

UNCLASSIFIED

**Department of Defense
Fiscal Year (FY) 2016 President's Budget Submission**

February 2015



Air Force

Justification Book Volume 2 of 3

Research, Development, Test & Evaluation, Air Force

Vol-II

UNCLASSIFIED

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Volume 2 Table of Contents

Comptroller Exhibit R-1..... Volume 2 - iii
Master Program Element Table of Contents (by Budget Activity then Line Item Number)..... Volume 2 - xix
Master Program Element Table of Contents (Alphabetically by Program Element Title)..... Volume 2 - xxxv
Program Element Table of Contents (by Budget Activity then Line Item Number).....Volume 2 - xlix
Program Element Table of Contents (Alphabetically by Program Element Title).....Volume 2 - lv
Intro and Explanation of Contents..... Volume 2 - lxi
Classified PEs..... Volume 2 - lxiii
FY16 PB Crosswalk Report..... Volume 2 - lxxv
Exhibit R-2's..... Volume 2 - 1

UNCLASSIFIED

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Department of Defense
 FY 2016 President's Budget
 Exhibit R-1 FY 2016 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

28 Jan 2015

Appropriation	FY 2014 (Base & OCO)	FY 2015 Base Enacted	FY 2015 OCO Enacted	FY 2015 Total Enacted	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Research, Development, Test & Eval, AF	23,823,510	23,630,474	14,706	23,645,180	26,473,669	17,100	26,490,769
Total Research, Development, Test & Evaluation	23,823,510	23,630,474	14,706	23,645,180	26,473,669	17,100	26,490,769

UNCLASSIFIED

Department of Defense
 FY 2016 President's Budget
 Exhibit R-1 FY 2016 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

28 Jan 2015

Summary Recap of Budget Activities	FY 2014 (Base & OCO)	FY 2015 Base Enacted	FY 2015 OCO Enacted	FY 2015 Total Enacted	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Basic Research	510,830	551,008		551,008	485,253		485,253
Applied Research	1,124,358	1,100,790		1,100,790	1,217,342		1,217,342
Advanced Technology Development	624,332	629,912		629,912	675,785		675,785
Advanced Component Development & Prototypes	936,496	1,407,354		1,407,354	2,062,575		2,062,575
System Development & Demonstration	4,344,992	3,617,103		3,617,103	3,847,791		3,847,791
Management Support	1,418,396	1,178,699		1,178,699	1,174,584		1,174,584
Operational Systems Development	14,864,106	15,145,608	14,706	15,160,314	17,010,339	17,100	17,027,439
Total Research, Development, Test & Evaluation	23,823,510	23,630,474	14,706	23,645,180	26,473,669	17,100	26,490,769
Summary Recap of FYDP Programs							
Strategic Forces	181,376	514,726		514,726	618,422		618,422
General Purpose Forces	1,475,225	1,541,794		1,541,794	1,687,905	300	1,688,205
Intelligence and Communications	1,362,446	1,640,102		1,640,102	1,635,920		1,635,920
Mobility Forces	311,274	241,643		241,643	366,856		366,856
Research and Development	9,095,792	8,343,388		8,343,388	9,105,003		9,105,003
Central Supply and Maintenance	91,235	98,657		98,657	156,778		156,778
Training Medical and Other	1,716	2,538		2,538	3,272		3,272
Administration and Associated Activities	119,003	116,625		116,625	117,056		117,056
Support of Other Nations	3,785	3,790		3,790	2,315		2,315
Classified Programs	11,181,658	11,127,211	14,706	11,141,917	12,780,142	16,800	12,796,942
Total Research, Development, Test & Evaluation	23,823,510	23,630,474	14,706	23,645,180	26,473,669	17,100	26,490,769

R-1C1: FY 2016 President's Budget (Published Version of PB Position), as of January 28, 2015 at 07:27:29

UNCLASSIFIED

Page 111
Volume 2 - iv

UNCLASSIFIED

Department of the Air Force
 FY 2016 President's Budget
 Exhibit R-1 FY 2016 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

28 Jan 2015

Summary Recap of Budget Activities	FY 2014 (Base & OCO)	FY 2015 Base Enacted	FY 2015 OCO Enacted	FY 2015 Total Enacted	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Basic Research	510,830	551,008		551,008	485,253		485,253
Applied Research	1,124,358	1,100,790		1,100,790	1,217,342		1,217,342
Advanced Technology Development	624,332	629,912		629,912	675,785		675,785
Advanced Component Development & Prototypes	936,496	1,407,354		1,407,354	2,062,575		2,062,575
System Development & Demonstration	4,344,992	3,617,103		3,617,103	3,847,791		3,847,791
Management Support	1,418,396	1,178,699		1,178,699	1,174,584		1,174,584
Operational Systems Development	14,864,106	15,145,608	14,706	15,160,314	17,010,339	17,100	17,027,439
Total Research, Development, Test & Evaluation	23,823,510	23,630,474	14,706	23,645,180	26,473,669	17,100	26,490,769
Summary Recap of FYDP Programs							
Strategic Forces	181,376	514,726		514,726	618,422		618,422
General Purpose Forces	1,475,225	1,541,794		1,541,794	1,687,905	300	1,688,205
Intelligence and Communications	1,362,446	1,640,102		1,640,102	1,635,920		1,635,920
Mobility Forces	311,274	241,643		241,643	366,856		366,856
Research and Development	9,095,792	8,343,388		8,343,388	9,105,003		9,105,003
Central Supply and Maintenance	91,235	98,657		98,657	156,778		156,778
Training Medical and Other	1,716	2,538		2,538	3,272		3,272
Administration and Associated Activities	119,003	116,625		116,625	117,056		117,056
Support of Other Nations	3,785	3,790		3,790	2,315		2,315
Classified Programs	11,181,658	11,127,211	14,706	11,141,917	12,780,142	16,800	12,796,942
Total Research, Development, Test & Evaluation	23,823,510	23,630,474	14,706	23,645,180	26,473,669	17,100	26,490,769

R-1C1: FY 2016 President's Budget (Published Version of PB Position), as of January 28, 2015 at 07:27:29

UNCLASSIFIED

Page F-1
Volume 2 - v

UNCLASSIFIED

Department of the Air Force
 FY 2016 President's Budget
 Exhibit R-1 FY 2016 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

28 Jan 2015

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

Line No	Program Element Number	Item	Act	FY 2014 (Base & OCO)	FY 2015 Base Enacted	FY 2015 OCO Enacted	FY 2015 Total Enacted	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Sec
1	0601102F	Defense Research Sciences	01	364,195	389,979		389,979	329,721		329,721	U
2	0601103F	University Research Initiatives	01	133,798	147,079		147,079	141,754		141,754	U
3	0601108F	High Energy Laser Research Initiatives	01	12,837	13,950		13,950	13,778		13,778	U
		Basic Research		510,830	551,008		551,008	485,253		485,253	
4	0602102F	Materials	02	118,951	110,680		110,680	125,234		125,234	U
5	0602201F	Aerospace Vehicle Technologies	02	117,724	105,673		105,673	123,438		123,438	U
6	0602202F	Human Effectiveness Applied Research	02	101,157	96,894		96,894	100,530		100,530	U
7	0602203F	Aerospace Propulsion	02	193,204	172,550		172,550	182,326		182,326	U
8	0602204F	Aerospace Sensors	02	125,989	118,321		118,321	147,291		147,291	U
9	0602601F	Space Technology	02	100,066	98,229		98,229	116,122		116,122	U
10	0602602F	Conventional Munitions	02	80,804	87,387		87,387	99,851		99,851	U
11	0602605F	Directed Energy Technology	02	110,725	125,866		125,866	115,604		115,604	U
12	0602788F	Dominant Information Sciences and Methods	02	136,885	147,749		147,749	164,909		164,909	U
13	0602890F	High Energy Laser Research	02	38,853	37,441		37,441	42,037		42,037	U
		Applied Research		1,124,358	1,100,790		1,100,790	1,217,342		1,217,342	
14	0603112F	Advanced Materials for Weapon Systems	03	53,593	40,177		40,177	37,665		37,665	U
15	0603199F	Sustainment Science and Technology (S&T)	03	12,380	15,800		15,800	18,378		18,378	U
16	0603203F	Advanced Aerospace Sensors	03	31,968	34,334		34,334	42,183		42,183	U
17	0603211F	Aerospace Technology Dev/Demo	03	75,029	91,037		91,037	100,733		100,733	U

R-1C1: FY 2016 President's Budget (Published Version of PB Position), as of January 28, 2015 at 07:27:29

UNCLASSIFIED

Department of the Air Force
 FY 2016 President's Budget
 Exhibit R-1 FY 2016 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

28 Jan 2015

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

Line No	Program Element Number	Item	Act	FY 2014 (Base & OCO)	FY 2015 Base Enacted	FY 2015 OCO Enacted	FY 2015 Total Enacted	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Sec
18	0603216F	Aerospace Propulsion and Power Technology	03	160,765	132,681		132,681	168,821		168,821	U
19	0603270F	Electronic Combat Technology	03	42,516	47,508		47,508	47,032		47,032	U
20	0603401F	Advanced Spacecraft Technology	03	57,787	68,907		68,907	54,897		54,897	U
21	0603444F	Maui Space Surveillance System (MSSS)	03	25,535	14,031		14,031	12,853		12,853	U
22	0603456F	Human Effectiveness Advanced Technology Development	03	24,508	21,788		21,788	25,448		25,448	U
23	0603601F	Conventional Weapons Technology	03	33,410	42,046		42,046	48,536		48,536	U
24	0603605F	Advanced Weapons Technology	03	18,519	33,542		33,542	30,195		30,195	U
25	0603680F	Manufacturing Technology Program	03	40,221	52,772		52,772	42,630		42,630	U
26	0603788F	Battlespace Knowledge Development and Demonstration	03	48,101	35,289		35,289	46,414		46,414	U
Advanced Technology Development				624,332	629,912		629,912	675,785		675,785	
27	0603260F	Intelligence Advanced Development	04	3,983	5,408		5,408	5,032		5,032	U
28	0603287F	Physical Security Equipment	04	3,874							U
29	0603438F	Space Control Technology	04	22,862	6,075		6,075	4,070		4,070	U
30	0603742F	Combat Identification Technology	04	12,938	10,980		10,980	21,790		21,790	U
31	0603790F	NATO Research and Development	04	4,561	2,392		2,392	4,736		4,736	U
32	0603791F	International Space Cooperative R&D	04	379	833		833				U
33	0603830F	Space Security and Defense Program	04	23,986	31,613		31,613	30,771		30,771	U
34	0603851F	Intercontinental Ballistic Missile - Dem/Val	04	72,696	30,885		30,885	39,765		39,765	U
35	0603859F	Pollution Prevention - Dem/Val	04	953	998		998				U

R-1C1: FY 2016 President's Budget (Published Version of PB Position), as of January 28, 2015 at 07:27:29

UNCLASSIFIED

Department of the Air Force
 FY 2016 President's Budget
 Exhibit R-1 FY 2016 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

28 Jan 2015

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

Line No	Program Element Number	Item	Act	FY 2014 (Base & OCO)	FY 2015 Base Enacted	FY 2015 OCO Enacted	FY 2015 Total Enacted	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Se c
36	0604015F	Long Range Strike	04	348,625	913,728		913,728	1,246,228		1,246,228	U
37	0604317F	Technology Transfer	04	2,531	4,769		4,769	3,512		3,512	U
38	0604327F	Hard and Deeply Buried Target Defeat System (HDBTDS) Program	04	109,602				54,637		54,637	U
39	0604337F	Requirements Analysis and Maturation	04	11,486							U
40	0604422F	Weather System Follow-on	04		39,901		39,901	76,108		76,108	U
41	0604458F	Air & Space Ops Center	04	60,971							U
42	0604618F	Joint Direct Attack Munition	04	2,417							U
43	0604635F	Ground Attack Weapons Fuze Development	04	17,271							U
44	0604857F	Operationally Responsive Space	04	10,000	20,000		20,000	6,457		6,457	U
45	0604858F	Tech Transition Program	04	48,194	79,004		79,004	246,514		246,514	U
46	0605230F	Ground Based Strategic Deterrent	04					75,166		75,166	U
47	0105921F	Service Support to STRATCOM - Space Activities	04	2,685							U
48	0201184F	Counter Narco-Terrorism Program Office	04	510							U
49	0207110F	Next Generation Air Dominance	04		15,722		15,722	8,830		8,830	U
50	0207455F	Three Dimensional Long-Range Radar (3DELRR)	04	52,891	88,825		88,825	14,939		14,939	U
51	0305164F	NAVSTAR Global Positioning System (User Equipment) (SPACE)	04	123,081	156,221		156,221	142,288		142,288	U
52	0306250F	Cyber Operations Technology Development	04					81,732		81,732	U
Advanced Component Development & Prototypes				936,496	1,407,354		1,407,354	2,062,575		2,062,575	

R-1C1: FY 2016 President's Budget (Published Version of PB Position), as of January 28, 2015 at 07:27:29

UNCLASSIFIED

Department of the Air Force
 FY 2016 President's Budget
 Exhibit R-1 FY 2016 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

28 Jan 2015

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

Line No	Program Element Number	Item	Act	FY 2014 (Base & OCO)	FY 2015 Base Enacted	FY 2015 OCO Enacted	FY 2015 Total Enacted	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Sec
53	0603260F	Intelligence Advanced Development	05	977							U
54	0604233F	Specialized Undergraduate Flight Training	05	3,601	13,324		13,324				U
55	0604270F	Electronic Warfare Development	05	1,971	7,815		7,815	929		929	U
56	0604281F	Tactical Data Networks Enterprise	05	41,388	39,059		39,059	60,256		60,256	U
57	0604287F	Physical Security Equipment	05		3,926		3,926	5,973		5,973	U
58	0604329F	Small Diameter Bomb (SDB) - EMD	05	109,580	68,738		68,738	32,624		32,624	U
59	0604421F	Counterspace Systems	05	22,655	23,424		23,424	24,208		24,208	U
60	0604425F	Space Situation Awareness Systems	05	304,380	9,462		9,462	32,374		32,374	U
61	0604426F	Space Fence	05		200,082		200,082	243,909		243,909	U
62	0604429F	Airborne Electronic Attack	05	4,422	30,687		30,687	8,358		8,358	U
63	0604441F	Space Based Infrared System (SBIRS) High EMD	05	322,399	308,788		308,788	292,235		292,235	U
64	0604602F	Armament/Ordnance Development	05	13,661	29,112		29,112	40,154		40,154	U
65	0604604F	Submunitions	05	2,564	2,543		2,543	2,506		2,506	U
66	0604617F	Agile Combat Support	05	16,747	42,840		42,840	57,678		57,678	U
67	0604706F	Life Support Systems	05	7,069	14,854		14,854	8,187		8,187	U
68	0604735F	Combat Training Ranges	05	19,649	10,129		10,129	15,795		15,795	U
69	0604800F	F-35 - EMD	05	616,560	567,889		567,889	589,441		589,441	U
70	0604851F	Intercontinental Ballistic Missile - EMD	05	118,504							U
71	0604853F	Evolved Expendable Launch Vehicle Program (SPACE) - EMD	05	19,431	225,600		225,600	84,438		84,438	U

R-1C1: FY 2016 President's Budget (Published Version of PB Position), as of January 28, 2015 at 07:27:29

UNCLASSIFIED

Department of the Air Force
 FY 2016 President's Budget
 Exhibit R-1 FY 2016 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

28 Jan 2015

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

Line No	Program Element Number	Item	Act	FY 2014 (Base & OCO)	FY 2015 Base Enacted	FY 2015 OCO Enacted	FY 2015 Total Enacted	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Sec
72	0604932F	Long Range Standoff Weapon	05	5,000	3,438		3,438	36,643		36,643	U
73	0604933F	ICBM Fuze Modernization	05	76,553	59,826		59,826	142,551		142,551	U
74	0605213F	F-22 Modernization Increment 3.2B	05	88,268	173,647		173,647	140,640		140,640	U
75	0605214F	Ground Attack Weapons Fuze Development	05		5,332		5,332	3,598		3,598	U
76	0605221F	KC-46	05	1,505,476	786,437		786,437	602,364		602,364	U
77	0605223F	Advanced Pilot Training	05		8,201		8,201	11,395		11,395	U
78	0605229F	CSAR HH-60 Recapitalization	05	333,558	100,000		100,000	156,085		156,085	U
79	0605278F	HC/MC-130 Recap RDT&E	05	2,611	4,497		4,497				U
80	0605431F	Advanced EHF MILSATCOM (SPACE)	05	261,554	307,898		307,898	228,230		228,230	U
81	0605432F	Polar MILSATCOM (SPACE)	05	101,401	103,245		103,245	72,084		72,084	U
82	0605433F	Wideband Global SATCOM (SPACE)	05	11,674	31,328		31,328	56,343		56,343	U
83	0605458F	Air & Space Ops Center 10.2 RDT&E	05		85,938		85,938	47,629		47,629	U
84	0605931F	B-2 Defensive Management System	05	248,971	98,768		98,768	271,961		271,961	U
85	0101125F	Nuclear Weapons Modernization	05	33,000	168,357		168,357	212,121		212,121	U
86	0207171F	F-15 EPAWSS	05					186,481		186,481	U
87	0207701F	Full Combat Mission Training	05	4,663	8,831		8,831	18,082		18,082	U
88	0305176F	Combat Survivor Evader Locator	05					993		993	U
89	0307581F	NextGen JSTARS	05		73,088		73,088	44,343		44,343	U
90	0401318F	CV-22	05	46,705							U
91	0401319F	Presidential Aircraft Replacement (PAR)	05					102,620		102,620	U

R-1C1: FY 2016 President's Budget (Published Version of PB Position), as of January 28, 2015 at 07:27:29

UNCLASSIFIED

Department of the Air Force
 FY 2016 President's Budget
 Exhibit R-1 FY 2016 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

28 Jan 2015

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

Line No	Program Element Number	Item	Act	FY 2014 (Base & OCO)	FY 2015 Base Enacted	FY 2015 OCO Enacted	FY 2015 Total Enacted	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Se
92	0701212F	Automated Test Systems	05					14,563		14,563	U
		System Development & Demonstration		4,344,992	3,617,103		3,617,103	3,847,791		3,847,791	
93	0604256F	Threat Simulator Development	06	14,786	24,418		24,418	23,844		23,844	U
94	0604759F	Major T&E Investment	06	31,423	47,232		47,232	68,302		68,302	U
95	0605101F	RAND Project Air Force	06	32,956	30,443		30,443	34,918		34,918	U
96	0605502F	Small Business Innovation Research	06	304,921							U
97	0605712F	Initial Operational Test & Evaluation	06	6,972	10,266		10,266	10,476		10,476	U
98	0605807F	Test and Evaluation Support	06	724,958	689,509		689,509	673,908		673,908	U
99	0605860F	Rocket Systems Launch Program (SPACE)	06	12,755	34,364		34,364	21,858		21,858	U
100	0605864F	Space Test Program (STP)	06	11,642	21,161		21,161	28,228		28,228	U
101	0605976F	Facilities Restoration and Modernization - Test and Evaluation Support	06	44,160	46,955		46,955	40,518		40,518	U
102	0605978F	Facilities Sustainment - Test and Evaluation Support	06	29,743	32,965		32,965	27,895		27,895	U
103	0606017F	Requirements Analysis and Maturation	06		16,350		16,350	16,507		16,507	U
104	0606116F	Space Test and Training Range Development	06		19,512		19,512	18,997		18,997	U
105	0606323F	Multi-Service Systems Engineering Initiative	06	6,682							U
106	0606392F	Space and Missile Center (SMC) Civilian Workforce	06	172,257	176,727		176,727	185,305		185,305	U
107	0308602F	ENTEPRISE INFORMATION SERVICES (EIS)	06		4,938		4,938	4,841		4,841	U

R-1C1: FY 2016 President's Budget (Published Version of PB Position), as of January 28, 2015 at 07:27:29

UNCLASSIFIED

Department of the Air Force
 FY 2016 President's Budget
 Exhibit R-1 FY 2016 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

28 Jan 2015

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

Line No	Program Element Number	Item	Act	FY 2014 (Base & OCO)	FY 2015 Base Enacted	FY 2015 OCO Enacted	FY 2015 Total Enacted	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Sec
108	0702806F	Acquisition and Management Support	06	20,525	18,644		18,644	15,357		15,357	U
109	0804731F	General Skill Training	06	304	1,425		1,425	1,315		1,315	U
110	0909999F	Financing for Cancelled Account Adjustments	06	527							U
111	1001004F	International Activities	06	3,785	3,790		3,790	2,315		2,315	U
		Management Support		1,418,396	1,178,699		1,178,699	1,174,584		1,174,584	
112	0603423F	Global Positioning System III - Operational Control Segment	07	361,381	299,060		299,060	350,232		350,232	U
113	0604233F	Specialized Undergraduate Flight Training	07					10,465		10,465	U
114	0604445F	Wide Area Surveillance	07	4,836	2,000		2,000	24,577		24,577	U
116	0604618F	Joint Direct Attack Munition	07		2,469		2,469				U
117	0605018F	AF Integrated Personnel and Pay System (AF-IPPS)	07	33,114	60,019		60,019	69,694		69,694	U
118	0605024F	Anti-Tamper Technology Executive Agency	07	25,733	34,815		34,815	26,718		26,718	U
119	0605278F	HC/MC-130 Recap RDT&E	07					10,807		10,807	U
121	0101113F	B-52 Squadrons	07	16,481	49,457		49,457	74,520		74,520	U
122	0101122F	Air-Launched Cruise Missile (ALCM)	07	983	450		450	451		451	U
123	0101126F	B-1B Squadrons	07	14,355	4,353		4,353	2,245		2,245	U
124	0101127F	B-2 Squadrons	07	80,225	116,580		116,580	108,183		108,183	U
125	0101213F	Minuteman Squadrons	07		139,109		139,109	178,929		178,929	U
126	0101313F	Strat War Planning System - USSTRATCOM	07	32,077	32,014		32,014	28,481		28,481	U

R-1C1: FY 2016 President's Budget (Published Version of PB Position), as of January 28, 2015 at 07:27:29

