and IAs are negotiated and concluded. This PE provides funds to execute up-front IAC responsibilities, realize cooperative opportunities, assess allied technologies and generate sound, cost-effective cooperative programs between the USAF and our international partners in the areas of Air, Space and Cyberspace. Once IAs are concluded they are transferred to the appropriate technology or systems program office and are then funded by the program office.

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