UNCLASSIFIED

Department of the Air Force
 FY 2016 President's Budget
 Exhibit R-1 FY 2016 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

28 Jan 2015

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

Line No	Program Element Number	Item	Act	FY 2014 (Base & OCO)	FY 2015 Base Enacted	FY 2015 OCO Enacted	FY 2015 Total Enacted	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Se c
127	0101314F	Night Fist - USSTRATCOM	07					87		87	U
128	0101316F	Worldwide Joint Strategic Communications	07					5,315		5,315	U
130	0102326F	Region/Sector Operation Control Center Modernization Program	07	1,570	1,272		1,272				U
131	0105921F	Service Support to STRATCOM - Space Activities	07		3,134		3,134	8,090		8,090	U
132	0205219F	MQ-9 UAV	07	104,000	148,598		148,598	123,439		123,439	U
133	0205671F	Joint Counter RCIED Electronic Warfare	07						300	300	U
134	0207131F	A-10 Squadrons	07	11,435							U
135	0207133F	F-16 Squadrons	07	109,887	133,105		133,105	148,297		148,297	U
136	0207134F	F-15E Squadrons	07	227,098	241,969		241,969	179,283		179,283	U
137	0207136F	Manned Destructive Suppression	07	10,724	14,831		14,831	14,860		14,860	U
138	0207138F	F-22A Squadrons	07	266,431	146,299		146,299	262,552		262,552	U
139	0207142F	F-35 Squadrons	07	3,000	40,092		40,092	115,395		115,395	U
140	0207161F	Tactical AIM Missiles	07	12,376	29,739		29,739	43,360		43,360	U
141	0207163F	Advanced Medium Range Air-to-Air Missile (AMRAAM)	07	68,564	82,195		82,195	46,160		46,160	U
142	0207171F	F-15 EPAWSS	07		38,944		38,944				U
143	0207224F	Combat Rescue and Recovery	07	2,582	5,095		5,095	412		412	U
144	0207227F	Combat Rescue - Pararescue	07	350	883		883	657		657	U
145	0207247F	AF TENCAP	07	114,816	5,812		5,812	31,428		31,428	U
146	0207249F	Precision Attack Systems Procurement	07	2,000	1,081		1,081	1,105		1,105	U

R-1C1: FY 2016 President's Budget (Published Version of PB Position), as of January 28, 2015 at 07:27:29

UNCLASSIFIED

Department of the Air Force
 FY 2016 President's Budget
 Exhibit R-1 FY 2016 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

28 Jan 2015

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

Line No	Program Element Number	Item	Act	FY 2014 (Base & OCO)	FY 2015 Base Enacted	FY 2015 OCO Enacted	FY 2015 Total Enacted	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Se c
147	0207253F	Compass Call	07	10,745	14,315		14,315	14,249		14,249	U
148	0207268F	Aircraft Engine Component Improvement Program	07	86,467	94,177		94,177	103,942		103,942	U
149	0207325F	Joint Air-to-Surface Standoff Missile (JASSM)	07	6,202	12,897		12,897	12,793		12,793	U
150	0207410F	Air & Space Operations Center (AOC)	07	18,332	25,662		25,662	21,193		21,193	U
151	0207412F	Control and Reporting Center (CRC)	07	6,435				559		559	U
152	0207417F	Airborne Warning and Control System (AWACS)	07	143,404	180,804		180,804	161,812		161,812	U
153	0207418F	Tactical Airborne Control Systems	07	719	3,754		3,754	6,001		6,001	U
155	0207431F	Combat Air Intelligence System Activities	07	5,780	7,891		7,891	7,793		7,793	U
156	0207444F	Tactical Air Control Party-Mod	07	8,816	5,850		5,850	12,465		12,465	U
157	0207448F	C2ISR Tactical Data Link	07	1,373	1,744		1,744	1,681		1,681	U
158	0207449F	Command and Control (C2) Constellation	07	7,418							U
159	0207452F	DCAPES	07	9,769	821		821	16,796		16,796	U
160	0207581F	Joint Surveillance/Target Attack Radar System (JSTARS)	07	27,308							U
161	0207590F	Seek Eagle	07	22,046	23,844		23,844	21,564		21,564	U
162	0207601F	USAF Modeling and Simulation	07	8,439	12,034		12,034	24,994		24,994	U
163	0207605F	Wargaming and Simulation Centers	07	5,326	5,956		5,956	6,035		6,035	U
164	0207697F	Distributed Training and Exercises	07	3,600	3,357		3,357	4,358		4,358	U
165	0208006F	Mission Planning Systems	07	55,432	60,679		60,679	55,835		55,835	U

R-1C1: FY 2016 President's Budget (Published Version of PB Position), as of January 28, 2015 at 07:27:29

UNCLASSIFIED

Department of the Air Force
 FY 2016 President's Budget
 Exhibit R-1 FY 2016 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

28 Jan 2015

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

Line No	Program Element Number	Item	Act	FY 2014 (Base & OCO)	FY 2015 Base Enacted	FY 2015 OCO Enacted	FY 2015 Total Enacted	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Se c
166	0208059F	Cyber Command Activities	07	36,824	67,057		67,057				U
167	0208087F	AF Offensive Cyberspace Operations	07	13,610	13,355		13,355	12,874		12,874	U
168	0208088F	AF Defensive Cyberspace Operations	07	5,853	5,576		5,576	7,681		7,681	U
171	0301017F	Global Sensor Integrated on Network (GSIN)	07					5,974		5,974	U
177	0301400F	Space Superiority Intelligence	07	10,697	10,697		10,697	13,815		13,815	U
178	0302015F	E-4B National Airborne Operations Center (NAOC)	07	12,816	25,852		25,852	80,360		80,360	U
179	0303001F	Family of Advanced BLoS Terminals (FAB-T)	07					3,907		3,907	U
180	0303131F	Minimum Essential Emergency Communications Network (MEECN)	07	18,981	80,882		80,882	75,062		75,062	U
181	0303140F	Information Systems Security Program	07	61,687	69,727		69,727	46,599		46,599	U
182	0303141F	Global Combat Support System	07	725	692		692				U
183	0303142F	Global Force Management - Data Initiative	07					2,470		2,470	U
184	0303601F	MILSATCOM Terminals	07	125,924	54,678		54,678				U
186	0304260F	Airborne SIGINT Enterprise	07	83,972	74,072		74,072	112,775		112,775	U
189	0305099F	Global Air Traffic Management (GATM)	07	4,027	4,157		4,157	4,235		4,235	U
190	0305103F	Cyber Security Initiative	07	1,979							U
191	0305105F	DoD Cyber Crime Center	07	279							U
192	0305110F	Satellite Control Network (SPACE)	07	34,488	20,806		20,806	7,879		7,879	U
193	0305111F	Weather Service	07	19,950	20,102		20,102	29,955		29,955	U

R-1C1: FY 2016 President's Budget (Published Version of PB Position), as of January 28, 2015 at 07:27:29

UNCLASSIFIED

Department of the Air Force
 FY 2016 President's Budget
 Exhibit R-1 FY 2016 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

28 Jan 2015

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

Line No	Program Element Number	Item	Act	FY 2014 (Base & OCO)	FY 2015 Base Enacted	FY 2015 OCO Enacted	FY 2015 Total Enacted	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Sec
194	0305114F	Air Traffic Control, Approach, and Landing System (ATCALs)	07	31,920	26,087		26,087	21,485		21,485	U
195	0305116F	Aerial Targets	07	10,616	8,639		8,639	2,515		2,515	U
198	0305128F	Security and Investigative Activities	07	189				472		472	U
199	0305145F	Arms Control Implementation	07	1,430	13,222		13,222	12,137		12,137	U
200	0305146F	Defense Joint Counterintelligence Activities	07	10	40		40	361		361	U
203	0305173F	Space and Missile Test and Evaluation Center	07	3,584	3,674		3,674	3,162		3,162	U
204	0305174F	Space Innovation, Integration and Rapid Technology Development	07	2,409	2,071		2,071	1,543		1,543	U
205	0305179F	Integrated Broadcast Service (IBS)	07	6,954	8,592		8,592	7,860		7,860	U
206	0305182F	Spacelift Range System (SPACE)	07	11,909	13,318		13,318	6,902		6,902	U
207	0305202F	Dragon U-2	07	13,700	5,511		5,511	34,471		34,471	U
208	0305205F	Endurance Unmanned Aerial Vehicles	07	1,000	20,000		20,000				U
209	0305206F	Airborne Reconnaissance Systems	07	47,059	37,652		37,652	50,154		50,154	U
210	0305207F	Manned Reconnaissance Systems	07	13,491	13,516		13,516	13,245		13,245	U
211	0305208F	Distributed Common Ground/Surface Systems	07	6,321	26,994		26,994	22,784		22,784	U
212	0305219F	MQ-1 Predator A UAV	07	760				716		716	U
213	0305220F	RQ-4 UAV	07	120,180	241,828		241,828	208,053		208,053	U
214	0305221F	Network-Centric Collaborative Targeting	07	7,413	11,096		11,096	21,587		21,587	U

R-1C1: FY 2016 President's Budget (Published Version of PB Position), as of January 28, 2015 at 07:27:29

UNCLASSIFIED

Department of the Air Force
 FY 2016 President's Budget
 Exhibit R-1 FY 2016 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

28 Jan 2015

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

Line No	Program Element Number	Item	Act	FY 2014 (Base & OCO)	FY 2015 Base Enacted	FY 2015 OCO Enacted	FY 2015 Total Enacted	FY 2016 Base	FY 2016 OCO	FY 2016 Total	S e c
215	0305236F	Common Data Link Executive Agent (CDL EA)	07	33,896	32,015		32,015	43,986		43,986	U
216	0305238F	NATO AGS	07	221,589	232,851		232,851	197,486		197,486	U
217	0305240F	Support to DCGS Enterprise	07	19,309	17,118		17,118	28,434		28,434	U
218	0305265F	GPS III Space Segment	07	195,950	211,907		211,907	180,902		180,902	U
219	0305600F	International Intelligence Technology and Architectures	07		2,270		2,270				U
220	0305614F	JSPOC Mission System	07	56,523	73,779		73,779	81,911		81,911	U
221	0305881F	Rapid Cyber Acquisition	07	2,151	4,102		4,102	3,149		3,149	U
222	0305913F	NUDET Detection System (SPACE)	07	42,506	20,405		20,405	14,447		14,447	U
223	0305940F	Space Situation Awareness Operations	07	11,911	11,408		11,408	20,077		20,077	U
224	0306250F	Cyber Operations Technology Development	07		4,938		4,938				U
225	0308699F	Shared Early Warning (SEW)	07	1,060	1,157		1,157	853		853	U
226	0401115F	C-130 Airlift Squadron	07	47,700				33,962		33,962	U
227	0401119F	C-5 Airlift Squadrons (IF)	07	48,617	38,773		38,773	42,864		42,864	U
228	0401130F	C-17 Aircraft (IF)	07	97,134	82,948		82,948	54,807		54,807	U
229	0401132F	C-130J Program	07	22,443	26,715		26,715	31,010		31,010	U
230	0401134F	Large Aircraft IR Countermeasures (LAIRCM)	07	4,116	4,672		4,672	6,802		6,802	U
231	0401219F	KC-10s	07		2,714		2,714	1,799		1,799	U
232	0401314F	Operational Support Airlift	07	38,538	27,784		27,784	48,453		48,453	U
233	0401318F	CV-22	07		38,719		38,719	36,576		36,576	U

R-1C1: FY 2016 President's Budget (Published Version of PB Position), as of January 28, 2015 at 07:27:29

UNCLASSIFIED

Department of the Air Force
 FY 2016 President's Budget
 Exhibit R-1 FY 2016 President's Budget
 Total Obligational Authority
 (Dollars in Thousands)

28 Jan 2015

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

Line No	Program Element Number	Item	Act	FY 2014 (Base & OCO)	FY 2015 Base Enacted	FY 2015 OCO Enacted	FY 2015 Total Enacted	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Sec
234	0401319F	Presidential Aircraft Replacement (PAR)	07		11,006		11,006				U
235	0408011F	Special Tactics / Combat Control	07	6,021	8,312		8,312	7,963		7,963	U
236	0702207F	Depot Maintenance (Non-IF)	07	1,605	1,407		1,407	1,525		1,525	U
237	0708610F	Logistics Information Technology (LOGIT)	07	58,532	62,894		62,894	112,676		112,676	U
238	0708611F	Support Systems Development	07	10,573	15,712		15,712	12,657		12,657	U
239	0804743F	Other Flight Training	07	1,347	987		987	1,836		1,836	U
240	0808716F	Other Personnel Activities	07	65	126		126	121		121	U
241	0901202F	Joint Personnel Recovery Agency	07	1,046	2,603		2,603	5,911		5,911	U
242	0901218F	Civilian Compensation Program	07	2,296	1,589		1,589	3,604		3,604	U
243	0901220F	Personnel Administration	07	8,322	5,026		5,026	4,598		4,598	U
244	0901226F	Air Force Studies and Analysis Agency	07	760	1,394		1,394	1,103		1,103	U
245	0901279F	Facilities Operation - Administrative	07	632	3,798		3,798				U
246	0901538F	Financial Management Information Systems Development	07	105,420	102,215		102,215	101,840		101,840	U
9999	9999999999	Classified Programs		11,181,658	11,127,211	14,706	11,141,917	12,780,142	16,800	12,796,942	U
		Operational Systems Development		14,864,106	15,145,608		15,160,314	17,010,339	17,100	17,027,439	
Total Research, Development, Test & Eval, AF				23,823,510	23,630,474		23,645,180	26,473,669	17,100	26,490,769	

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

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

Budget Activity 01: Basic Research
Appropriation 3600: Research, Development, Test & Evaluation, Air Force

.....

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
1	01	0601102F	Defense Research Sciences.....	Volume 1 - 1
2	01	0601103F	University Research Initiatives.....	Volume 1 - 17
3	01	0601108F	High Energy Laser Research Initiatives.....	Volume 1 - 21

Budget Activity 02: Applied Research
Appropriation 3600: Research, Development, Test & Evaluation, Air Force

.....

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
4	02	0602102F	Materials.....	Volume 1 - 25
5	02	0602201F	Aerospace Vehicle Technologies.....	Volume 1 - 41
6	02	0602202F	Human Effectiveness Applied Research.....	Volume 1 - 57
7	02	0602203F	Aerospace Propulsion.....	Volume 1 - 73
8	02	0602204F	Aerospace Sensors.....	Volume 1 - 97
9	02	0602601F	Space Technology.....	Volume 1 - 117

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Budget Activity 02: Applied Research
Appropriation 3600: Research, Development, Test & Evaluation, Air Force

.....

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
10	02	0602602F	Conventional Munitions.....	Volume 1 - 135
11	02	0602605F	Directed Energy Technology.....	Volume 1 - 143
12	02	0602788F	Dominant Information Sciences and Methods.....	Volume 1 - 151
13	02	0602890F	High Energy Laser Research.....	Volume 1 - 173

Budget Activity 03: Advanced Technology Development (ATD)
Appropriation 3600: Research, Development, Test & Evaluation, Air Force

.....

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
14	03	0603112F	Advanced Materials for Weapon Systems.....	Volume 1 - 179
15	03	0603199F	Sustainment Science and Technology (S&T).....	Volume 1 - 191
16	03	0603203F	Advanced Aerospace Sensors.....	Volume 1 - 195
17	03	0603211F	Aerospace Technology Dev/Demo.....	Volume 1 - 205
18	03	0603216F	Aerospace Propulsion and Power Technology.....	Volume 1 - 215
19	03	0603270F	Electronic Combat Technology.....	Volume 1 - 233
20	03	0603401F	Advanced Spacecraft Technology.....	Volume 1 - 243
21	03	0603444F	Maui Space Surveillance System (MSSS).....	Volume 1 - 263

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Budget Activity 03: Advanced Technology Development (ATD)
Appropriation 3600: Research, Development, Test & Evaluation, Air Force

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
22	03	0603456F	Human Effectiveness Advanced Technology Development.....	Volume 1 - 267
23	03	0603601F	Conventional Weapons Technology.....	Volume 1 - 281
24	03	0603605F	Advanced Weapons Technology.....	Volume 1 - 285
25	03	0603680F	Manufacturing Technology Program.....	Volume 1 - 291
26	03	0603788F	Battlespace Knowledge Development and Demonstration.....	Volume 1 - 295

Budget Activity 04: Advanced Component Development & Prototypes (ACD&P)
Appropriation 3600: Research, Development, Test & Evaluation, Air Force

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
27	04	0603260F	Intelligence Advanced Development.....	Volume 2 - 1
28	04	0603287F	Physical Security Equipment.....	Volume 2 - 43
29	04	0603438F	Space Control Technology.....	Volume 2 - 51
30	04	0603742F	Combat Identification Technology.....	Volume 2 - 67
31	04	0603790F	NATO Research and Development.....	Volume 2 - 89
32	04	0603791F	International Space Cooperative R&D.....	Volume 2 - 95
33	04	0603830F	Space Security and Defense Program.....	Volume 2 - 101

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Budget Activity 04: Advanced Component Development & Prototypes (ACD&P)
Appropriation 3600: Research, Development, Test & Evaluation, Air Force

.....

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
34	04	0603851F	Intercontinental Ballistic Missile - Dem/Val.....	Volume 2 - 115
35	04	0603859F	Pollution Prevention - Dem/Val.....	Volume 2 - 155
36	04	0604015F	Long Range Strike.....	Volume 2 - 163
37	04	0604317F	Technology Transfer.....	Volume 2 - 169
38	04	0604327F	Hard and Deeply Buried Target Defeat System (HDBTDS) Program.....	Volume 2 - 175
39	04	0604337F	Requirements Analysis and Maturation.....	Volume 2 - 183
40	04	0604422F	Weather System Follow-on.....	Volume 2 - 191
41	04	0604458F	Air & Space Ops Center.....	Volume 2 - 201
42	04	0604618F	Joint Direct Attack Munition.....	Volume 2 - 209
43	04	0604635F	Ground Attack Weapons Fuze Development.....	Volume 2 - 215
44	04	0604857F	Operationally Responsive Space.....	Volume 2 - 223
45	04	0604858F	Tech Transition Program.....	Volume 2 - 233
46	04	0605230F	Ground Based Strategic Deterrent.....	Volume 2 - 241
47	04	0105921F	Service Support to STRATCOM - Space Activities.....	Volume 2 - 249
48	04	0201184F	Counter Narco-Terrorism Program Office.....	Volume 2 - 257
49	04	0207110F	Next Generation Air Dominance.....	Volume 2 - 263
50	04	0207455F	Three Dimensional Long-Range Radar (3DELRR).....	Volume 2 - 271
51	04	0305164F	NAVSTAR Global Positioning System (User Equipment) (SPACE).....	Volume 2 - 279

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Budget Activity 04: Advanced Component Development & Prototypes (ACD&P)
Appropriation 3600: Research, Development, Test & Evaluation, Air Force

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
52	04	0306250F	Cyber Operations Technology Development.....	Volume 2 - 289

Budget Activity 05: System Development & Demonstration (SDD)
Appropriation 3600: Research, Development, Test & Evaluation, Air Force

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
53	05	0603260F	Intelligence Advanced Development.....	Volume 2 - 299
54	05	0604233F	Specialized Undergraduate Flight Training.....	Volume 2 - 307
55	05	0604270F	Electronic Warfare Development.....	Volume 2 - 331
56	05	0604281F	Tactical Data Networks Enterprise.....	Volume 2 - 339
57	05	0604287F	Physical Security Equipment.....	Volume 2 - 359
58	05	0604329F	Small Diameter Bomb (SDB) - EMD.....	Volume 2 - 369
59	05	0604421F	Counterspace Systems.....	Volume 2 - 379
60	05	0604425F	Space Situation Awareness Systems.....	Volume 2 - 397
61	05	0604426F	Space Fence.....	Volume 2 - 425
62	05	0604429F	Airborne Electronic Attack.....	Volume 2 - 433
63	05	0604441F	Space Based Infrared System (SBIRS) High EMD.....	Volume 2 - 441

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Budget Activity 05: System Development & Demonstration (SDD)
Appropriation 3600: Research, Development, Test & Evaluation, Air Force

.....

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
64	05	0604602F	Armament/Ordnance Development.....	Volume 2 - 467
65	05	0604604F	Submunitions.....	Volume 2 - 491
66	05	0604617F	Agile Combat Support.....	Volume 2 - 501
67	05	0604706F	Life Support Systems.....	Volume 2 - 515
68	05	0604735F	Combat Training Ranges.....	Volume 2 - 525
69	05	0604800F	F-35 - EMD.....	Volume 2 - 535
70	05	0604851F	Intercontinental Ballistic Missile - EMD.....	Volume 2 - 565
71	05	0604853F	Evolved Expendable Launch Vehicle Program (SPACE) - EMD.....	Volume 2 - 585
72	05	0604932F	Long Range Standoff Weapon.....	Volume 2 - 599
73	05	0604933F	ICBM Fuze Modernization.....	Volume 2 - 607
74	05	0605213F	F-22 Modernization Increment 3.2B.....	Volume 2 - 617
75	05	0605214F	Ground Attack Weapons Fuze Development.....	Volume 2 - 627
76	05	0605221F	KC-46.....	Volume 2 - 635
77	05	0605223F	Advanced Pilot Training.....	Volume 2 - 647
78	05	0605229F	CSAR HH-60 Recapitalization.....	Volume 2 - 661
79	05	0605278F	HC/MC-130 Recap RDT&E.....	Volume 2 - 669
80	05	0605431F	Advanced EHF MILSATCOM (SPACE).....	Volume 2 - 677
81	05	0605432F	Polar MILSATCOM (SPACE).....	Volume 2 - 695

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Budget Activity 05: System Development & Demonstration (SDD)
Appropriation 3600: Research, Development, Test & Evaluation, Air Force

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
82	05	0605433F	WIDEBAND GLOBAL SATCOM (SPACE).....	Volume 2 - 703
83	05	0605458F	Air & Space Ops Center 10.2 RDT&E.....	Volume 2 - 717
84	05	0605931F	B-2 Defensive Management System.....	Volume 2 - 725
85	05	0101125F	Nuclear Weapons Modernization.....	Volume 2 - 733
86	05	0207171F	F-15 EPAWSS.....	Volume 2 - 743
87	05	0207701F	Full Combat Mission Training.....	Volume 2 - 751
88	05	0305176F	Combat Survivor Evader Locator.....	Volume 2 - 765
89	05	0307581F	NextGen JSTARS.....	Volume 2 - 771
90	05	0401318F	CV-22.....	Volume 2 - 779
91	05	0401319F	Presidential Aircraft Replacement (PAR).....	Volume 2 - 787
92	05	0701212F	Automated Test Systems.....	Volume 2 - 795

Budget Activity 06: RDT&E Management Support
Appropriation 3600: Research, Development, Test & Evaluation, Air Force

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
93	06	0604256F	Threat Simulator Development.....	Volume 2 - 803

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Budget Activity 06: RDT&E Management Support
Appropriation 3600: Research, Development, Test & Evaluation, Air Force

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
94	06	0604759F	Major T&E Investment.....	Volume 2 - 813
95	06	0605101F	RAND Project Air Force.....	Volume 2 - 825
96	06	0605502F	Small Business Innovation Research.....	Volume 2 - 831
97	06	0605712F	Initial Operational Test & Evaluation.....	Volume 2 - 833
98	06	0605807F	Test and Evaluation Support.....	Volume 2 - 841
99	06	0605860F	Rocket Systems Launch Program (SPACE).....	Volume 2 - 847
100	06	0605864F	Space Test Program (STP).....	Volume 2 - 851
101	06	0605976F	Facilities Restoration and Modernization - Test and Evaluation Support.....	Volume 2 - 855
102	06	0605978F	Facilities Sustainment - Test and Evaluation Support.....	Volume 2 - 861
103	06	0606017F	Requirements Analysis and Maturation.....	Volume 2 - 865
104	06	0606116F	Space Test and Training Range Development.....	Volume 2 - 873
105	06	0606323F	Multi-Service Systems Engineering Initiative.....	Volume 2 - 877
106	06	0606392F	Space and Missile Center (SMC) Civilian Workforce.....	Volume 2 - 881
107	06	0308602F	ENTEPRISE INFORMATION SERVICES (EIS).....	Volume 2 - 883
108	06	0702806F	Acquisition and Management Support.....	Volume 2 - 889
109	06	0804731F	General Skill Training.....	Volume 2 - 899
110	06	0909999F	Financing for Cancelled Account Adjustments.....	Volume 2 - 901
111	06	1001004F	International Activities.....	Volume 2 - 903

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

***Budget Activity 07: Operational Systems Development
Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

.....

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
112	07	0603423F	Global Positioning System III - Operational Control Segment.....	Volume 3a - 1
113	07	0604233F	Specialized Undergraduate Flight Training.....	Volume 3a - 19
114	07	0604445F	Wide Area Surveillance.....	Volume 3a - 47
116	07	0604618F	Joint Direct Attack Munition.....	Volume 3a - 53
117	07	0605018F	AF Integrated Personnel and Pay System (AF-IPPS).....	Volume 3a - 61
118	07	0605024F	Anti-Tamper Technology Executive Agency.....	Volume 3a - 69
119	07	0605278F	HC/MC-130 Recap RDT&E.....	Volume 3a - 77
121	07	0101113F	B-52 SQUADRONS.....	Volume 3a - 85
122	07	0101122F	Air-Launched Cruise Missile (ALCM).....	Volume 3a - 115
123	07	0101126F	B-1B Squadrons.....	Volume 3a - 123
124	07	0101127F	B-2 SQUADRONS.....	Volume 3a - 131
125	07	0101213F	Minuteman Squadrons.....	Volume 3a - 149
126	07	0101313F	Strat War Planning System - USSTRATCOM.....	Volume 3a - 205
127	07	0101314F	Night Fist - USSTRATCOM.....	Volume 3a - 221
128	07	0101316F	Worldwide Joint Strategic Communications.....	Volume 3a - 227
130	07	0102326F	Region/Sector Operation Control Center Modernization Program.....	Volume 3a - 235

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

***Budget Activity 07: Operational Systems Development
Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

.....

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
131	07	0105921F	Service Support to STRATCOM - Space Activities.....	Volume 3a - 243
132	07	0205219F	MQ-9 UAV.....	Volume 3a - 263
133	07	0205671F	Joint Counter RCIED Electronic Warfare.....	Volume 3a - 281
134	07	0207131F	A-10 Squadrons.....	Volume 3a - 287
135	07	0207133F	F-16 Squadrons.....	Volume 3a - 293
136	07	0207134F	F-15E Squadrons.....	Volume 3a - 305
137	07	0207136F	Manned Destructive Suppression.....	Volume 3a - 323
138	07	0207138F	F-22A Squadrons.....	Volume 3a - 331
139	07	0207142F	F-35 Squadrons.....	Volume 3a - 353
140	07	0207161F	Tactical AIM Missiles.....	Volume 3a - 373
141	07	0207163F	Advanced Medium Range Air-to-Air Missile (AMRAAM).....	Volume 3a - 383
142	07	0207171F	F-15 EPAWSS.....	Volume 3a - 393
143	07	0207224F	Combat Rescue and Recovery.....	Volume 3a - 401
144	07	0207227F	Combat Rescue - Pararescue.....	Volume 3a - 407
145	07	0207247F	AF TENCAP.....	Volume 3a - 413
146	07	0207249F	Precision Attack Systems Procurement.....	Volume 3a - 423
147	07	0207253F	Compass Call.....	Volume 3a - 429
148	07	0207268F	Aircraft Engine Component Improvement Program.....	Volume 3a - 435

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

***Budget Activity 07: Operational Systems Development
Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
149	07	0207325F	Joint Air-to-Surface Standoff Missile (JASSM).....	Volume 3a - 451
150	07	0207410F	Air & Space Operations Center (AOC).....	Volume 3a - 467
151	07	0207412F	Control and Reporting Center (CRC).....	Volume 3a - 493
152	07	0207417F	Airborne Warning and Control System (AWACS).....	Volume 3a - 501
153	07	0207418F	Tactical Airborne Control Systems.....	Volume 3a - 519
155	07	0207431F	Combat Air Intelligence System Activities.....	Volume 3a - 527
156	07	0207444F	Tactical Air Control Party-Mod.....	Volume 3a - 541
157	07	0207448F	C2ISR Tactical Data Link.....	Volume 3a - 549
158	07	0207449F	Command and Control (C2) Constellation.....	Volume 3a - 559
159	07	0207452F	DCAPES.....	Volume 3a - 569
160	07	0207581F	Joint Surveillance/Target Attack Radar System (JSTARS).....	Volume 3a - 579
161	07	0207590F	Seek Eagle.....	Volume 3a - 587
162	07	0207601F	USAF Modeling and Simulation.....	Volume 3a - 597
163	07	0207605F	Wargaming and Simulation Centers.....	Volume 3a - 611
164	07	0207697F	Distributed Training and Exercises.....	Volume 3a - 621
165	07	0208006F	Mission Planning Systems.....	Volume 3a - 629
166	07	0208059F	CYBER COMMAND ACTIVITIES.....	Volume 3a - 653
167	07	0208087F	AF Offensive Cyberspace Operations.....	Volume 3a - 661

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

***Budget Activity 07: Operational Systems Development
Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

.....

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
168	07	0208088F	AF Defensive Cyberspace Operations.....	Volume 3a - 671
171	07	0301017F	Global Sensor Integrated on Network (GSIN).....	Volume 3b - 1
177	07	0301400F	Space Superiority Intelligence.....	Volume 3b - 9
178	07	0302015F	E-4B National Airborne Operations Center (NAOC).....	Volume 3b - 17
179	07	0303001F	Family of Advanced BLoS Terminals (FAB-T).....	Volume 3b - 27
180	07	0303131F	Minimum Essential Emergency Communications Network (MEECN).....	Volume 3b - 35
181	07	0303140F	Information Systems Security Program.....	Volume 3b - 49
182	07	0303141F	Global Combat Support System.....	Volume 3b - 77
183	07	0303142F	Global Force Management - Data Initiative.....	Volume 3b - 89
184	07	0303601F	MILSATCOM Terminals.....	Volume 3b - 95
186	07	0304260F	Airborne SIGINT Enterprise.....	Volume 3b - 103
189	07	0305099F	Global Air Traffic Management (GATM).....	Volume 3b - 137
190	07	0305103F	Cyber Security Initiative.....	Volume 3b - 147
191	07	0305105F	DoD Cyber Crime Center.....	Volume 3b - 153
192	07	0305110F	Satellite Control Network (SPACE).....	Volume 3b - 159
193	07	0305111F	Weather Service.....	Volume 3b - 167
194	07	0305114F	Air Traffic Control, Approach, and Landing System (ATCAL).....	Volume 3b - 179
195	07	0305116F	Aerial Targets.....	Volume 3b - 193

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

***Budget Activity 07: Operational Systems Development
Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

.....

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
198	07	0305128F	Security and Investigative Activities.....	Volume 3b - 209
199	07	0305145F	Arms Control Implementation.....	Volume 3b - 217
200	07	0305146F	Defense Joint Counterintelligence Activities.....	Volume 3b - 225
203	07	0305173F	Space and Missile Test and Evaluation Center.....	Volume 3b - 231
204	07	0305174F	Space Innovation, Integration and Rapid Technology Development.....	Volume 3b - 239
205	07	0305179F	Integrated Broadcast Service (IBS).....	Volume 3b - 247
206	07	0305182F	Spacelift Range System (SPACE).....	Volume 3b - 255
207	07	0305202F	Dragon U-2.....	Volume 3b - 263
208	07	0305205F	Endurance Unmanned Aerial Vehicles.....	Volume 3b - 271
209	07	0305206F	Airborne Reconnaissance Systems.....	Volume 3b - 283
210	07	0305207F	Manned Reconnaissance Systems.....	Volume 3b - 331
211	07	0305208F	Distributed Common Ground/Surface Systems.....	Volume 3b - 339
212	07	0305219F	MQ-1 Predator A UAV.....	Volume 3b - 355
213	07	0305220F	RQ-4 UAV.....	Volume 3b - 363
214	07	0305221F	Network-Centric Collaborative Targeting.....	Volume 3b - 403
215	07	0305236F	Common Data Link Executive Agent (CDL EA).....	Volume 3b - 419
216	07	0305238F	NATO AGS.....	Volume 3b - 429
217	07	0305240F	Support to DCGS Enterprise.....	Volume 3b - 439

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

***Budget Activity 07: Operational Systems Development
Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

.....

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
218	07	0305265F	GPS III Space Segment.....	Volume 3b - 453
219	07	0305600F	International Intelligence Technology and Architectures.....	Volume 3b - 467
220	07	0305614F	JSPOC Mission System.....	Volume 3b - 473
221	07	0305881F	Rapid Cyber Acquisition.....	Volume 3b - 493
222	07	0305913F	NUDET Detection System (SPACE).....	Volume 3b - 501
223	07	0305940F	Space Situation Awareness Operations.....	Volume 3b - 509
224	07	0306250F	Cyber Operations Technology Development.....	Volume 3b - 517
225	07	0308699F	Shared Early Warning (SEW).....	Volume 3b - 523
226	07	0401115F	C-130 Airlift Squadron.....	Volume 3b - 533
227	07	0401119F	C-5 Airlift Squadrons (IF).....	Volume 3b - 547
228	07	0401130F	C-17 Aircraft (IF).....	Volume 3b - 563
229	07	0401132F	C-130J Program.....	Volume 3b - 575
230	07	0401134F	Large Aircraft IR Countermeasures (LAIRCM).....	Volume 3b - 591
231	07	0401219F	KC-10s.....	Volume 3b - 601
232	07	0401314F	Operational Support Airlift.....	Volume 3b - 607
233	07	0401318F	CV-22.....	Volume 3b - 621
234	07	0401319F	Presidential Aircraft Replacement (PAR).....	Volume 3b - 633
235	07	0408011F	Special Tactics / Combat Control.....	Volume 3b - 641

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

***Budget Activity 07: Operational Systems Development
Appropriation 3600: Research, Development, Test & Evaluation, Air Force***

.....

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
236	07	0702207F	Depot Maintenance (Non-IF).....	Volume 3b - 651
237	07	0708610F	Logistics Information Technology (LOGIT).....	Volume 3b - 661
238	07	0708611F	Support Systems Development.....	Volume 3b - 709
239	07	0804743F	Other Flight Training.....	Volume 3b - 723
240	07	0808716F	Other Personnel Activities.....	Volume 3b - 735
241	07	0901202F	Joint Personnel Recovery Agency.....	Volume 3b - 741
242	07	0901218F	Civilian Compensation Program.....	Volume 3b - 749
243	07	0901220F	Personnel Administration.....	Volume 3b - 755
244	07	0901226F	Air Force Studies and Analysis Agency.....	Volume 3b - 763
245	07	0901279F	Facilities Operation - Administrative.....	Volume 3b - 769
246	07	0901538F	Financial Management Information Systems Development.....	Volume 3b - 775

UNCLASSIFIED

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

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

Program Element Title	Program Element Number	Line Item	Budget Activity	Page
A-10 Squadrons	0207131F	134	07.....	Volume 3a - 287
AF Defensive Cyberspace Operations	0208088F	168	07.....	Volume 3a - 671
AF Integrated Personnel and Pay System (AF-IPPS)	0605018F	117	07.....	Volume 3a - 61
AF Offensive Cyberspace Operations	0208087F	167	07.....	Volume 3a - 661
AF TENCAP	0207247F	145	07.....	Volume 3a - 413
Acquisition and Management Support	0702806F	108	06.....	Volume 2 - 889
Advanced Aerospace Sensors	0603203F	16	03.....	Volume 1 - 195
Advanced EHF MILSATCOM (SPACE)	0605431F	80	05.....	Volume 2 - 677
Advanced Materials for Weapon Systems	0603112F	14	03.....	Volume 1 - 179
Advanced Medium Range Air-to-Air Missile (AMRAAM)	0207163F	141	07.....	Volume 3a - 383
Advanced Pilot Training	0605223F	77	05.....	Volume 2 - 647
Advanced Spacecraft Technology	0603401F	20	03.....	Volume 1 - 243
Advanced Weapons Technology	0603605F	24	03.....	Volume 1 - 285
Aerial Targets	0305116F	195	07.....	Volume 3b - 193
Aerospace Propulsion	0602203F	7	02.....	Volume 1 - 73
Aerospace Propulsion and Power Technology	0603216F	18	03.....	Volume 1 - 215
Aerospace Sensors	0602204F	8	02.....	Volume 1 - 97

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Program Element Title	Program Element Number	Line Item	Budget Activity	Page
Aerospace Technology Dev/Demo	0603211F	17	03.....	Volume 1 - 205
Aerospace Vehicle Technologies	0602201F	5	02.....	Volume 1 - 41
Agile Combat Support	0604617F	66	05.....	Volume 2 - 501
Air & Space Operations Center (AOC)	0207410F	150	07.....	Volume 3a - 467
Air & Space Ops Center	0604458F	41	04.....	Volume 2 - 201
Air & Space Ops Center 10.2 RDT&E	0605458F	83	05.....	Volume 2 - 717
Air Force Studies and Analysis Agency	0901226F	244	07.....	Volume 3b - 763
Air Traffic Control, Approach, and Landing System (ATCALs)	0305114F	194	07.....	Volume 3b - 179
Air-Launched Cruise Missile (ALCM)	0101122F	122	07.....	Volume 3a - 115
Airborne Electronic Attack	0604429F	62	05.....	Volume 2 - 433
Airborne Reconnaissance Systems	0305206F	209	07.....	Volume 3b - 283
Airborne SIGINT Enterprise	0304260F	186	07.....	Volume 3b - 103
Airborne Warning and Control System (AWACS)	0207417F	152	07.....	Volume 3a - 501
Aircraft Engine Component Improvement Program	0207268F	148	07.....	Volume 3a - 435
Anti-Tamper Technology Executive Agency	0605024F	118	07.....	Volume 3a - 69
Armament/Ordnance Development	0604602F	64	05.....	Volume 2 - 467
Arms Control Implementation	0305145F	199	07.....	Volume 3b - 217
Automated Test Systems	0701212F	92	05.....	Volume 2 - 795
B-1B Squadrons	0101126F	123	07.....	Volume 3a - 123

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Program Element Title	Program Element Number	Line Item	Budget Activity	Page
B-2 Defensive Management System	0605931F	84	05.....	Volume 2 - 725
B-2 SQUADRONS	0101127F	124	07.....	Volume 3a - 131
B-52 SQUADRONS	0101113F	121	07.....	Volume 3a - 85
Battlespace Knowledge Development and Demonstration	0603788F	26	03.....	Volume 1 - 295
C-130 Airlift Squadron	0401115F	226	07.....	Volume 3b - 533
C-130J Program	0401132F	229	07.....	Volume 3b - 575
C-17 Aircraft (IF)	0401130F	228	07.....	Volume 3b - 563
C-5 Airlift Squadrons (IF)	0401119F	227	07.....	Volume 3b - 547
C2ISR Tactical Data Link	0207448F	157	07.....	Volume 3a - 549
CSAR HH-60 Recapitalization	0605229F	78	05.....	Volume 2 - 661
CV-22	0401318F	90	05.....	Volume 2 - 779
CV-22	0401318F	233	07.....	Volume 3b - 621
CYBER COMMAND ACTIVITIES	0208059F	166	07.....	Volume 3a - 653
Civilian Compensation Program	0901218F	242	07.....	Volume 3b - 749
Combat Air Intelligence System Activities	0207431F	155	07.....	Volume 3a - 527
Combat Identification Technology	0603742F	30	04.....	Volume 2 - 67
Combat Rescue - Pararescue	0207227F	144	07.....	Volume 3a - 407
Combat Rescue and Recovery	0207224F	143	07.....	Volume 3a - 401
Combat Survivor Evader Locator	0305176F	88	05.....	Volume 2 - 765

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Program Element Title	Program Element Number	Line Item	Budget Activity	Page
Combat Training Ranges	0604735F	68	05.....	Volume 2 - 525
Command and Control (C2) Constellation	0207449F	158	07.....	Volume 3a - 559
Common Data Link Executive Agent (CDL EA)	0305236F	215	07.....	Volume 3b - 419
Compass Call	0207253F	147	07.....	Volume 3a - 429
Control and Reporting Center (CRC)	0207412F	151	07.....	Volume 3a - 493
Conventional Munitions	0602602F	10	02.....	Volume 1 - 135
Conventional Weapons Technology	0603601F	23	03.....	Volume 1 - 281
Counter Narco-Terrorism Program Office	0201184F	48	04.....	Volume 2 - 257
Counterspace Systems	0604421F	59	05.....	Volume 2 - 379
Cyber Operations Technology Development	0306250F	52	04.....	Volume 2 - 289
Cyber Operations Technology Development	0306250F	224	07.....	Volume 3b - 517
Cyber Security Initiative	0305103F	190	07.....	Volume 3b - 147
DCAPES	0207452F	159	07.....	Volume 3a - 569
Defense Joint Counterintelligence Activities	0305146F	200	07.....	Volume 3b - 225
Defense Research Sciences	0601102F	1	01.....	Volume 1 - 1
Depot Maintenance (Non-IF)	0702207F	236	07.....	Volume 3b - 651
Directed Energy Technology	0602605F	11	02.....	Volume 1 - 143
Distributed Common Ground/Surface Systems	0305208F	211	07.....	Volume 3b - 339
Distributed Training and Exercises	0207697F	164	07.....	Volume 3a - 621

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Program Element Title	Program Element Number	Line Item	Budget Activity	Page
DoD Cyber Crime Center	0305105F	191	07.....	Volume 3b - 153
Dominant Information Sciences and Methods	0602788F	12	02.....	Volume 1 - 151
Dragon U-2	0305202F	207	07.....	Volume 3b - 263
E-4B National Airborne Operations Center (NAOC)	0302015F	178	07.....	Volume 3b - 17
ENTEPRISE INFORMATION SERVICES (EIS)	0308602F	107	06.....	Volume 2 - 883
Electronic Combat Technology	0603270F	19	03.....	Volume 1 - 233
Electronic Warfare Development	0604270F	55	05.....	Volume 2 - 331
Endurance Unmanned Aerial Vehicles	0305205F	208	07.....	Volume 3b - 271
Evolved Expendable Launch Vehicle Program (SPACE) - EMD	0604853F	71	05.....	Volume 2 - 585
F-15 EPAWSS	0207171F	86	05.....	Volume 2 - 743
F-15 EPAWSS	0207171F	142	07.....	Volume 3a - 393
F-15E Squadrons	0207134F	136	07.....	Volume 3a - 305
F-16 Squadrons	0207133F	135	07.....	Volume 3a - 293
F-22 Modernization Increment 3.2B	0605213F	74	05.....	Volume 2 - 617
F-22A Squadrons	0207138F	138	07.....	Volume 3a - 331
F-35 - EMD	0604800F	69	05.....	Volume 2 - 535
F-35 Squadrons	0207142F	139	07.....	Volume 3a - 353
Facilities Operation - Administrative	0901279F	245	07.....	Volume 3b - 769
Facilities Restoration and Modernization - Test and Evaluation Support	0605976F	101	06.....	Volume 2 - 855

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Program Element Title	Program Element Number	Line Item	Budget Activity	Page
Facilities Sustainment - Test and Evaluation Support	0605978F	102	06.....	Volume 2 - 861
Family of Advanced BLoS Terminals (FAB-T)	0303001F	179	07.....	Volume 3b - 27
Financial Management Information Systems Development	0901538F	246	07.....	Volume 3b - 775
Financing for Cancelled Account Adjustments	0909999F	110	06.....	Volume 2 - 901
Full Combat Mission Training	0207701F	87	05.....	Volume 2 - 751
GPS III Space Segment	0305265F	218	07.....	Volume 3b - 453
General Skill Training	0804731F	109	06.....	Volume 2 - 899
Global Air Traffic Management (GATM)	0305099F	189	07.....	Volume 3b - 137
Global Combat Support System	0303141F	182	07.....	Volume 3b - 77
Global Force Management - Data Initiative	0303142F	183	07.....	Volume 3b - 89
Global Positioning System III - Operational Control Segment	0603423F	112	07.....	Volume 3a - 1
Global Sensor Integrated on Network (GSIN)	0301017F	171	07.....	Volume 3b - 1
Ground Attack Weapons Fuze Development	0604635F	43	04.....	Volume 2 - 215
Ground Attack Weapons Fuze Development	0605214F	75	05.....	Volume 2 - 627
Ground Based Strategic Deterrent	0605230F	46	04.....	Volume 2 - 241
HC/MC-130 Recap RDT&E	0605278F	79	05.....	Volume 2 - 669
HC/MC-130 Recap RDT&E	0605278F	119	07.....	Volume 3a - 77
Hard and Deeply Buried Target Defeat System (HDBTDS) Program	0604327F	38	04.....	Volume 2 - 175
High Energy Laser Research	0602890F	13	02.....	Volume 1 - 173

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Program Element Title	Program Element Number	Line Item	Budget Activity	Page
High Energy Laser Research Initiatives	0601108F	3	01.....	Volume 1 - 21
Human Effectiveness Advanced Technology Development	0603456F	22	03.....	Volume 1 - 267
Human Effectiveness Applied Research	0602202F	6	02.....	Volume 1 - 57
ICBM Fuze Modernization	0604933F	73	05.....	Volume 2 - 607
Information Systems Security Program	0303140F	181	07.....	Volume 3b - 49
Initial Operational Test & Evaluation	0605712F	97	06.....	Volume 2 - 833
Integrated Broadcast Service (IBS)	0305179F	205	07.....	Volume 3b - 247
Intelligence Advanced Development	0603260F	27	04.....	Volume 2 - 1
Intelligence Advanced Development	0603260F	53	05.....	Volume 2 - 299
Intercontinental Ballistic Missile - Dem/Val	0603851F	34	04.....	Volume 2 - 115
Intercontinental Ballistic Missile - EMD	0604851F	70	05.....	Volume 2 - 565
International Activities	1001004F	111	06.....	Volume 2 - 903
International Intelligence Technology and Architectures	0305600F	219	07.....	Volume 3b - 467
International Space Cooperative R&D	0603791F	32	04.....	Volume 2 - 95
JSPOC Mission System	0305614F	220	07.....	Volume 3b - 473
Joint Air-to-Surface Standoff Missile (JASSM)	0207325F	149	07.....	Volume 3a - 451
Joint Counter RCIED Electronic Warfare	0205671F	133	07.....	Volume 3a - 281
Joint Direct Attack Munition	0604618F	42	04.....	Volume 2 - 209
Joint Direct Attack Munition	0604618F	116	07.....	Volume 3a - 53

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Program Element Title	Program Element Number	Line Item	Budget Activity	Page
Joint Personnel Recovery Agency	0901202F	241	07.....	Volume 3b - 741
Joint Surveillance/Target Attack Radar System (JSTARS)	0207581F	160	07.....	Volume 3a - 579
KC-10s	0401219F	231	07.....	Volume 3b - 601
KC-46	0605221F	76	05.....	Volume 2 - 635
Large Aircraft IR Countermeasures (LAIRCM)	0401134F	230	07.....	Volume 3b - 591
Life Support Systems	0604706F	67	05.....	Volume 2 - 515
Logistics Information Technology (LOGIT)	0708610F	237	07.....	Volume 3b - 661
Long Range Standoff Weapon	0604932F	72	05.....	Volume 2 - 599
Long Range Strike	0604015F	36	04.....	Volume 2 - 163
MILSATCOM Terminals	0303601F	184	07.....	Volume 3b - 95
MQ-1 Predator A UAV	0305219F	212	07.....	Volume 3b - 355
MQ-9 UAV	0205219F	132	07.....	Volume 3a - 263
Major T&E Investment	0604759F	94	06.....	Volume 2 - 813
Manned Destructive Suppression	0207136F	137	07.....	Volume 3a - 323
Manned Reconnaissance Systems	0305207F	210	07.....	Volume 3b - 331
Manufacturing Technology Program	0603680F	25	03.....	Volume 1 - 291
Materials	0602102F	4	02.....	Volume 1 - 25
Maui Space Surveillance System (MSSS)	0603444F	21	03.....	Volume 1 - 263
Minimum Essential Emergency Communications Network (MEECN)	0303131F	180	07.....	Volume 3b - 35

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Program Element Title	Program Element Number	Line Item	Budget Activity	Page
Minuteman Squadrons	0101213F	125	07.....	Volume 3a - 149
Mission Planning Systems	0208006F	165	07.....	Volume 3a - 629
Multi-Service Systems Engineering Initiative	0606323F	105	06.....	Volume 2 - 877
NATO AGS	0305238F	216	07.....	Volume 3b - 429
NATO Research and Development	0603790F	31	04.....	Volume 2 - 89
NAVSTAR Global Positioning System (User Equipment) (SPACE)	0305164F	51	04.....	Volume 2 - 279
NUDET Detection System (SPACE)	0305913F	222	07.....	Volume 3b - 501
Network-Centric Collaborative Targeting	0305221F	214	07.....	Volume 3b - 403
Next Generation Air Dominance	0207110F	49	04.....	Volume 2 - 263
NextGen JSTARS	0307581F	89	05.....	Volume 2 - 771
Night Fist - USSTRATCOM	0101314F	127	07.....	Volume 3a - 221
Nuclear Weapons Modernization	0101125F	85	05.....	Volume 2 - 733
Operational Support Airlift	0401314F	232	07.....	Volume 3b - 607
Operationally Responsive Space	0604857F	44	04.....	Volume 2 - 223
Other Flight Training	0804743F	239	07.....	Volume 3b - 723
Other Personnel Activities	0808716F	240	07.....	Volume 3b - 735
Personnel Administration	0901220F	243	07.....	Volume 3b - 755
Physical Security Equipment	0603287F	28	04.....	Volume 2 - 43
Physical Security Equipment	0604287F	57	05.....	Volume 2 - 359

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Program Element Title	Program Element Number	Line Item	Budget Activity	Page
Polar MILSATCOM (SPACE)	0605432F	81	05.....	Volume 2 - 695
Pollution Prevention - Dem/Val	0603859F	35	04.....	Volume 2 - 155
Precision Attack Systems Procurement	0207249F	146	07.....	Volume 3a - 423
Presidential Aircraft Replacement (PAR)	0401319F	91	05.....	Volume 2 - 787
Presidential Aircraft Replacement (PAR)	0401319F	234	07.....	Volume 3b - 633
RAND Project Air Force	0605101F	95	06.....	Volume 2 - 825
RQ-4 UAV	0305220F	213	07.....	Volume 3b - 363
Rapid Cyber Acquisition	0305881F	221	07.....	Volume 3b - 493
Region/Sector Operation Control Center Modernization Program	0102326F	130	07.....	Volume 3a - 235
Requirements Analysis and Maturation	0604337F	39	04.....	Volume 2 - 183
Requirements Analysis and Maturation	0606017F	103	06.....	Volume 2 - 865
Rocket Systems Launch Program (SPACE)	0605860F	99	06.....	Volume 2 - 847
Satellite Control Network (SPACE)	0305110F	192	07.....	Volume 3b - 159
Security and Investigative Activities	0305128F	198	07.....	Volume 3b - 209
Seek Eagle	0207590F	161	07.....	Volume 3a - 587
Service Support to STRATCOM - Space Activities	0105921F	47	04.....	Volume 2 - 249
Service Support to STRATCOM - Space Activities	0105921F	131	07.....	Volume 3a - 243
Shared Early Warning (SEW)	0308699F	225	07.....	Volume 3b - 523
Small Business Innovation Research	0605502F	96	06.....	Volume 2 - 831

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Program Element Title	Program Element Number	Line Item	Budget Activity	Page
Small Diameter Bomb (SDB) - EMD	0604329F	58	05.....	Volume 2 - 369
Space Based Infrared System (SBIRS) High EMD	0604441F	63	05.....	Volume 2 - 441
Space Control Technology	0603438F	29	04.....	Volume 2 - 51
Space Fence	0604426F	61	05.....	Volume 2 - 425
Space Innovation, Integration and Rapid Technology Development	0305174F	204	07.....	Volume 3b - 239
Space Security and Defense Program	0603830F	33	04.....	Volume 2 - 101
Space Situation Awareness Operations	0305940F	223	07.....	Volume 3b - 509
Space Situation Awareness Systems	0604425F	60	05.....	Volume 2 - 397
Space Superiority Intelligence	0301400F	177	07.....	Volume 3b - 9
Space Technology	0602601F	9	02.....	Volume 1 - 117
Space Test Program (STP)	0605864F	100	06.....	Volume 2 - 851
Space Test and Training Range Development	0606116F	104	06.....	Volume 2 - 873
Space and Missile Center (SMC) Civilian Workforce	0606392F	106	06.....	Volume 2 - 881
Space and Missile Test and Evaluation Center	0305173F	203	07.....	Volume 3b - 231
Spacelift Range System (SPACE)	0305182F	206	07.....	Volume 3b - 255
Special Tactics / Combat Control	0408011F	235	07.....	Volume 3b - 641
Specialized Undergraduate Flight Training	0604233F	54	05.....	Volume 2 - 307
Specialized Undergraduate Flight Training	0604233F	113	07.....	Volume 3a - 19
Strat War Planning System - USSTRATCOM	0101313F	126	07.....	Volume 3a - 205

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Program Element Title	Program Element Number	Line Item	Budget Activity	Page
Submunitions	0604604F	65	05.....	Volume 2 - 491
Support Systems Development	0708611F	238	07.....	Volume 3b - 709
Support to DCGS Enterprise	0305240F	217	07.....	Volume 3b - 439
Sustainment Science and Technology (S&T)	0603199F	15	03.....	Volume 1 - 191
Tactical AIM Missiles	0207161F	140	07.....	Volume 3a - 373
Tactical Air Control Party-Mod	0207444F	156	07.....	Volume 3a - 541
Tactical Airborne Control Systems	0207418F	153	07.....	Volume 3a - 519
Tactical Data Networks Enterprise	0604281F	56	05.....	Volume 2 - 339
Tech Transition Program	0604858F	45	04.....	Volume 2 - 233
Technology Transfer	0604317F	37	04.....	Volume 2 - 169
Test and Evaluation Support	0605807F	98	06.....	Volume 2 - 841
Threat Simulator Development	0604256F	93	06.....	Volume 2 - 803
Three Dimensional Long-Range Radar (3DELRR)	0207455F	50	04.....	Volume 2 - 271
USAF Modeling and Simulation	0207601F	162	07.....	Volume 3a - 597
University Research Initiatives	0601103F	2	01.....	Volume 1 - 17
WIDEBAND GLOBAL SATCOM (SPACE)	0605433F	82	05.....	Volume 2 - 703
Wargaming and Simulation Centers	0207605F	163	07.....	Volume 3a - 611
Weather Service	0305111F	193	07.....	Volume 3b - 167
Weather System Follow-on	0604422F	40	04.....	Volume 2 - 191

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Program Element Title	Program Element Number	Line Item	Budget Activity	Page
Wide Area Surveillance	0604445F	114	07.....	Volume 3a - 47
Worldwide Joint Strategic Communications	0101316F	128	07.....	Volume 3a - 227

UNCLASSIFIED

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

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

*Budget Activity 04: Advanced Component Development & Prototypes (ACD&P)
Appropriation 3600: Research, Development, Test & Evaluation, Air Force*

.....

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
27	04	0603260F	Intelligence Advanced Development.....	Volume 2 - 1
28	04	0603287F	Physical Security Equipment.....	Volume 2 - 43
29	04	0603438F	Space Control Technology.....	Volume 2 - 51
30	04	0603742F	Combat Identification Technology.....	Volume 2 - 67
31	04	0603790F	NATO Research and Development.....	Volume 2 - 89
32	04	0603791F	International Space Cooperative R&D.....	Volume 2 - 95
33	04	0603830F	Space Security and Defense Program.....	Volume 2 - 101
34	04	0603851F	Intercontinental Ballistic Missile - Dem/Val.....	Volume 2 - 115
35	04	0603859F	Pollution Prevention - Dem/Val.....	Volume 2 - 155
36	04	0604015F	Long Range Strike.....	Volume 2 - 163
37	04	0604317F	Technology Transfer.....	Volume 2 - 169
38	04	0604327F	Hard and Deeply Buried Target Defeat System (HDBTDS) Program.....	Volume 2 - 175
39	04	0604337F	Requirements Analysis and Maturation.....	Volume 2 - 183
40	04	0604422F	Weather System Follow-on.....	Volume 2 - 191
41	04	0604458F	Air & Space Ops Center.....	Volume 2 - 201

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Budget Activity 04: Advanced Component Development & Prototypes (ACD&P)
Appropriation 3600: Research, Development, Test & Evaluation, Air Force

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
42	04	0604618F	Joint Direct Attack Munition.....	Volume 2 - 209
43	04	0604635F	Ground Attack Weapons Fuze Development.....	Volume 2 - 215
44	04	0604857F	Operationally Responsive Space.....	Volume 2 - 223
45	04	0604858F	Tech Transition Program.....	Volume 2 - 233
46	04	0605230F	Ground Based Strategic Deterrent.....	Volume 2 - 241
47	04	0105921F	Service Support to STRATCOM - Space Activities.....	Volume 2 - 249
48	04	0201184F	Counter Narco-Terrorism Program Office.....	Volume 2 - 257
49	04	0207110F	Next Generation Air Dominance.....	Volume 2 - 263
50	04	0207455F	Three Dimensional Long-Range Radar (3DELRR).....	Volume 2 - 271
51	04	0305164F	NAVSTAR Global Positioning System (User Equipment) (SPACE).....	Volume 2 - 279
52	04	0306250F	Cyber Operations Technology Development.....	Volume 2 - 289

Budget Activity 05: System Development & Demonstration (SDD)
Appropriation 3600: Research, Development, Test & Evaluation, Air Force

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
53	05	0603260F	Intelligence Advanced Development.....	Volume 2 - 299

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Budget Activity 05: System Development & Demonstration (SDD)
Appropriation 3600: Research, Development, Test & Evaluation, Air Force

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
54	05	0604233F	Specialized Undergraduate Flight Training.....	Volume 2 - 307
55	05	0604270F	Electronic Warfare Development.....	Volume 2 - 331
56	05	0604281F	Tactical Data Networks Enterprise.....	Volume 2 - 339
57	05	0604287F	Physical Security Equipment.....	Volume 2 - 359
58	05	0604329F	Small Diameter Bomb (SDB) - EMD.....	Volume 2 - 369
59	05	0604421F	Counterspace Systems.....	Volume 2 - 379
60	05	0604425F	Space Situation Awareness Systems.....	Volume 2 - 397
61	05	0604426F	Space Fence.....	Volume 2 - 425
62	05	0604429F	Airborne Electronic Attack.....	Volume 2 - 433
63	05	0604441F	Space Based Infrared System (SBIRS) High EMD.....	Volume 2 - 441
64	05	0604602F	Armament/Ordnance Development.....	Volume 2 - 467
65	05	0604604F	Submunitions.....	Volume 2 - 491
66	05	0604617F	Agile Combat Support.....	Volume 2 - 501
67	05	0604706F	Life Support Systems.....	Volume 2 - 515
68	05	0604735F	Combat Training Ranges.....	Volume 2 - 525
69	05	0604800F	F-35 - EMD.....	Volume 2 - 535
70	05	0604851F	Intercontinental Ballistic Missile - EMD.....	Volume 2 - 565
71	05	0604853F	Evolved Expendable Launch Vehicle Program (SPACE) - EMD.....	Volume 2 - 585

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Budget Activity 05: System Development & Demonstration (SDD)
Appropriation 3600: Research, Development, Test & Evaluation, Air Force

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
72	05	0604932F	Long Range Standoff Weapon.....	Volume 2 - 599
73	05	0604933F	ICBM Fuze Modernization.....	Volume 2 - 607
74	05	0605213F	F-22 Modernization Increment 3.2B.....	Volume 2 - 617
75	05	0605214F	Ground Attack Weapons Fuze Development.....	Volume 2 - 627
76	05	0605221F	KC-46.....	Volume 2 - 635
77	05	0605223F	Advanced Pilot Training.....	Volume 2 - 647
78	05	0605229F	CSAR HH-60 Recapitalization.....	Volume 2 - 661
79	05	0605278F	HC/MC-130 Recap RDT&E.....	Volume 2 - 669
80	05	0605431F	Advanced EHF MILSATCOM (SPACE).....	Volume 2 - 677
81	05	0605432F	Polar MILSATCOM (SPACE).....	Volume 2 - 695
82	05	0605433F	WIDEBAND GLOBAL SATCOM (SPACE).....	Volume 2 - 703
83	05	0605458F	Air & Space Ops Center 10.2 RDT&E.....	Volume 2 - 717
84	05	0605931F	B-2 Defensive Management System.....	Volume 2 - 725
85	05	0101125F	Nuclear Weapons Modernization.....	Volume 2 - 733
86	05	0207171F	F-15 EPAWSS.....	Volume 2 - 743
87	05	0207701F	Full Combat Mission Training.....	Volume 2 - 751
88	05	0305176F	Combat Survivor Evader Locator.....	Volume 2 - 765
89	05	0307581F	NextGen JSTARS.....	Volume 2 - 771

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Budget Activity 05: System Development & Demonstration (SDD)
Appropriation 3600: Research, Development, Test & Evaluation, Air Force

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
90	05	0401318F	CV-22.....	Volume 2 - 779
91	05	0401319F	Presidential Aircraft Replacement (PAR).....	Volume 2 - 787
92	05	0701212F	Automated Test Systems.....	Volume 2 - 795

Budget Activity 06: RDT&E Management Support
Appropriation 3600: Research, Development, Test & Evaluation, Air Force

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
93	06	0604256F	Threat Simulator Development.....	Volume 2 - 803
94	06	0604759F	Major T&E Investment.....	Volume 2 - 813
95	06	0605101F	RAND Project Air Force.....	Volume 2 - 825
96	06	0605502F	Small Business Innovation Research.....	Volume 2 - 831
97	06	0605712F	Initial Operational Test & Evaluation.....	Volume 2 - 833
98	06	0605807F	Test and Evaluation Support.....	Volume 2 - 841
99	06	0605860F	Rocket Systems Launch Program (SPACE).....	Volume 2 - 847
100	06	0605864F	Space Test Program (STP).....	Volume 2 - 851
101	06	0605976F	Facilities Restoration and Modernization - Test and Evaluation Support.....	Volume 2 - 855

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Budget Activity 06: RDT&E Management Support
Appropriation 3600: Research, Development, Test & Evaluation, Air Force

.....

Line Item	Budget Activity	Program Element Number	Program Element Title	Page
102	06	0605978F	Facilities Sustainment - Test and Evaluation Support.....	Volume 2 - 861
103	06	0606017F	Requirements Analysis and Maturation.....	Volume 2 - 865
104	06	0606116F	Space Test and Training Range Development.....	Volume 2 - 873
105	06	0606323F	Multi-Service Systems Engineering Initiative.....	Volume 2 - 877
106	06	0606392F	Space and Missile Center (SMC) Civilian Workforce.....	Volume 2 - 881
107	06	0308602F	ENTEPRISE INFORMATION SERVICES (EIS).....	Volume 2 - 883
108	06	0702806F	Acquisition and Management Support.....	Volume 2 - 889
109	06	0804731F	General Skill Training.....	Volume 2 - 899
110	06	0909999F	Financing for Cancelled Account Adjustments.....	Volume 2 - 901
111	06	1001004F	International Activities.....	Volume 2 - 903

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

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

Program Element Title	Program Element Number	Line Item	Budget Activity	Page
Acquisition and Management Support	0702806F	108	06.....	Volume 2 - 889
Advanced EHF MILSATCOM (SPACE)	0605431F	80	05.....	Volume 2 - 677
Advanced Pilot Training	0605223F	77	05.....	Volume 2 - 647
Agile Combat Support	0604617F	66	05.....	Volume 2 - 501
Air & Space Ops Center	0604458F	41	04.....	Volume 2 - 201
Air & Space Ops Center 10.2 RDT&E	0605458F	83	05.....	Volume 2 - 717
Airborne Electronic Attack	0604429F	62	05.....	Volume 2 - 433
Armament/Ordnance Development	0604602F	64	05.....	Volume 2 - 467
Automated Test Systems	0701212F	92	05.....	Volume 2 - 795
B-2 Defensive Management System	0605931F	84	05.....	Volume 2 - 725
CSAR HH-60 Recapitalization	0605229F	78	05.....	Volume 2 - 661
CV-22	0401318F	90	05.....	Volume 2 - 779
Combat Identification Technology	0603742F	30	04.....	Volume 2 - 67
Combat Survivor Evader Locator	0305176F	88	05.....	Volume 2 - 765
Combat Training Ranges	0604735F	68	05.....	Volume 2 - 525
Counter Narco-Terrorism Program Office	0201184F	48	04.....	Volume 2 - 257
Counterspace Systems	0604421F	59	05.....	Volume 2 - 379

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Program Element Title	Program Element Number	Line Item	Budget Activity	Page
Cyber Operations Technology Development	0306250F	52	04.....	Volume 2 - 289
ENTEPRISE INFORMATION SERVICES (EIS)	0308602F	107	06.....	Volume 2 - 883
Electronic Warfare Development	0604270F	55	05.....	Volume 2 - 331
Evolved Expendable Launch Vehicle Program (SPACE) - EMD	0604853F	71	05.....	Volume 2 - 585
F-15 EPAWSS	0207171F	86	05.....	Volume 2 - 743
F-22 Modernization Increment 3.2B	0605213F	74	05.....	Volume 2 - 617
F-35 - EMD	0604800F	69	05.....	Volume 2 - 535
Facilities Restoration and Modernization - Test and Evaluation Support	0605976F	101	06.....	Volume 2 - 855
Facilities Sustainment - Test and Evaluation Support	0605978F	102	06.....	Volume 2 - 861
Financing for Cancelled Account Adjustments	0909999F	110	06.....	Volume 2 - 901
Full Combat Mission Training	0207701F	87	05.....	Volume 2 - 751
General Skill Training	0804731F	109	06.....	Volume 2 - 899
Ground Attack Weapons Fuze Development	0604635F	43	04.....	Volume 2 - 215
Ground Attack Weapons Fuze Development	0605214F	75	05.....	Volume 2 - 627
Ground Based Strategic Deterrent	0605230F	46	04.....	Volume 2 - 241
HC/MC-130 Recap RDT&E	0605278F	79	05.....	Volume 2 - 669
Hard and Deeply Buried Target Defeat System (HDBTDS) Program	0604327F	38	04.....	Volume 2 - 175
ICBM Fuze Modernization	0604933F	73	05.....	Volume 2 - 607
Initial Operational Test & Evaluation	0605712F	97	06.....	Volume 2 - 833

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Program Element Title	Program Element Number	Line Item	Budget Activity	Page
Intelligence Advanced Development	0603260F	27	04.....	Volume 2 - 1
Intelligence Advanced Development	0603260F	53	05.....	Volume 2 - 299
Intercontinental Ballistic Missile - Dem/Val	0603851F	34	04.....	Volume 2 - 115
Intercontinental Ballistic Missile - EMD	0604851F	70	05.....	Volume 2 - 565
International Activities	1001004F	111	06.....	Volume 2 - 903
International Space Cooperative R&D	0603791F	32	04.....	Volume 2 - 95
Joint Direct Attack Munition	0604618F	42	04.....	Volume 2 - 209
KC-46	0605221F	76	05.....	Volume 2 - 635
Life Support Systems	0604706F	67	05.....	Volume 2 - 515
Long Range Standoff Weapon	0604932F	72	05.....	Volume 2 - 599
Long Range Strike	0604015F	36	04.....	Volume 2 - 163
Major T&E Investment	0604759F	94	06.....	Volume 2 - 813
Multi-Service Systems Engineering Initiative	0606323F	105	06.....	Volume 2 - 877
NATO Research and Development	0603790F	31	04.....	Volume 2 - 89
NAVSTAR Global Positioning System (User Equipment) (SPACE)	0305164F	51	04.....	Volume 2 - 279
Next Generation Air Dominance	0207110F	49	04.....	Volume 2 - 263
NextGen JSTARS	0307581F	89	05.....	Volume 2 - 771
Nuclear Weapons Modernization	0101125F	85	05.....	Volume 2 - 733
Operationally Responsive Space	0604857F	44	04.....	Volume 2 - 223

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Program Element Title	Program Element Number	Line Item	Budget Activity	Page
Physical Security Equipment	0603287F	28	04.....	Volume 2 - 43
Physical Security Equipment	0604287F	57	05.....	Volume 2 - 359
Polar MILSATCOM (SPACE)	0605432F	81	05.....	Volume 2 - 695
Pollution Prevention - Dem/Val	0603859F	35	04.....	Volume 2 - 155
Presidential Aircraft Replacement (PAR)	0401319F	91	05.....	Volume 2 - 787
RAND Project Air Force	0605101F	95	06.....	Volume 2 - 825
Requirements Analysis and Maturation	0604337F	39	04.....	Volume 2 - 183
Requirements Analysis and Maturation	0606017F	103	06.....	Volume 2 - 865
Rocket Systems Launch Program (SPACE)	0605860F	99	06.....	Volume 2 - 847
Service Support to STRATCOM - Space Activities	0105921F	47	04.....	Volume 2 - 249
Small Business Innovation Research	0605502F	96	06.....	Volume 2 - 831
Small Diameter Bomb (SDB) - EMD	0604329F	58	05.....	Volume 2 - 369
Space Based Infrared System (SBIRS) High EMD	0604441F	63	05.....	Volume 2 - 441
Space Control Technology	0603438F	29	04.....	Volume 2 - 51
Space Fence	0604426F	61	05.....	Volume 2 - 425
Space Security and Defense Program	0603830F	33	04.....	Volume 2 - 101
Space Situation Awareness Systems	0604425F	60	05.....	Volume 2 - 397
Space Test Program (STP)	0605864F	100	06.....	Volume 2 - 851
Space Test and Training Range Development	0606116F	104	06.....	Volume 2 - 873

UNCLASSIFIED

UNCLASSIFIED

Air Force • President's Budget Submission FY 2016 • RDT&E Program

Program Element Title	Program Element Number	Line Item	Budget Activity	Page
Space and Missile Center (SMC) Civilian Workforce	0606392F	106	06.....	Volume 2 - 881
Specialized Undergraduate Flight Training	0604233F	54	05.....	Volume 2 - 307
Submunitions	0604604F	65	05.....	Volume 2 - 491
Tactical Data Networks Enterprise	0604281F	56	05.....	Volume 2 - 339
Tech Transition Program	0604858F	45	04.....	Volume 2 - 233
Technology Transfer	0604317F	37	04.....	Volume 2 - 169
Test and Evaluation Support	0605807F	98	06.....	Volume 2 - 841
Threat Simulator Development	0604256F	93	06.....	Volume 2 - 803
Three Dimensional Long-Range Radar (3DELRR)	0207455F	50	04.....	Volume 2 - 271
WIDEBAND GLOBAL SATCOM (SPACE)	0605433F	82	05.....	Volume 2 - 703
Weather System Follow-on	0604422F	40	04.....	Volume 2 - 191

UNCLASSIFIED

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

**Fiscal Year (FY) 2016 President's Budget Submission
RDT&E Descriptive Summaries
Budget Activities
February 2015**

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 2016 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 2015 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.

UNCLASSIFIED

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

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

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

UNCLASSIFIED

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

PROGRAM ELEMENT COMPARISON SUMMARY

PROGRAM ELEMENT (BY BUDGET ACTIVITY)

Remarks

BUDGET ACTIVITY #1: BASIC RESEARCH (Volume 1)

None

BUDGET ACTIVITY #2: APPLIED RESEARCH (Volume 1)

None

BUDGET ACTIVITY #3: ADVANCED TECHNOLOGY DEVELOPMENT (Volume 1)

None

BUDGET ACTIVITY #4: ADVANCED COMPONENT DEVELOPMENT AND PROTOTYPE (Volume 2)

0306250F	CYBER OPERATIONS TECHNOLOGY DEVELOPMENT	In FY 2016, funding in PECs 0208059F and 0306250F, Project 676002 Cyber Systems Modernization, BA 07, was transferred to PE 0306250F, Cyber Operations Technology Development, Project 646008, US Cyber Command Technology Development, BA 04 in order to align efforts.
0603742F	COMBAT IDENTIFICATION TECHNOLOGY	In FY 2016, Project 642597 Non-cooperative Identification Subsystems includes new start efforts for Radio ID (RID).
0603790F	NATO RESEARCH AND DEVELOPMENT	In FY 2016, PE 0603791F, International Space Cooperative Research & Development, Project 645035, International Space Coop R&D, efforts were transferred to PE 0603790, NATO Research and Development, Project 64NATO, NATO Coop R&D, in order to consolidate international cooperative research and development activities.

UNCLASSIFIED

UNCLASSIFIED

PROGRAM ELEMENT COMPARISON SUMMARY

PROGRAM ELEMENT (BY BUDGET ACTIVITY)

0603791F	INTERNATIONAL SPACE COOPERATIVE R&D	In FY 2016, PE 0603791F, International Space Cooperative Research & Development, Project 645035, International Space Coop R&D, efforts were transferred to PE 0603790, NATO Research and Development, Project 64NATO, NATO Coop R&D, in order to consolidate international cooperative research and development activities.
0603859F	POLLUTION PREVENTION - DEM/VAL	In FY 2016, Project Number 644852 Pollution Prevention was terminated.
0605230F	GROUND BASED STRATEGIC DETERRENT	In FY 2016, PE 0605230F, Project 641025, Ground Based Strategic Deterrent (GBSD), efforts were transferred from the Solid Rocket Motor Modernization (SRMM) and Guidance Modernization Program (GMP) efforts in PE 0101213F, Project 672987, MM Ops Equipment

BUDGET ACTIVITY #5: SYSTEM DEVELOPMENT AND DEMONSTRATION (SDD) (Volume 2)

0207171F	F-15 EPAWSS	In FY 2016, PE 0207171F, F-15 EPAWSS, Project 676038 was transferred to PE 0207171F, F-15 EPAWSS, Project 657108 BA05 to align BA with stage of development.
0305176F	COMBAT SURVIVOR EVADER LOCATOR	In FY 2016, Project 654522 CSAR EMD, includes new start efforts for CSEL Crypto.
0401319F	PRESIDENTIAL AIRCRAFT REPLACEMENT (PAR)	In the FY 2016, PE 0401319 Presidential Aircraft Recap (PAR), Project 655250 Presidential Aircraft Recapitalization, was transferred to PE 0401319 Presidential Aircraft Recap (PAR), Project 655250 Presidential Aircraft Recapitalization, BA07 to align BA with stage of development.
0604233F	SPECIALIZED UNDERGRADUATE FLIGHT TRAINING	In FY 2016 PE 0604233F Specialized Undergraduate Flight Training, Project 654102 JPATS was transferred to BA07 to align activities for upgrades to fielded weapon system.
0604421F	COUNTERSPACE SYSTEMS	In FY 2016, Project 65A013 Bounty Hunter is a new start effort.

UNCLASSIFIED

PROGRAM ELEMENT COMPARISON SUMMARY

PROGRAM ELEMENT (BY BUDGET ACTIVITY)

0604706F	LIFE SUPPORT SYSTEMS	In FY 2016 project 65412A Life Support Systems New Start projects for Personal Radio Communications (PRC) and Aircrew Safety Improvements.
0604853F	EELVP (SPACE) - EMD	In FY 2016, Project 650006, Next Generation Rocket Engine, includes new start efforts for the Evolved Expendable Launch Vehicle program.
0605278F	HC/MC-130 RECAP RDT&E	In FY 2016, PE 0605278F, HC/MC-130 Recap RDTE, Project 655249 HC-130Recap, efforts were transferred to PE 0605278F, HC/MC-130 Recap RDTE, Project 655249, HC/MC-130 Recap, BA 07 as the program achieved full rate production.
0701212F	AUTOMATED TEST SYSTEMS	In FY 2016, Project 6506TE, Test and Evaluation Support Budget Authority, includes a new start effort for Automated Bomber Test Systems.

BUDGET ACTIVITY #6: RDT&E MANAGEMENT SUPPORT (Volume 2)

0606017F	REQUIREMENTS ANALYSIS AND MATURATION	In FY 2016, Project 666158, Integrated Simulation and Analysis includes new start efforts to improve organic Air Force analysis and assessment capabilities.
----------	--------------------------------------	--

BUDGET ACTIVITY #7: OPERATIONAL SYSTEMS DEVELOPMENT (Volume 3)

0101113F	B-52 SQUADRONS	In FY 2016, Project 675055, GPS-IU, includes new start effort for Global Positioning System (GPS)-Interface Unit (IU) Replacement. In FY 2016, Project 675039, B-52 System Improvements, includes new start effort(s) for potential engineering studies & analysis and test & evaluation.
0101127F	B-2 SQUADRONS	In FY 2016 Project 675345, B-2 Modernization, includes new start effort for B-2 strategic communication.

UNCLASSIFIED

PROGRAM ELEMENT COMPARISON SUMMARY

PROGRAM ELEMENT (BY BUDGET ACTIVITY)

0101213F	MINUTEMAN SQUADRONS	<p>In FY 2016, Project 672984, MM III Baseline Support, includes new start efforts for LGM-30G Cadmium Replacement Program (CaDRP) and LGM-30G Squadron Data Simulator (SDS).</p> <p>In FY 2016, Project 672985, MM Support Equip, the LGM-30G Payload Transporter Replacement (PTR) program was re-established and transferred from PE 0604851F, ICBM - EMD, Project 655037, Support Equipment, in order to consolidate ICBM efforts.</p> <p>In FY 2016, Project 672987, MM Ops Equipment, the two ongoing efforts will be transferred into PE 0605230F, Ground Based Strategic Deterrent (GBSD), Project 641025. The efforts being transferred are Guidance Modernization Program (GMP) and Solid Rocket Motor Modernization (SRMM).</p> <p>In FY 2016, Project 672985, MM Support Equip, includes a new start effort for LGM-30G Performance Assessment Data Systems Communications Equipment Interface Unit (PADS CEIU).</p>
0101313F	STRAT WAR PLANNING SYSTEM - USSTRATCOM	<p>In FY 2016, PE 0101313F, Strategic War Planning System, Project 675368, Global Sensor Integrated on Network, efforts were transferred to PE 0301017F, Global Sensor Integrated on Network, Project 675368, Global Sensor Integrated on Network, in order to provide improved transparency.</p>
0101316F	WORLDWIDE JOINT STRATEGIC COMMUNICATIONS	<p>In FY 2016, Project 671820, Strategic Automated Command and Control System (SACCS), includes a new start effort for SACCS Replacement.</p>
0105921F	SVC SPT TO STRATCOM - SPACE ACTIVITIES	<p>In FY 2016 Project 670373 DCIP and Project 67A011 Space Analysis and Application Development are new starts</p>
0207171F	F-15 EPAWSS	<p>In FY 2016, PE 0207171F, F-15 EPAWSS, Project 676038 was transferred to PE 0207171F, F-15 EPAWSS, Project 657108 BA05 to align BA with stage of development.</p>
0207224F	COMBAT RESCUE AND RECOVERY	<p>In FY 2016, Project 676016, Avionics Development and Integration will complete.</p>
0207412F	CONTROL AND REPORTING CENTER (CRC)	<p>In FY 2016, Project 67485L, Theater Air Control Sys Imp (TACSI), includes new start effort for JTIDS LINK 16 Terminal replacement.</p>

UNCLASSIFIED

UNCLASSIFIED

PROGRAM ELEMENT COMPARISON SUMMARY

PROGRAM ELEMENT (BY BUDGET ACTIVITY)

0207601F	USAF MODELING AND SIMULATION	In FY 2016, Project Number 674567, M&S Foundations includes new start efforts for simulations for systems engineering and test activities.
0208059F	CYBER COMMAND ACTIVITIES	In FY 2016, PE 0208059F, Cyber Command Activities, Project 676002, Cyber Systems Modernization, efforts were transferred to PE 0306250F, Cyber Operations Technology Development, Project 646008, US Cyber Command Technology Development, to consolidate all USCYBERCOM programs
0208088F	AF DEFENSIVE CYBERSPACE OPERATIONS	In FY 2016, this program element includes new start efforts for Cyberspace Vulnerability Assessment, Cyber Defense Analysis, and AFCERT activities.
0301017F	GLOBAL SENSOR INTEGRATED ON NETWORK (GSIN)	In FY 2016, PE 0101313F, (Strategic War Planning System), Project 675368, (Global Sensor Integrated on Network) efforts were transferred to PE 0301017F, (Global Sensor Integrated on Network), Project 675368, (Global Sensor Integrated on Network), in order to provide improved transparency.
0302015F	E-4B NAT AIRBORNE OPS CTR (NAOC)	In FY 2016, Project E-4B Recapitalization includes new start efforts for E-4B Aircraft Modernization.
0303001F	FAMILY OF ADVANCED BLOS TERMINALS (FAB-T)	In FY 2016, PE 0303001F Family of Advanced BLoS Terminals (FAB-T), Project 672490, Family of Advanced BLoS Terminals (FAB-T) efforts were transferred to PE 0303601F, MILSATCOM Terminals, Project 672490, Family of Advanced BLoS Terminals (FAB-T) in order to provide improved visibility.
0303131F	MIN ESSENT EMGNCY COMM NETWORK (MEECN)	In FY 2016, Project 676029, Global ASNT, includes a new start effort for Global ASNT Increment 2.
0303141F	GLOBAL COMBAT SUPPORT SYSTEM	In FY 2016, components of project number 675046, Systems Engineering & Integration, efforts were transferred from PE 0303141F, Global Combat Support Systems (GCSS) to PE 0303142F, Global Force Management - Data Initiative (GFM-DI) in order to provide better visibility.
0303142F	GLOBAL FORCE MGMT - DATA INITIATIVE	In FY 2016, components of project number 675046, Systems Engineering & Integration, efforts were transferred from PE 0303141F, Global Combat Support Systems (GCSS) to PE 0303142F, Global Force Management - Data Initiative (GFM-DI) in order to provide better visibility.

UNCLASSIFIED

PROGRAM ELEMENT COMPARISON SUMMARY

PROGRAM ELEMENT (BY BUDGET ACTIVITY)

0303601F	MILSATCOM TERMINALS	In FY 2016, PE 0303601F, MILSATCOM Terminals, Project 672490, Family of Advanced Beyond Line-of-Sight Terminals (FAB-T) was transferred to PE 0303001F, FAB-T, Project 672490 FAB-T for improved visibility of ACAT I programs.
0304260F	AIRBORNE SIGINT ENTERPRISE	In FY 2016, PE 0304260F, Airborne SIGINT Enterprise, Project 675181, High Altitude SIGINT Development - High Altitude efforts are transferred to PE 0304260F, Airborne SIGINT Enterprise, Project 675183, Common Development (Airborne SIGINT Development - Common Development) to better align efforts.
0305206F	AIRBORNE RECONNAISSANCE SYSTEMS	<p>In FY 2016, PE 0305220F, RQ-4, Project 675148, Common Airborne Sense and Avoid (C-ABSAA), efforts transferred to PE 0305206F, Airborne Reconnaissance Systems, Project 675148, Common Airborne Sense and Avoid (C-ABSAA), in order to provide greater visibility into this capability and prepare for expanded applications.</p> <p>In FY 2016, PE 0305208F, Distributed Common Ground Station (DCGS), Project 676025, Data Compression, efforts transferred to PE 0305206F, Airborne Reconnaissance Systems, Project 676025, Data Compression, in order to provide greater visibility into this capability.</p>
0305208F	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	In FY 2016, PE 0305208F, Distributed Common Ground Station (DCGS), Project 676025, Data Compression, efforts transferred to PE 0305206F, Airborne Reconnaissance Systems, Project 676025, Data Compression, in order to provide greater visibility into this capability.
0305220F	RQ-4 UAV	In FY 2016, PE 0305220F, RQ-4, Project 675148, Common-Airborne Sense & Avoid (C-ABSAA), transferred to PE 0305206F, Airborne Reconnaissance Systems, Project 675148. This transfer will provide greater visibility into this capability and prepares for expanded applications by making the capability program and platform agnostic.
0305614F	JSPOC MISSION SYSTEM	In FY 2016, Project 65A035, (Increment 3), includes new start efforts for JMS Increment 3.
0305940F	SPACE SITUATION AWARENESS OPERATIONS	In FY 2016, Project 67A017, Sensor Service Life Extension Program, includes a new start effort for Space Situational Awareness (SSA) Ops Demo.

UNCLASSIFIED

UNCLASSIFIED

PROGRAM ELEMENT COMPARISON SUMMARY

PROGRAM ELEMENT (BY BUDGET ACTIVITY)

0306250F	CYBER OPERATIONS TECHNOLOGY DEVELOPMENT	In FY 2016, PE 0208059F, Cyber Command Activities, Project 676002, Cyber Systems Modernization, efforts were transferred to PE 0306250F, Cyber Operations Technology Development, Project 646008, US Cyber Command Technology Development, to consolidate all USCYBERCOM programs.
0401115F	C-130 AIRLIFT SQUADRON	C-130 CNS/ATM program has been updated and renamed C-130H VAAP Increment 1.
0401119F	C-5 AIRLIFT SQUADRONS (IF)	In FY 2016, Project 675359, C-5 Communication, Navigation, Surveillance / Air Traffic Management (CNS/ATM), is a new start effort.
0401318F	CV-22	In FY 2016, Project 676033 includes new start effort for Aircraft Electrical Power upgrade.
0401319F	PRESIDENTIAL AIRCRAFT REPLACEMENT (PAR)	In the FY 2016, PE 0401319 Presidential Aircraft Replacement, Project 655250 Presidential Aircraft Recap (PAR), was transferred to PE 0401319 Presidential Aircraft Replacement, Project 655250 Presidential Aircraft Recap (PAR), BA07 to realign budget activity for execution.

UNCLASSIFIED

PROGRAM ELEMENT COMPARISON SUMMARY

PROGRAM ELEMENT (BY BUDGET ACTIVITY)

0604233F	SPECIALIZED UNDERGRADUATE FLIGHT TRAINING	<p>In FY 2016 PE 0604233F Specialized Undergraduate Flight Training, Project 654102 JPATS, was transferred from BA05 as the program achieved full-rate production.</p> <p>In FY 2016 Project 674101 Undergraduate Remotely Piloted Aircraft Training includes a new start effort for Remotely Piloted Aircraft (RPA) Predator Reaper Integrated Mission Environment (PRIME) Desktop Training System (DTS).</p> <p>In FY 2016 Project 676034 Joint Primary Aircraft Training System (JPATS) was completed.</p> <p>In FY 2016 Project 676035 T-6 Operational System Development includes new start efforts for studies & development efforts to support future ACAT III Engineering Change Proposals(ECPs) to the T-6 Aircraft. This includes development for the FAA mandated ACAT III program for ADS-B Out and associated upgrades.</p> <p>In FY 2016 Project 676037 T-38 Operational Systems Development includes a new start effort for Block upgrades to 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).</p>
0605278F	HC/MC-130 RECAP RDT&E	<p>In FY 2016, PE 0605278F, HC/MC-130 Recap RDTE, Project 655249 HC-130Recap, efforts were transferred from PE 0605278F, HC/MC-130 Recap RDTE, Project 655249, HC/MC-130 Recap, BA 05 as the program achieved full rate production.</p>
0708611F	SUPPORT SYSTEMS DEVELOPMENT	<p>In FY 2016, PE 0708611 Support Systems Development, Project 673318, Product Data Systems Modernization efforts transferred to PE 0708610F, Logistics Information Technology (Log IT), Project 675207 to align with the Enhanced Technical Information Management System (ETIMS) modification efforts funded within the Log IT PE.</p> <p>In FY 2016, PE 0708611 Support Systems Development, Project Number 675042, Logistics Application Logistics Integration (LALI), the F-35 User Identification Data Exchange System (UIDES) effort was transferred to PE 0604800F, F-35 Lightning II Joint Strike Fighter, in order to align the activity under the F-35 RDT&E Program Element.</p>

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
--	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	3.983	5.408	5.032	-	5.032	5.654	5.691	5.663	5.764	Continuing	Continuing
643479: <i>Advanced Sensor Exploitation</i>	-	0.335	-	-	-	-	-	-	-	-	-	0.335
643480: <i>Automated Imagery Exploitation</i>	-	2.020	-	-	-	-	-	-	-	-	-	2.020
643481: <i>Knowledge Based Tech For Intelligence</i>	-	0.858	-	-	-	-	-	-	-	-	-	0.858
643482: <i>Science & Tech Intelligence Methodology</i>	-	0.770	-	-	-	-	-	-	-	-	-	0.770
64536A: <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i>	-	-	4.298	3.991	-	3.991	4.487	4.519	4.496	4.576	Continuing	Continuing
64537A: <i>INTELLIGENCE ANALYSIS CAPABILITIES (IAC)</i>	-	-	1.110	1.041	-	1.041	1.167	1.172	1.167	1.188	Continuing	Continuing

Note

In FY 2015, PE 0603260F (BA5), Intelligence Advanced Development (IAD), Project Number 652053, National Air Intelligence Center efforts were transferred to PE 0603260F (BA4), Intelligence Advanced Development (IAD), Project Number 64537A, Intelligence Analysis Capabilities (IAC), in order to properly align efforts, increase management efficiency, and reduce administrative actions.

In FY 2015, PE 0603260F (BA4), Intelligence Advanced Development (IAD), Project Number 643479 (Advanced Sensor Exploitation), Project Number 643480 (Automated Imagery Exploitation), Project Number 643481 (Knowledge Based Tech for Intelligence), and Project Number 643482 (Science & Tech Intelligence Methodology), were transferred to PE 0603260F (BA4), Intelligence Advanced Development (IAD), Project Number 64536A, IET, in order to increase management efficiency, reduce administrative actions, and minimize effort duplication.

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 projects provide better on-time information to the warfighter using new and existing data sources, streamlining data analysis, reducing footprint, extending life of sensors in place and enhancing performance. The Air Force Research Lab, Rome Research Site, Information and Intelligence Exploitation Division (AFRL/RIE), develops prototype applications for evaluation in a realistic operating environment. 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

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
--	--

to operational users via rapid prototyping, focusing on technology insertion correcting AF intelligence deficiencies at the tactical and operational levels. This PE bridges the technology transition from Advanced Technology Demonstrations (ATDs) and Integrated Technology Thrust Programs (ITTPs) to current/new systems, and also supports 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 25th Air Force (25 AF). Development of new/improved capabilities to meet these requirements is managed by AFRL/RIE. Prototype products, usually in the form of software, are provided to the users for operational environment evaluation.

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.

The FY2016 funding request was reduced by \$0.336 million to account for the availability of prior execution balances.

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	3.983	5.408	5.402	-	5.402
Current President's Budget	3.983	5.408	5.032	-	5.032
Total Adjustments	-	-	-0.370	-	-0.370
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-0.370	-	-0.370

Change Summary Explanation

The FY2016 funding request was reduced by \$0.336M to account for the availability of prior execution balances.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 643479 / <i>Advanced Sensor Exploitation</i>
--	--	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
643479: <i>Advanced Sensor Exploitation</i>	-	0.335	-	-	-	-	-	-	-	-	-	0.335
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Note

In FY 2015, PE 0603260F (BA4), Intelligence Advanced Development (IAD), Project Number 643479 (Advanced Sensor Exploitation), efforts were transferred to PE 0603260F, Intelligence Advanced Development (IAD), Project Number 64536A, Intelligence Exploitation Tools (IET), in order to increase management efficiency, reduce administrative actions, and minimize effort duplication.

A. Mission Description and Budget Item Justification

The project objectives are to develop, demonstrate and evaluate a near-real-time all source correlation/fusion capability by applying state-of-the-art data processing techniques for the receipt, correlation, templating, and analysis of battlefield information. Prototypes will be developed in an open systems architecture environment allowing for the greatest efficiency in terms of integrating or interfacing with other systems. There are Air Force, DoD, and Coalition requirements to correlate various sources of intelligence information [Communications Intelligence (COMINT), Electronic Intelligence (ELINT), Imagery Intelligence (IMINT) and Measurement and Signature Intelligence - (MASINT)] within seconds/minutes vs. hours/days with current manual and semi-automated methods. The project includes development of data correlation and predictive intelligence algorithms as well as target analysis and prioritization, air order of battle update, and tactical analysis techniques. This computerized approach will speed up the correlation of data from diverse sources of intelligence information, including COMINT, ELINT, IMINT and MASINT, providing faster situational awareness and threat assessment, and replacing manual systems with automated 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 2014	FY 2015	FY 2016
Title: ELINT Synchronization	0.335	-	-
Description: Risk reduction development initiative which automates analysis and screening of large volumes of collected but unscreened technical ELINT data. Effort will further the development of applications in signals characterization and database matching algorithms.			
FY 2014 Accomplishments: Initiated prototype development of a software capability providing automated screening of technical ELINT data through further development of applications in signals characterization and database matching algorithms.			
FY 2015 Plans: N/A			
Accomplishments/Planned Programs Subtotals	0.335	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 643479 / <i>Advanced Sensor Exploitation</i>

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• None: N/A	-	-	-	-	-	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Requirements for new advanced sensor exploitation technologies are identified and prioritized by the 25th Air Force (25 AF). Development of 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 the operational community in spirals. All 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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 643479 / <i>Advanced Sensor Exploitation</i>
--	--	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ELINT Synchronization	MIPR	SRC : Dayton, OH	-	0.335	Nov 2013	-		-		-		-	-	0.335	-
Subtotal			-	0.335		-		-		-		-	-	0.335	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.335	-	-	-	-	-	0.335	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 643479 / <i>Advanced Sensor Exploitation</i>

FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

ELINT Synchronization Development/Prototype	[REDACTED]																											
---	------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 643479 / <i>Advanced Sensor Exploitation</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
ELINT Synchronization Development/Prototype	1	2014	4	2014

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>				Project (Number/Name) 643480 / <i>Automated Imagery Exploitation</i>			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
643480: <i>Automated Imagery Exploitation</i>	-	2.020	-	-	-	-	-	-	-	-	-	2.020
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2015, PE 0603260F (BA4), Intelligence Advanced Development (IAD), Project Number 643480 (Automated Imagery Exploitation), was transferred to PE 0603260F (BA4), Intelligence Advanced Development (IAD), Project Number 64536A, IET, in order to increase management efficiency, reduce administrative actions, and minimize effort duplication.

A. Mission Description and Budget Item Justification

This project demonstrates and validates the capability to more accurately and quickly interpret digital imagery and video by developing/evaluating computer-assisted techniques to manipulate and overlay imagery, cartographic data, signals intelligence (SIGINT), and on-line intelligence data. The result of this effort will provide the operator precise target locations and identifications, precise target reference scenes, and more accurate damage assessments. Allows for easier supportability on low-cost, commercially-available computer workstations. 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 2014	FY 2015	FY 2016
<p>Title: Digital Library Input Processing System (DLIPS)</p> <p>Description: Updates current DLIPS configuration (Text-to-Text translation only) to process foreign language audio or video input into English in support of open-source analysts.</p> <p>FY 2014 Accomplishments: Released DLIPS prototype 1.2, conducted user evaluation; incorporated user feedback and completed development of final prototype.</p> <p>FY 2015 Plans: N/A</p>	1.090	-	-
<p>Title: Emitter Location Systems Modeling (ELSM)</p> <p>Description: Initiates enhancement of modeling capability of next generation US, Allied, and adversary RF emitters on the battlefield to allow for enhanced EW performance and vulnerability assessments.</p> <p>FY 2014 Accomplishments:</p>	0.340	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 643480 / <i>Automated Imagery Exploitation</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Released ELSM prototype 1.1 to users for evaluation in realistic operating environment; incorporated user feedback and completed development of final prototype. FY 2015 Plans: N/A			
Title: Rapid Electronic Attack Assessment For Protection, Exploitation, and Reprogramming (REAPER) Description: Initiates capability to provide rapid assessment of adversary Electronic Attack (EA) signals, which supports pilot training and the development of EA protection and countermeasures systems. FY 2014 Accomplishments: Released Rapid Electronic Attack Assessment for Protection, Exploitation and Reprogramming (REAPER) prototype 1.1 to users for evaluation in realistic operating environment; incorporated user feedback and completed development of final prototype. FY 2015 Plans: N/A	0.340	-	-
Title: Electronics Exploitation Description: Develop a 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. FY 2014 Accomplishments: Initiated prototype development of a capability to enable the detection, geo-location, and tracking of complex wideband and low probability of intercept emitters; improving reporting timeliness and accuracy of worldwide Electronics Intelligence (ELINT) intercept data. FY 2015 Plans: N/A	0.250	-	-
Accomplishments/Planned Programs Subtotals	2.020	-	-

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• None: N/A	-	-	-	-	-	-	-	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 643480 / <i>Automated Imagery Exploitation</i>

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
Remarks None											

D. Acquisition Strategy

Requirements for new computer assisted techniques for interpretation of digital imagery and video are identified and prioritized by the 25th Air Force (25 AF). Development of new/improved capabilities to meet these requirements is managed by AF Research Laboratory (Rome Research Site). The 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.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 643480 / <i>Automated Imagery Exploitation</i>
--	--	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Library Input Processing System (DLIPS)	C/CPFF	Northrop Grumman : Beavercreek, OH	-	0.975	Oct 2013	-		-		-		-	-	0.975	4.900
Emitter Location Systems Modeling (ELSM)	C/CPFF	Information Systems Laboratory : San Diego, CA	-	0.300	Oct 2013	-		-		-		-	-	0.300	1.600
Rapid Electronic Attack Assessment For Protection, Exploitation, and Reprogramming (REAPER)	C/CPFF	SAIC : McLean, VA	-	0.300	Oct 2013	-		-		-		-	-	0.300	1.200
Electronics Exploitation	C/CPFF	L3 Communications : Greenville, TX	-	0.215	Oct 2013	-		-		-		-	-	0.215	-
Subtotal			-	1.790		-		-		-		-	-	1.790	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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			-	-		-		-		-		-	-	-	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 643480 / <i>Automated Imagery Exploitation</i>

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Digital Library Input Processing System (DLIPS) Development/Prototype	██████████																											
Emitter Location Systems Modeling (ELSM) Development/Prototype	██████████																											
Rapid Electronic Attack Assessment for Protection, Exploitation, and Reprogramming (REAPER) Development/Prototype	██████████																											
Electronics Exploitation Development/Prototype	██████████																											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 643480 / <i>Automated Imagery Exploitation</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Digital Library Input Processing System (DLIPS) Development/Prototype	1	2014	4	2014
Emitter Location Systems Modeling (ELSM) Development/Prototype	1	2014	4	2014
Rapid Electronic Attack Assessment for Protection, Exploitation, and Reprogramming (REAPER) Development/Prototype	1	2014	4	2014
Electronics Exploitation Development/Prototype	1	2014	4	2014

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>				Project (Number/Name) 643481 / <i>Knowledge Based Tech For Intelligence</i>			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
643481: <i>Knowledge Based Tech For Intelligence</i>	-	0.858	-	-	-	-	-	-	-	-	-	0.858
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2015, PE 0603260F (BA4), Intelligence Advanced Development (IAD), Project Number 643481 (Knowledge Based Tech for Intelligence), was transferred to PE 0603260F (BA4), Intelligence Advanced Development (IAD), Project Number 64536A, IET, in order to increase management efficiency, reduce administrative actions, and minimize effort duplication.

A. Mission Description and Budget Item Justification

This project improves global awareness, dynamic planning, and execution by providing information repositories and inference engines (computer program) to exploit collected data for nine major commands and Air Force intelligence organizations. Development of analytical aids is based on artificial intelligence techniques. Increased timeliness, efficiency and effectiveness will provide enhanced warning time and accuracy, allowing national/military authorities a greater range of options to avert, diminish or control a crisis. 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 2014	FY 2015	FY 2016
<p>Title: Multi-Source, Multi-Modal, Analytical Collect, Process, Exploit and Disseminate (MMACPED) System</p> <p>Description: Develop a framework designed to expose media tools, data, products, workflow and analytical services to the DoD and IC.</p> <p>FY 2014 Accomplishments: Initiated prototype development of MMACPED system.</p> <p>FY 2015 Plans: N/A</p>	0.483	-	-
<p>Title: C2 Surrogate System Build Spec</p> <p>Description: Develop 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.</p> <p>FY 2014 Accomplishments:</p>	0.375	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force	Date: February 2015
---	----------------------------

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 643481 / <i>Knowledge Based Tech For Intelligence</i>
--	--	---

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Initiated prototype 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. <i>FY 2015 Plans:</i> N/A			
Accomplishments/Planned Programs Subtotals	0.858	-	-

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• None: N/A	-	-	-	-	-	-	-	-	-	-	-

Remarks
None

D. Acquisition Strategy
Requirements for new/improved analytical aids to exploit collected intelligence data are identified and prioritized by the 25th Air Force (25 AF). Development of 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.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 643481 / <i>Knowledge Based Tech For Intelligence</i>
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Multi-Source, Multi-Modal Analytical Collect, Process, Exploit and Disseminate (MMACPED) System	C/CPFF	Northrop Grumman : Beaver creek, OH	-	0.483	Oct 2013	-		-		-		-	-	0.483	-
C2 Surrogate System Build Spec	C/CPFF	Leidos : Beaver creek, OH	-	0.375	Oct 2013	-		-		-		-	-	0.375	-
Subtotal			-	0.858		-		-		-		-	-	0.858	-

Remarks
Both are IDIQ

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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			-	-		-		-		-		-	-	-	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force								Date: February 2015			
Appropriation/Budget Activity 3600 / 4			R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>			Project (Number/Name) 643481 / <i>Knowledge Based Tech For Intelligence</i>					
	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals	-	0.858	-	-	-	-	-	0.858	-		

Remarks

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 643481 / <i>Knowledge Based Tech For Intelligence</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Multi-Source, Multi-Modal Analytical Collect, Process, Exploit and Disseminate (MMACPED) System Development/Prototype	1	2014	4	2014
C2 Surrogate System Build Spec Development/Prototype	1	2014	4	2014

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>				Project (Number/Name) 643482 / <i>Science & Tech Intelligence Methodology</i>			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
643482: <i>Science & Tech Intelligence Methodology</i>	-	0.770	-	-	-	-	-	-	-	-	-	0.770
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2015, PE 0603260F (BA4), Intelligence Advanced Development (IAD), Project Number 643482 (Science & Tech Intelligence Methodology), was transferred to PE 0603260F (BA4), Intelligence Advanced Development (IAD), Project Number 64536A, IET, in order to increase management efficiency, reduce administrative actions, and minimize effort duplication.

A. Mission Description and Budget Item Justification

The project demonstrates and validates intelligence methodologies and techniques for operational employment of simulation models in support of the 25th Air Force (25 AF) requirements. The methods and techniques help the 25 AF improve analysis of current and future foreign weapon systems and prevent technological surprises to our warfighters with regard to the capabilities of these systems. 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 2014	FY 2015	FY 2016
Title: Enabling Discovery through Automated Content Extraction (EDACE)	0.770	-	-
Description: Develop automated methods that aid in the systematic, continuous, and comprehensive assessment of technical concepts using information found in the published scientific, technical, and patent literature, message traffic, gray literature, and conference papers.			
FY 2014 Accomplishments: Initiated prototype 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, and conference papers.			
FY 2015 Plans: N/A			
Accomplishments/Planned Programs Subtotals	0.770	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force	Date: February 2015
---	----------------------------

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 643482 / <i>Science & Tech Intelligence Methodology</i>
--	--	---

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• None: N/A	-	-	-	-	-	-	-	-	-	-	-

Remarks

D. Acquisition Strategy

Requirements for new/improved techniques for operational employment of simulation models are identified and prioritized by the 25th Air Force (25 AF). 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.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 643482 / <i>Science & Tech Intelligence Methodology</i>
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Enabling Discovery through Automated Content Extraction (EDACE)	C/CPFF	Raytheon : Cambridge, MA	-	0.460	Oct 2013	-		-		-		-	-	0.460	-
Subtotal			-	0.460		-		-		-		-	-	0.460	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	0.310	Oct 2013	-		-		-		-	-	0.310	-
Subtotal			-	0.310		-		-		-		-	-	0.310	-

			Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.770	-	-	-	-	-	0.770	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 643482 / <i>Science & Tech Intelligence Methodology</i>

FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Enabling Discovery through Automated Content Extraction (EDACE) Prototype Development

[REDACTED]																											
------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 643482 / <i>Science & Tech Intelligence Methodology</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Enabling Discovery through Automated Content Extraction (EDACE) Prototype Development	1	2014	4	2014

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
64536A: <i>INTELLIGENCE EXPLOITATION TOOLS (IET)</i>	-	-	4.298	3.991	-	3.991	4.487	4.519	4.496	4.576	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2015, PE 0603260F (BA4), Intelligence Advanced Development (IAD), Project Number 643479 (Advanced Sensor Exploitation), Project Number 643480 (Automated Imagery Exploitation), Project Number 643481 (Knowledge Based Tech for Intelligence), and Project Number 643482 (Science & Tech Intelligence Methodology), were transferred to PE 0603260F (BA4), Intelligence Advanced Development (IAD), Project Number 64536A, IET, in order to increase management efficiency, reduce administrative actions, and minimize effort duplication.

A. Mission Description and Budget Item Justification

Intelligence Exploitation Tools (IET) prototyping encompasses several areas of intelligence exploitation including the advancement of all source correlation and fusion prototypes for the intelligence analyst, thus enhancing 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, MOVINT and others, in a timely manner.

This project also addresses the accurate and timely interpretation of digital imagery and video by developing and evaluating techniques to manipulate and overlay imagery, cartographic data, SIGINT, and digital intelligence data. Analytical cross domain tools, which provide enhanced warning and accuracy and allow national and military authorities a greater range of options to avert, diminish or control a crisis, are also developed in this project.

In addition, methods to improve analysis of current and future foreign weapon systems are explored in this project.

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

	FY 2014	FY 2015	FY 2016
Title: ELINT Synchronization	-	0.340	-
Description: Risk reduction development initiative which automates analysis and screening of large volumes of collected but unscreened technical ELINT data. Furthers development of applications in signals characterization and database matching algorithms.			
FY 2014 Accomplishments: FY14 funding in Project 643479.			
FY 2015 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
Continuing development of a software prototype that provides automated screening of technical ELINT data through further development of applications in signals characterization and database matching algorithms, releasing first prototype, conducting user assessment, completing development of final prototype, and releasing final prototype. FY 2016 Plans: N/A				
Title: Private Assistant for Individual Relegation (PAIR) Description: Develops software focused on improving the way computers and application services supports intelligence analysts through the use of cognitive systems. FY 2014 Accomplishments: N/A FY 2015 Plans: Starting development of Private Assistance for Individual Relegation (PAIR) prototype. FY 2016 Plans: Will deliver first prototype, initiate user assessment of prototype, and initiate development of next prototype.		-	0.525	0.528
Title: Electronics Exploitation Description: Develop a 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. FY 2014 Accomplishments: FY14 funding in Project 643480. FY 2015 Plans: Delivering 1st Electronics Exploitation prototype, conducting user assessment, and initiating development of next prototype. FY 2016 Plans: Will complete user assessment and initiate development of next prototype.		-	0.430	0.417
Title: Feature and Pattern Recognition and Parsing to Text-Foreign Audio Video Operations (FAVOR) II Description: Develops 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.		-	0.588	0.576

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p><i>FY 2014 Accomplishments:</i> N/A</p> <p><i>FY 2015 Plans:</i> Starting the development of the FAVOR II prototype.</p> <p><i>FY 2016 Plans:</i> Will release the first prototype, initiate user assessment, and initiate development of next prototype.</p>				
<p><i>Title:</i> Increased SIGINT On-board Analysis (ISOBA)</p> <p><i>Description:</i> Expands software currently deployed on RIVET JOINT processor to enable collecting current and future SIGINT metadata.</p> <p><i>FY 2014 Accomplishments:</i> N/A</p> <p><i>FY 2015 Plans:</i> Starting development of ISOBA prototype.</p> <p><i>FY 2016 Plans:</i> Will release first prototype, initiate user assessment, and initiate development of next prototype.</p>		-	0.440	0.613
<p><i>Title:</i> Multi-Source, Multi-Modal, Analytical Collect, Process, Exploit and Disseminate (MMACPED) System</p> <p><i>Description:</i> Develop a framework designed to expose media tools, data, products, workflow and analytical services to the DoD and IC.</p> <p><i>FY 2014 Accomplishments:</i> FY14 funding in Project 643481.</p> <p><i>FY 2015 Plans:</i> Delivering first prototype of MMACPED prototype, initiating user assessment, and initiating development of next prototype.</p> <p><i>FY 2016 Plans:</i> Will complete user assessment and continue development of next prototype.</p>		-	0.575	0.596
<p><i>Title:</i> Global Architecture for Mission Reporting and Analysis (GAMRA)</p>		-	0.460	0.665

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016
<p>Description: Develops capability for qualitative mission assessment and lays a framework for integrating future ISR and combat mission capabilities into the assessment framework.</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: Starting development of Global Architecture for Mission Reporting and Analysis (GAMRA) prototype.</p> <p>FY 2016 Plans: Will release first prototype, conduct user assessment, and initiate development of next prototype.</p>			
<p>Title: C2 Surrogate System Build Spec</p> <p>Description: Develop 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.</p> <p>FY 2014 Accomplishments: FY14 funding in Project 643481.</p> <p>FY 2015 Plans: Releasing prototype, conducting user assessment, and completing final prototype.</p> <p>FY 2016 Plans: FY16 plans no funds requested in FY16.</p>	-	0.390	-
<p>Title: Enabling Discovery through Automated Content Extraction (EDACE)</p> <p>Description: Develop 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.</p> <p>FY 2014 Accomplishments: FY14 funding in Project 643482.</p> <p>FY 2015 Plans: Releasing first prototype of EDACE prototype, initiating user assessment, and initiating development of next prototype.</p> <p>FY 2016 Plans:</p>	-	0.550	0.596

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016
Will complete user assessment and continue developing next prototype.			
Accomplishments/Planned Programs Subtotals	-	4.298	3.991

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• N/A: N/A	-	-	-	-	-	-	-	-	-	-	-

Remarks

D. Acquisition Strategy
 Requirements for new/improved techniques for operational employment of simulation models are identified and prioritized by the 25th Air Force (25 AF). 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.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ELINT Synchronization	MIPR	SRC : Dayton, OH	-	-		0.300	Oct 2014	-		-		-	-	0.300	-
Feature and Pattern Recognition and Parsing to Text-Foreign Audio Video Operations (FAVOR II)	C/CPFF	Northrop Grumman : Dayton, OH	-	-		0.535	Apr 2015	0.560	Nov 2015	-		0.560	-	1.095	-
Enabling Discovery through Automated Content Extraction (EDACE)	C/CPFF	Raytheon : Cambridge, MA	-	-		0.500	Oct 2014	0.580	Oct 2015	-		0.580	-	1.080	-
Electronics Exploitation	C/CPFF	L3 Communications : Greenville, TX	-	-		0.385	Oct 2014	0.400	Oct 2015	-		0.400	-	0.785	-
Increased SIGINT On-Board Analysis (ISOBA)	C/CPFF	AIS : Rome, NY	-	-		0.400	Mar 2015	0.600	Oct 2015	-		0.600	-	1.000	-
Multi-Source, Multi-Modal, Analytical Collect, Process, Exploit and Disseminate (MMACPED) System	C/CPFF	Northrop Grumman : Beavercreek, OH	-	-		0.525	Oct 2014	0.580	Oct 2015	-		0.580	-	1.105	-
C2 Surrogate System Build Spec	C/CPFF	Leidos : Beavercreek, OH	-	-		0.345	Oct 2014	-		-		-	-	0.345	-
Global Architecture for Mission Reporting and Analysis (GAMRA)	C/CPFF	TBD : TBD,	-	-		0.425	Jun 2015	0.650	Oct 2015	-		0.650	-	1.075	-
Private Assistant for Individual Relegation (PAIR)	C/CPFF	Securburation/ Aptima : Various,	-	-		0.480	Apr 2015	0.510	Oct 2015	-		0.510	-	0.990	-
Subtotal			-	-		3.895		3.880		-		3.880	-	7.775	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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			-	-		-		-		-		-	-	-	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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>

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ELINT Synchronization - FY14 Schedule is shown in PE 0603260F, Project 643479	██████████																											
ELINT Synchronization Development/Prototype					██████████																							
PAIR Development/Prototype					██																							
Electronics Exploitation - FY14 Schedule is shown in PE 0603260F, Project 643480	██████████																											
Electronics Exploitation Development/Prototype					██																							
FAVOR II Development/Prototype					██																							
ISOBA Development/Prototype					██																							
MMACPED - FY14 Schedule is shown in PE 0603260F, Project 643481	██████████																											
MMACPED Development/Prototype					██																							
GAMRA - Development/Prototype					██																							
C2 Surrogate System Build Spec - FY14 Schedule is shown in PE 0603260F, Project 643481	██████████																											
C2 Surrogate System Build Spec Development/Prototype					██████████																							
EDACE - FY14 Schedule is shown in PE 0603260F, Project 643482	██████████																											
EDACE Development/Prototype					██																							
FY17 IET Requirements Data Call					████																							
FY17 IET New Start(s) Development/Prototype													██															
FY19 IET Requirements Data Call													████															
FY19 IET New Start(s) Development/Prototype																	██											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
ELINT Synchronization - FY14 Schedule is shown in PE 0603260F, Project 643479	1	2014	4	2014
ELINT Synchronization Development/Prototype	1	2015	4	2015
PAIR Development/Prototype	1	2015	4	2018
Electronics Exploitation - FY14 Schedule is shown in PE 0603260F, Project 643480	1	2014	4	2014
Electronics Exploitation Development/Prototype	1	2015	4	2018
FAVOR II Development/Prototype	1	2015	4	2018
ISOBA Development/Prototype	1	2015	4	2017
MMACPED - FY14 Schedule is shown in PE 0603260F, Project 643481	1	2014	4	2014
MMACPED Development/Prototype	1	2015	4	2018
GAMRA - Development/Prototype	1	2015	4	2017
C2 Surrogate System Build Spec - FY14 Schedule is shown in PE 0603260F, Project 643481	1	2014	4	2014
C2 Surrogate System Build Spec Development/Prototype	1	2015	4	2015
EDACE - FY14 Schedule is shown in PE 0603260F, Project 643482	1	2014	4	2014
EDACE Development/Prototype	1	2015	4	2018
FY17 IET Requirements Data Call	2	2015	2	2015
FY17 IET New Start(s) Development/Prototype	1	2017	4	2020
FY19 IET Requirements Data Call	2	2017	2	2017
FY19 IET New Start(s) Development/Prototype	1	2019	4	2020

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
64537A: <i>INTELLIGENCE ANALYSIS CAPABILITIES (IAC)</i>	-	-	1.110	1.041	-	1.041	1.167	1.172	1.167	1.188	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2015, PE 0603260F (BA5), Intelligence Advanced Development (IAD), Project Number 652053, National Air Intelligence Center efforts were transferred to PE 0603260F (BA4), Intelligence Advanced Development (IAD), Project Number 64537A, Intelligence Analysis Capabilities (IAC), in order to properly align efforts, increase management efficiency, and reduce administrative actions.

A. Mission Description and Budget Item Justification

Intelligence Analysis Capabilities (IAC) provides 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. IAC tools and algorithms provide NASIC and the 453rd EWS 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.

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 2014	FY 2015	FY 2016
Title: Space, Air, and Terrestrial Modeling & Simulation (SATM&S) Initiative	-	0.337	0.335
Description: Initiates SATM&S to add a space communications modeling capability to the previously fielded terrestrial communications focused TEL-SCOPE 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.			
FY 2014 Accomplishments: FY14 funding in PE 0603260F (BA5), Project 652053.			
FY 2015 Plans: Releasing first prototype and initiating development of 2nd prototype.			
FY 2016 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016
Will release second prototype and initiate development of 3rd prototype.			
Title: Activity Based Intelligence Indication & Warning (ABI I&W)	-	0.773	0.706
Description: Develop 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.			
FY 2014 Accomplishments: N/A			
FY 2015 Plans: Starting development of first prototype.			
FY 2016 Plans: Will release first prototype and start development of second prototype.			
Accomplishments/Planned Programs Subtotals	-	1.110	1.041

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE: BA05: PE 0603260F: <i>Intelligence Advanced Development</i>	0.977	-	-	-	-	-	-	-	-	-	-
Remarks											

D. Acquisition Strategy
Requirements of new/upgraded intelligence analysis tools are identified and prioritized by the 25th Air Force (25 AF). 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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force												Date: February 2015				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 4				PE 0603260F / Intelligence Advanced Development				64537A / INTELLIGENCE ANALYSIS CAPABILITIES (IAC)								
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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	
Space, Air, and Terrestrial Modeling & Simulation Initiative	C/CPFF	Northrop Grumman Mission Systems : Beavercreek, OH	-	-		0.300	Oct 2014	0.300	Oct 2015	-		0.300	-	0.600	-	
Activity Based Intelligence Indication & Warning	C/CPFF	CUBRC : Buffalo, NY	-	-		0.700	Nov 2014	0.643	Oct 2015	-		0.643	-	1.343	-	
Subtotal			-	-		1.000		0.943		-		0.943	-	1.943	-	
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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	AFRL - Information Directorate : Rome, NY	-	-		0.110	Oct 2014	0.098	Oct 2015	-		0.098	-	0.208	-	
Subtotal			-	-		0.110		0.098		-		0.098	-	0.208	-	

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force								Date: February 2015			
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>				
	Prior Years	FY 2014	FY 2015		FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals	-	-	1.110		1.041	-	1.041	-	2.151	-	

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020											
	1	2	3	4	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, Air, Terrestrial Modeling and Simulation - FY14 Schedule is shown in PE 0603260F, Project 652053																																				
Space, Air, Terrestrial Modeling and Simulation Development/Prototype																																				
Activity Based Intelligence Indication and Warning Development/Prototype																																				
FY17 IAC Requirements Data Call																																				
FY17 IAC New Start(s) Development/Prototype																																				
FY19 IAC Requirements Data Call																																				
FY19 IAC New Start(s) Development/Prototype																																				

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
Space, Air, Terrestrial Modeling and Simulation - FY14 Schedule is shown in PE 0603260F, Project 652053	1	2014	4	2014
Space, Air, Terrestrial Modeling and Simulation Development/Prototype	1	2015	4	2018
Activity Based Intelligence Indication and Warning Development/Prototype	1	2015	4	2017
FY17 IAC Requirements Data Call	2	2015	2	2015
FY17 IAC New Start(s) Development/Prototype	1	2017	4	2020
FY19 IAC Requirements Data Call	2	2017	2	2017
FY19 IAC New Start(s) Development/Prototype	1	2019	4	2020

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0603287F / <i>Physical Security Equipment</i>
--	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	3.874	-	-	-	-	-	-	-	-	Continuing	Continuing
645121: <i>Physical Security Equipment</i>	-	3.874	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY15, Physical Security Equipment efforts were transferred from PE 0603287F, Physical Security Equipment, Project Number 645121 in BA04 to PE 0604287F, Physical Security Equipment, Project Number 645121 in BA05 in order to align funding into the correct Budget Activity of BA05.

A. Mission Description and Budget Item Justification

Integrated Base Defense Security Systems (IBDSS) develops, 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 develop, 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 development 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 (FP) 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 and power) 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 as a Major Range and Test facility, conducting developmental and operational testing as the primary mission.

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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 0603287F / <i>Physical Security Equipment</i>
--	--

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	3.874	-	1.977	-	1.977
Current President's Budget	3.874	-	-	-	-
Total Adjustments	-	-	-1.977	-	-1.977
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-1.977	-	-1.977

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Title: Integrated Base Defense Security Systems	3.874	-	-
Description: Develops, demonstrates, and tests Physical Security Equipment (PSE) systems to include Force Protection. This continuing effort was previously named Physical Security Equipment and is not a New Start.			
FY 2014 Accomplishments:			
- Refine, research, and test technology for automated entry control systems.			
- Continue TASS P3I efforts including improvements to the annunciator.			
- Continue to manage, develop, evaluate, and test Delay/Denial products.			
- Develop internal delay, denial, and detection options for the Nuclear Storage environment.			
- Develop 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)			
-- Analyses and maturity assessment of interruption methods to disable or mitigate adversary remote airborne platforms.			
- Force Protection Commercial Off The Shelf (COTS) evaluation and testing.			
- Continue to manage sensor and assessment product developments and tests; qualification testing to demonstrate sensor and integration maturity and effectiveness.			
- Market research, integration and evaluation of a portable detection system that can be deployed to meet the full detection and communication requirements for nuclear security.			
- Market research, integration and evaluation of a capability to detect			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 0603287F / <i>Physical Security Equipment</i>
--	--

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
personnel and vehicle movement through foliage that obscures line of sight technologies. - Continue to research technological advances at DoD, DoE, University Labs, DARPA, within industry, etc., with PSE utility. - Continue to prepare operational systems improvement plans; develop technology roadmap; update system architecture. - Continue to test, develop, and integrate equipment to improve security and access to facilities. - Conduct analyses to include the adversary needs assessment and System Effectiveness Assessment (SEA) of the Nuclear Environment. - Develop a Security Forces Management Information System (SFMIS) module. - Develop Physical Security Alarm Systems; develop, 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; 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. - Refine, research, and test technology for Common Operational Picture systems.			
Accomplishments/Planned Programs Subtotals	3.874	-	-

D. Other Program Funding Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• AFOP: BA03: Line Item #30: <i>Air Force Physical Security System</i>	32.089	-	-	-	-	-	-	-	-	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 Delivery Orders on Indefinite Delivery/Indefinite Quantity contract vehicles, direct purchase orders after competitive selection process, or other alternative competitive selection processes. 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 development of new items or modification of COTS through national laboratories; as competitive delivery order efforts on IDIQ contracts; or alternative competitive selection procedures as determined through acquisition strategy decisions.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0603287F / <i>Physical Security Equipment</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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603287F / <i>Physical Security Equipment</i>	Project (Number/Name) 645121 / <i>Physical Security Equipment</i>
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
HQ ESC (Air Force)	Various	Various : Various,	-	3.470		-		-		-		-	Continuing	Continuing	-
Subtotal			-	3.470		-		-		-		-	-	-	-

Remarks
The \$189K in the Product Development line is incorrect. The actual # is \$2.828M. This error is due to the incorrect # (\$476K) being shown in PRCP versus the correct overall FY12 amount of \$3.115M.

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
HQ ESC (Air Force)	Various	Various : ,	-	0.404		-		-		-		-	Continuing	Continuing	-
Subtotal			-	0.404		-		-		-		-	-	-	-

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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	3.874	-	-	-	-	-	-	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force	Date: February 2015
--	----------------------------

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603287F / <i>Physical Security Equipment</i>	Project (Number/Name) 645121 / <i>Physical Security Equipment</i>
--	--	---

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
--	-------------	---------	---------	--------------	-------------	---------------	------------------	------------	--------------------------

Remarks

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603287F / <i>Physical Security Equipment</i>	Project (Number/Name) 645121 / <i>Physical Security Equipment</i>
--	--	---

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Continue TASS P3I efforts including the annunciator	1	2014	4	2014
Portable Detection System (PDSNE)	1	2014	4	2016
Foliage Penetrating Radar	1	2014	4	2016
COTS Testing (WSTI/LRTI/Narrow beam line sensor/active denial, etc	1	2014	4	2018
Common Operational Picture	1	2014	4	2015
Develop Physical Security Alarm Systems	1	2014	4	2014
Conduct System Effectiveness Assessment of Nuclear Environment	1	2014	4	2014
Maintain C-3 and Cold Weather Test Site (RDT&E Testing Facility)	1	2014	4	2015
Develop Internal and External Delay/Denial/Detection options for Nuclear Storage environment	1	2014	4	2015

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
--	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	22.862	6.075	4.070	-	4.070	5.509	5.495	5.263	5.362	Continuing	Continuing
642611: <i>Technology Insertion Planning and Analysis</i>	-	5.534	6.075	4.070	-	4.070	5.509	5.495	5.263	5.362	Continuing	Continuing
64A007: <i>Space Range</i>	-	17.328	-	-	-	-	-	-	-	-	-	17.328

Note
In FY 2015, PE 0603438F, Space Control Technology, Project 64A007, Space Range efforts were transferred to PE 0606116F, Space Test and Training Range Development, Project 666156 Space Test and Training Range Development in order to provide transparency in development funding.

A. Mission Description and Budget Item Justification

This program supports a range of activities including technology planning, development, demonstrations and prototyping, 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 FY2016 funding request was reduced by -\$0.739M to account for the availability of prior execution balances.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
--	---

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	22.862	6.075	6.336	-	6.336
Current President's Budget	22.862	6.075	4.070	-	4.070
Total Adjustments	-	-	-2.266	-	-2.266
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-2.266	-	-2.266

Change Summary Explanation

The FY2016 funding request was reduced by $-\$.739\text{M}$ to account for the availability of prior execution balances.

FY2016 reduction of $\$1.5\text{M}$ due to higher department priorities.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
642611: <i>Technology Insertion Planning and Analysis</i>	-	5.534	6.075	4.070	-	4.070	5.509	5.495	5.263	5.362	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 Space Situational Awareness (SSA), Defensive Counterspace (DCS) and Offensive Counterspace (OCS). Specifically supported are OCS activities which include disruption, denial, or degradation of adversary space systems, or the information they provide, which may be used for 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 2014	FY 2015	FY 2016
Title: Rapid Reaction Branch (RRB)	3.560	6.075	4.070
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 2014 Accomplishments: Tested and fielded quick reaction capability in support of warfighter UON requirements. Developed and performed worldwide development test program for additional rapid prototyping capabilities then integrated capabilities into space control programs of record. Designed and integrated initial Multi-Mission Processor (MMP) Increment 2 prototype.			
FY 2015 Plans: Complete development and testing for MMP Increment 2 prototype. Integrate Increment 2 architecture into space control programs of record. If requested, field quick reaction capabilities using MMP Increment 2 architecture.			
FY 2016 Plans: Complete integration and testing of MMP Increment 2 architecture into space control programs of record. Conduct worldwide development testing for additional rapid prototype capabilities. If requested, field quick reaction capabilities using MMP Increment 2 architecture. Begin development of MMP Increment 3.			
Title: Responsive, Resilient Space Architecture Support	1.974	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
<p>Description: Assist space control programs to develop increasingly responsive, resilient and affordable capabilities via architectures emphasizing hostable payloads, small satellites, interface standards and government/commercial hosting opportunities.</p> <p>FY 2014 Accomplishments: Assisted space control programs to develop increasingly responsive, resilient and affordable capabilities via architectures emphasizing hostable payloads, small satellites, interface standards and government/commercial hosting opportunities.</p> <p>FY 2015 Plans: N/A</p> <p>FY 2016 Plans: N/A</p>			
Accomplishments/Planned Programs Subtotals	5.534	6.075	4.070

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• None: <i>None</i>	-	-	-	-	-	-	-	-	-	-	-

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force												Date: February 2015			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)						Project (Number/Name)					
3600 / 4				PE 0603438F / Space Control Technology						642611 / Technology Insertion Planning and Analysis					
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
Counterspace Technology Prototyping/Rapid Reaction Branch	Various	Various : Various,	-	5.169	Jan 2014	5.657	Jan 2015	3.652	Jan 2016	-		3.652	Continuing	Continuing	TBD
Subtotal			-	5.169		5.657		3.652		-		3.652	-	-	-
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Support	Various	Space and Missile Systems Center : El Segundo, CA	-	0.155	Jan 2014	0.208	Jan 2015	0.208	Jan 2016	-		0.208	Continuing	Continuing	TBD
Subtotal			-	0.155		0.208		0.208		-		0.208	-	-	-
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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	SMC : El Segundo, CA	-	0.210	Nov 2013	0.210	Jan 2015	0.210	Jan 2016	-		0.210	Continuing	Continuing	TBD
Subtotal			-	0.210		0.210		0.210		-		0.210	-	-	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force								Date: February 2015			
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>			
	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals	-	5.534	6.075	4.070	-	4.070	-	-	-		

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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]											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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	2014	4	2019
Signal Processing Lab MMP(D) Increment 2	1	2014	2	2015
Signal Processing Lab MMP(D) Increment 3	1	2016	1	2018
Signal Processing Lab MMP(D) Increment 4	1	2019	4	2020

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
Appropriation/Budget Activity 3600 / 4					R-1 Program Element (Number/Name) PE 0603438F / <i>Space Control Technology</i>				Project (Number/Name) 64A007 / <i>Space Range</i>			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
64A007: <i>Space Range</i>	-	17.328	-	-	-	-	-	-	-	-	-	17.328
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2015, PE 0603438F, Space Control Technology, Project 64A007 Space Range efforts were transferred to PE 0606116F, Space Test and Training Range Development, Project 666156, Space Test and Training Range Development in order to improve transparency for acquisition programs.

A. Mission Description and Budget Item Justification

This project supports the development of Space Test and Training Range (STTR) capabilities required to support developmental and operational test, training, exercises and tactics development for Space Control systems and related architecture. This 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. The objective of the STTR is to provide 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 supports the development of test range assets required to support developmental and operational test, exercises, training, and tactics development for Air Force and Joint-service space control systems/units. Included are both the fixed node Space Range Operation Center (SROC) at Schriever AFB and a deployable capability to support complex Joint and AF exercises. A space range Family of Systems (FoS) called Big Top is being developed to accomplish the STTR mission. The Big Top objective is integration into a Distributed Mission Architecture, tying into both the Information Operations (IO) and Air ranges for increased realism and complexity. 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. Satellite bandwidth is leased in this program for use in support of live testing and training events.

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

	FY 2014	FY 2015	FY 2016
Title: Range Control	15.483	-	-
Description: Development and acquisition of mobile, transportable, and fixed range monitoring and communications capabilities for the space range.			
FY 2014 Accomplishments: Completed initial delivery of the Deployable Range and SMU. Initiated Deployable Package 2. Initiated tech refresh activities for SROC Spiral 0. Completed SROC Spiral 1 upgrades and initiate Spiral 2 development. Continued development of advanced live, virtual and constructive environment and closed loop training capabilities via virtual packages and advanced software simulation tools.			
FY 2015 Plans: N/A			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015		
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603438F / <i>Space Control Technology</i>	Project (Number/Name) 64A007 / <i>Space Range</i>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016
N/A				
FY 2016 Plans: N/A				
Title: Live Fire Training In Degraded Environments		1.000	-	-
Description: Development of closed loop trainers that joint forces will use to simulate operating through denied GPS and SATCOM environments.				
FY 2014 Accomplishments: Began development for delivery closed loop trainer capability for the STTR that joint forces will use to simulate operating though denied GPS and SATCOM environments.				
FY 2015 Plans: N/A				
FY 2016 Plans: N/A				
Title: Bandwidth Support		0.845	-	-
Description: Provides for leased SATCOM bandwidth for STTR operations.				
FY 2014 Accomplishments: Provided required space range satellite communications bandwidth for exercise, testing and training of both offensive and defensive space control systems on the space range.				
FY 2015 Plans: N/A				
FY 2016 Plans: N/A				
Accomplishments/Planned Programs Subtotals		17.328	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force	Date: February 2015
---	----------------------------

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603438F / <i>Space Control Technology</i>	Project (Number/Name) 64A007 / <i>Space Range</i>
--	---	---

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE: BA06: PE 0606116F: <i>Space Test and Training</i> <i>Range Development</i>	-	19.512	18.997	-	18.997	19.167	19.504	19.912	20.264	-	-

Remarks

D. Acquisition Strategy

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

E. Performance Metrics

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

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603438F / <i>Space Control Technology</i>	Project (Number/Name) 64A007 / <i>Space Range</i>
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Leased Bandwidth	SS/FFP	DISA : Arlington, VA	-	0.845	Jan 2014	-		-		-		-	Continuing	Continuing	-
Space Range Operations Center	C/CPAF	Harris Corp : Melbourne, FL	-	3.698	Feb 2014	-		-		-		-	Continuing	Continuing	-
Joint Closed Loop Trainer	MIPR	Various : Various,	-	1.000	Jan 2014	-		-		-		-	Continuing	Continuing	-
STTR Transportable	C/TBD	TBD : TBD,	-	2.483	Jan 2014	-		-		-		-	Continuing	Continuing	-
Signal Generation, Monitoring and Collection	Various	SMC : Los Angeles AFB, CA	-	-		-		-		-		-	-	-	15.000
Range Scheduling Tool	Various	Various : Various,	-	-		-		-		-		-	-	-	1.000
Advanced Capabilities Environment (ACE)	C/CPAF	Harris Corp : Melbourne, FL	-	4.517	Jan 2014	-		-		-		-	Continuing	Continuing	-
Training Systems Requirements Analysis	C/CPAF	Spiral Solutions Tech : Omaha, NE	-	-		-		-		-		-	-	-	0.808
Interim Contractor Support	C/CPAF	Harris Corp : Melbourne, FL	-	-		-		-		-		-	-	-	4.300
Managment Operations	Various	TBD : TBD,	-	-		-		-		-		-	Continuing	Continuing	-
Subtotal			-	12.543		-		-		-		-	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	SMC : El Segundo, CA	-	-		-		-		-		-	Continuing	Continuing	-
Subtotal			-	-		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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			-	-		-		-		-		-	-	-	-

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0603438F / <i>Space Control Technology</i>	Project (Number/Name) 64A007 / <i>Space Range</i>
--	---	---

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Operate Mobile Communications and Analysis Test System (MCATS) 1	1	2014	2	2014
Space Test and Training Range (STTR) Core Fixed Site development Spiral 0	1	2014	4	2014
STTR Core Fixed Site development Spiral 1	1	2014	4	2014
Joint Closed Loop Trainer	1	2014	4	2014
Deployable Range Package 1	1	2014	4	2014
Virtual Package Development	1	2014	3	2014
Purchase Commercial Satellite Bandwidth	1	2014	4	2014

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
--	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	12.938	10.980	21.790	-	21.790	24.661	24.562	23.873	24.300	Continuing	Continuing
642597: <i>Non-cooperative Identification Subsystems</i>	-	10.993	9.104	19.893	-	19.893	22.730	22.594	21.869	22.260	Continuing	Continuing
642599: <i>Cooperative Identification Techniques</i>	-	1.945	1.876	1.897	-	1.897	1.931	1.968	2.004	2.040	Continuing	Continuing

Note

In FY 2016, Project 642597 Non-cooperative Identification Subsystems includes new start efforts for Radio ID (RID).

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) Radar Vision, an air-to-ground radar imaging technique to identify stationary and moving targets using their radar signatures; including passive techniques and electronic warfare identification technologies; (3) 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; (4) 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 (5) X-Patch, a validated set of prediction codes and analysis tools that predicts realistic far-field radar signatures from 3-D (3 dimensional) target models in order to predict 1D and/or 2D data. (6) A new program called Radio ID (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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0603742F I <i>Combat Identification Technology</i>

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 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.

The FY2016 funding request was reduced by \$2.981 million to account for the availability of prior execution balances.

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	13.386	10.980	24.915	-	24.915
Current President's Budget	12.938	10.980	21.790	-	21.790
Total Adjustments	-0.448	-	-3.125	-	-3.125
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.448	-			
• Other Adjustments	-	-	-3.125	-	-3.125

Change Summary Explanation

The FY2016 funding request was reduced to account for the availability of prior execution balances.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
642597: <i>Non-cooperative Identification Subsystems</i>	-	10.993	9.104	19.893	-	19.893	22.730	22.594	21.869	22.260	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2016, Project 642597 Non-cooperative Identification Subsystems includes new start efforts for Radio ID (RID).

A. Mission Description and Budget Item Justification

Non-cooperative Combat Identification (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 identification ranges and includes exploiting synergies between non-cooperative and cooperative ID systems (radio, millimeter wave, infrared, and laser); (2) Radar Vision, an air-to-ground radar imaging technique to identify stationary and moving targets using their radar signatures; including passive techniques and electronic warfare identification technologies; (3) 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; (4) 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 (5) X-Patch, a validated set of prediction codes and analysis tools that predicts realistic far-field radar signatures from 3-D (3 dimensional) target models in order to predict 1D and/or 2D data. X-Patch is vital for development of radar signatures of potential high-threat weapons systems; it is a critical capability of database production centers which support Joint Sensors Signature Database (JSSD) pathfinders.

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Laser Vision/3-D Ladar	-	0.800	1.800	-	1.800
Description: Laser Vision, a family of electro-optical (EO) systems that significantly increase ID ranges. Provides the demonstration and evaluation data necessary to support decisions on future EO technologies supporting CID. Includes 3-D (3 dimensional) imaging laser radar (Ladar) and exploration of advanced concepts. The 3-D ladar technology provides a display of an 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.					
FY 2014 Accomplishments:					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
N/A					
<p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - The 3D video human perception research begins to quantify the enhancement to CID. - Discoveries can be used to optimize the display of 3D information on 2D video displays. - Using a spiral development approach, this work results in quantitative measure of improvement to CID and advanced 3D video modes for use in the flight demonstration. - A laboratory-class flight experiment can be initiated to provide early flight evaluation of the technology and provide critical data for other demonstration activities, such as flight measurement of real target signatures, benchmarking CIDS-3D, and supporting the development of advanced signal processing algorithms and display modes. - As in the FY 2014 AFRL test, the baseline is to use the DARPA program receiver. - The CIDS-3D performance modeling tool should be completed. - Components of this tool can be used to support the construction of the human perception research tool. - Results from the AFRL experiment and the laboratory-class flight tests can be used to benchmark CIDS-3D predictions. - A new procurement is initiated to begin integration of the 2D/3D receiver into the LITENING pod. - This work is expected to include mechanical, optical, electrical, firmware, and software modifications. - The integration activity can be followed by ground and flight evaluation of 3D sensing in the CID mission <p>FY 2016 Base Plans:</p> <ul style="list-style-type: none"> - 3DTO laboratory demonstration: (Cost: \$0.8M) this demonstration will provide a ground test of 3D ladar technology for targeting pods. - This FY16 demonstration will most likely be a short range tower demonstration prior to full up flight demonstration. - This will be a critical demonstration for a flight test of 3D ladar technology. - This technology not only has the potential for pilot/weaponeer interpretation but the (Assisted Target Recognition) AiTR capability for 3D ladar information is mature and will provide a high confidence target ID into the cockpit. - The initial capability will be for high confidence ground target recognition but also has the potential for air target recognition. 					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
- Pod integration of the 2D/3D receiver will continue. FY 2016 OCO Plans: N/A					
Title: Laser Vision/Siren Description: 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. Begin research into advanced algorithms for processing data provided by vibrometry sensors in order to develop and demonstrate prototype pilot Aided Target Recognition software(VAMP). FY 2014 Accomplishments: - Material procurement was completed. - Fabrication of sensor active and passive electro-optical components has been initiated. - Modifications to targeting pod wiring harness have been completed. - Software development has been initiated and demonstrations of initial software components in operation were completed. - Testing of pod fiber raceway and compensation software approach assessment was completed. - Additional vibration contact measurement tests have been conducted and vibration feature selection algorithm research were continued for Aided Target Recognition (AiTR) software(VAMP). FY 2015 Plans: - Conduct subsystem verification experiments. - Conduct laboratory calibration and system tests. - Targeting pod system level tower testing at WPAFB tentatively scheduled for June 2015. - Test will utilize canonical and military targets. - Initiate flight test planning and add work. - Initiate SEEK EAGLE certification. - Continue AiTR development(VAMP). FY 2016 Base Plans: - This demonstration will demonstrate the vibrometry sensing technology for targeting Pod demonstration.	3.616	2.664	4.355	-	4.355

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
<p>- This technology will provide a valuable target recognition capability for ground targets determining engine type, with potential to counter enemy Camouflage, Concealment and Deception (CC&D) techniques as well as a valuable battle damage assessment tool.</p> <p>- This capability will provide a critical complement to image based ID tools and has the potential for air target ID as well as ground target ID.</p> <p>- This demonstration will provide the necessary funds to have AATC demonstrations with modified LITENING Pod flying on a test F-16 (Cost: \$3.5M).</p> <p>FY 2016 OCO Plans: N/A</p>					
<p>Title: Hydra Vision</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 2014 Accomplishments:</p> <ul style="list-style-type: none"> - Air to Air: The air to air hydra vision effort pushed the state of the art for air target ID in both more sustainable target insertion and dramatically increased database size. - Air to Ground: Conducted a real-time flight test and an assessment of system and ATR performance evaluation. - Initiated ATR and system updates to enhance robustness. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Air to Air: Continue to refine fusion algorithms to maximize performance. - Demonstrate 2 feature fusion with ground based radar and investigate additional feature fusion for higher confidence ID performance. <p>- Air to Ground: Complete ATR/system updates and transition away from surrogate sensors. - Plan and execute an engineering flight test and evaluate the ATR results.</p> <p>FY 2016 Base 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. 	3.533	2.715	6.700	-	6.700

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force			Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
<p>- 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> <p>- Air to Ground: Will participate in a suitable operational demonstration such as Bold Quest to demonstrate Assisted Target Recognition (AiTR) for a MQ-9 (Reaper).</p> <p>- 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.</p> <p>- This will benefit both ACC and AFSOC MQ-9's assuring more effective close in ID capabilities (Cost: \$2.5M).</p> <p>FY 2016 OCO Plans: N/A</p>					
<p>Title: Compact ATR and Sustainable Environment (CASE)</p> <p>Description: CASE is a family of efforts to address efficiency and sustainability issues associated with the development, operation and maintenance of non-cooperative ATR technology. Develop sustainable multi-phenomenology ATR based on low fidelity, compact, and inexpensive database technology.</p> <p>FY 2014 Accomplishments:</p> <ul style="list-style-type: none"> - Started initial design with an analysis of a breadth of technologies to determine the most promising overall system to provide compact data with continued identification performance. - Downselected to two contractors from five proposed contractor designs. - This technology promises a more sustainable technology for long term combat ID systems. <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> - Continue technology development in compact feature ATR initiated in Hydra Vision study. - Analyze feature extraction / uncertainty using low fidelity / physical feature target models. - Create compact feature ATR database and assess saliency and target discrimination utility. - FY15 will begin development towards a FY17 demonstration of the technology. <p>FY 2016 Base Plans:</p> <ul style="list-style-type: none"> - Testing of the system will begin utilizing cost and performance metrics. <p>FY 2016 OCO Plans: N/A</p>					
	0.994	1.925	3.475	-	3.475
<p>Title: Enhanced Combat Identification (ECID)</p>					
	-	-	0.500	-	0.500

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
<p>Description: Develop a robust ability to quantitatively evaluate promising CID technologies using enhanced modeling and simulation (M&S) capabilities.</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: N/A</p> <p>FY 2016 Base Plans: - 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>FY 2016 OCO Plans: N/A</p>					
<p>Title: Studies</p> <p>Description: Conduct CID-related studies/demos.</p> <p>FY 2014 Accomplishments: - Continued study projects leading to new concepts for non-cooperative and cooperative CID efforts.</p> <p>FY 2015 Plans: - Continue study projects leading to new concepts for non-cooperative and cooperative CID efforts.</p> <p>FY 2016 Base Plans: - Will continue study projects leading to new concepts for non-cooperative and cooperative CID efforts.</p> <p>FY 2016 OCO Plans: N/A</p>	0.350	0.500	0.450	-	0.450
<p>Title: X-Patch</p> <p>Description: X-Patch consists of software code refinement based on feedback from the X-Patch user community.</p> <p>FY 2014 Accomplishments:</p>	2.500	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force			Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
- Continued funding X-Patch RDT&E tool development and sustainment. FY 2015 Plans: N/A FY 2016 Base Plans: N/A FY 2016 OCO Plans: N/A					
Title: Passive RF ID Environment (PRIDE) Description: Develop passive RF target ID capability for denied access environment utilizing passive RF and EW information with potential non-traditional ISR capabilities. Passive RF ID is a new start in FY15. FY 2014 Accomplishments: n/a FY 2015 Plans: - Explore concepts for RF-based CID to include bistatic / multi-static, passive incorporation of electronic warfare techniques and multi-mode applications. FY 2016 Base Plans: - Passive Radar Identification Environment (PRIDE) will develop the technology to provide a passive radar based ID capability to the warfighter. - This technology development and demonstration will be critical to keep the stealth capabilities of the strike fighter fleet which will be necessary to operate in the Anti Access/ Area Denial environment. FY 2016 OCO Plans: N/A	-	0.500	1.819	-	1.819
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 2014 Accomplishments:	-	-	0.794	-	0.794

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
N/A					
FY 2015 Plans: N/A					
FY 2016 Base Plans: - Radio ID (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 2016 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	10.993	9.104	19.893	-	19.893

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

N/A

Remarks

D. Acquisition Strategy

Award multiple, competitive contract vehicles emphasizing off-the-shelf technology and maximizing the use of non-developmental items (NDIs).

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	0.550	Mar 2014	0.525	Mar 2015	0.600	Feb 2016	-		0.600	Continuing	Continuing	-
Hydra Vision (Air-to-Air) - N	C/CPFF	Northrop Grumman : Linthicum Heights, MD	-	0.288	Feb 2014	0.175	Mar 2015	1.550	Feb 2016	-		1.550	-	2.013	-
Hydra Vision (Air-to-Air) - R	C/CPFF	Raytheon Company : El Segundo, CA	-	0.250	Jun 2014	0.200	Mar 2015	1.550	Feb 2016	-		1.550	-	2.000	-
SIREN	C/CPFF	Northrop Grumman : Rowling Meadows, IL	-	3.516	Apr 2014	2.175	Feb 2015	3.811	Feb 2016	-		3.811	-	9.502	-
VAMP - EO X DWARVES	C/CPFF	Etegent : Cincinnati, OH	-	0.100	Oct 2014	0.100	Mar 2015	0.494	Feb 2016	-		0.494	-	0.694	-
3-D Ladar	C/CPAF	TBD : TBD,	-	-		0.700	Apr 2015	1.800	Dec 2015	-		1.800	Continuing	Continuing	-
Hydra Vision, Target Recognition & Tracking Technology/CASE	MIPR	Sandia : Albuquerque, NM	-	0.400	May 2014	0.200	Mar 2015	0.250	May 2016	-		0.250	-	0.850	-
Studies - ECID	MIPR	Booz Allen Hamilton : McLean, VA	-	-	Jun 2014	-	Apr 2015	0.400	Dec 2015	-		0.400	-	0.400	-
Hydra Vision - Air to Ground	C/CPFF	BAE Systems : Burlington, MA	-	0.600	Aug 2014	0.600	Mar 2015	-		-		-	-	1.200	-
Hydra Vision- Ops Demo	C/CPFF	General Atomics : San Diego, CA	-	0.625	Dec 2014	0.450	Dec 2014	2.750	Feb 2016	-		2.750	-	3.825	-
Hydra Vision - SCEPTIC	C/CPFF	Intelligent Software Solutions : Colorado Springs, CA	-	0.075	Dec 2014	0.040	Mar 2015	-		-		-	-	0.115	-
X-Patch	MIPR	GSA : Atlanta, GA	-	1.607	May 2014	-		-		-		-	-	1.607	-
Hydra Vision - Core Database	C/CPFF	McAulay Brown : Dayton, OH	-	0.045	Mar 2014	0.024	Mar 2015	-		-		-	-	0.069	-
Hydra Vision - Air-to-Ground	C/CPFF	Jacobs : Ft Walton Beach, FL	-	0.070	Jan 2015	0.100	Feb 2015	-		-		-	Continuing	Continuing	-
Hydra Vision - Compact ATR and Sustainable Environment Agile CEM	C/CPFF	Signal Innovations Group : Durham, NC	-	0.150	Sep 2014	0.250	Dec 2014	0.250	Jan 2016	-		0.250	-	0.650	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Reliable ATR Features	C/CPFF	Matrix Research & Engineering : Dayton, OH	-	0.250	Apr 2014	0.150	Feb 2015	0.250	Feb 2016	-		0.250	-	0.650	-
Hydra Vision - Compact ATR and Sustainable Environment Analysis - L	C/CPFF	Leidos : Mclean, VA	-	0.230	Sep 2014	1.100	Mar 2015	1.360	Feb 2016	-		1.360	-	2.690	-
Hydra Vision - Compact ATR and Sustainable Environment Analysis - R	C/CPFF	Raytheon : El Segundo, CA	-	0.230	Oct 2014	1.100	Mar 2015	1.360	Feb 2016	-		1.360	-	2.690	-
Passive Radar Identification Environment (PRIDE)	C/TBD	TBD : TBD,	-	-		0.050	Sep 2015	1.500	Dec 2015	-		1.500	-	1.550	-
Radio Identification (RID)	C/TBD	TBD : TBD,	-	-		0.050	Sep 2015	0.718	Dec 2015	-		0.718	-	0.768	-
Subtotal			-	8.986		7.989		18.643		-		18.643	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Jan 2014	0.025	Dec 2014	-		-		-	-	0.050	-
Studies & Analysis	MIPR	GSA : Denver, CO	-	0.350	Jun 2015	0.250	Apr 2015	0.350	Apr 2016	-		0.350	Continuing	Continuing	-
X-Patch (Robins AFB)	MIPR	402 MXW/OBWB : Robins AFB, GA	-	0.792	Apr 2014	-		-		-		-	-	0.792	-
Subtotal			-	1.167		0.275		0.350		-		0.350	-	-	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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			-	-		-		-		-		-	-	-	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force **Date:** February 2015

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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Compact ATR - Compact Feature ATR Lab Demo																																
Compact ATR- Compact Feature ATR - Flight Demo																																
Enhanced CID																																
Studies																																
X-Patch Development																																

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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	2014	4	2016
LASER VISION - Siren POD Demo BoldQuest 16 ACTD	3	2016	3	2016
LASER VISION - VAMP	1	2015	2	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	4	2016	4	2016
LASER VISION - 3D Ladar (3DTO) POD Demo	2	2018	2	2018
Passive RF ID (PRIDE)	3	2016	4	2020
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	2020
RID (Radio ID) Lab Demo	1	2019	1	2019
RID (Radio ID) - Flight Demo	3	2020	3	2020
Hydra Vision - Air to Air	1	2014	2	2020
Hydra Vision - Air to Air 2 Feature RT Demo	1	2016	1	2016
Hydra Vision - Air to Air 3 Feature RT Demo	2	2020	2	2020
Hydra Vision - Increment 1 - Air-to-Ground	1	2014	4	2016
Hydra Vision - Increment 1 - Air-To-Ground OPS Demo	3	2016	3	2016
Hydra Vision - Increment 2 - Air-To-Ground	1	2017	4	2020
Hydra Vision - Increment 2 - Air-to-Ground Flight Demo	3	2020	3	2020
Compact ATR - Compact Feature ATR	1	2014	4	2020

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

Events	Start		End	
	Quarter	Year	Quarter	Year
Compact ATR - Compact Feature ATR Lab Demo	3	2017	3	2017
Compact ATR- Compact Feature ATR - Flight Demo	3	2020	3	2020
Enhanced CID	1	2016	4	2019
Studies	1	2014	4	2020
X-Patch Development	1	2014	4	2014

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
642599: <i>Cooperative Identification Techniques</i>	-	1.945	1.876	1.897	-	1.897	1.931	1.968	2.004	2.040	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.

Within the air-to-air domain, programs funded to meet this intent include:

Mode 5 Technology Insertion Program (TIP): This project funds preliminary RDT&E for Mark XIIA, the next generation Identification Friend or Foe (IFF) standard for the DoD and NATO. Mark XIIA represents a substantial enhancement to the Mark XII IFF system. It is expected to achieve Joint Initial Operational Capability in 2014. The "A" denotes the addition of Mode 5 (an encrypted challenge-and-reply mode) to the other Mark XII system modes (Modes 1, 2, 3/A, C, S, and 4). The Mode 5 secure IFF program is a DoD-wide, Navy-led development and acquisition program. The Mode 5 TIP specifically addresses implementation for air platforms by integrating Mode 5 into APX-119, APX-114, APX-113 and the UPX-40 transponder systems.

Within the air-to-ground domain, development funded by this project ensures development, integration, test and evaluation of friendly identification systems focused on reducing air-to-ground fratricide. CID efforts include investigation of radio based identification technologies; including the exploitation of state of the art digital radios and software defined radios and integration of cooperative and non-cooperative technologies for improved target recognition which could be incorporated into targeting pods or directly into the cockpit.

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.

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

	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: AIMS Program Office	1.945	1.876	1.897	-	1.897
Description: 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					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
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. FY 2014 Accomplishments: - Continued to fund AIMS for interoperability testing, FAA liason, and support of Mode 4 / Mode 5 equipment. FY 2015 Plans: - Continue to fund AIMS for interoperability testing, FAA liason, and support of Mode 4 / Mode 5 equipment. FY 2016 Base Plans: - Will continue to fund AIMS for interoperability testing, FAA liason, and support of Mode 4 / Mode 5 equipment. FY 2016 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	1.945	1.876	1.897	-	1.897

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

Remarks

D. Acquisition Strategy
Award multiple, competitive contract vehicles emphasizing off-the-shelf technology and maximizing the use of non-developmental items (NDIs).

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	1.880	Mar 2014	1.756	May 2015	1.777	Apr 2016	-		1.777	Continuing	Continuing	-
Subtotal			-	1.880		1.756		1.777		-		1.777	-	-	-

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Not specified. : ,	-	0.065	Sep 2014	0.120	Sep 2015	0.120	Sep 2016	-		0.120	Continuing	Continuing	-
Subtotal			-	0.065		0.120		0.120		-		0.120	-	-	-

			Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	1.945	1.876	1.897	-	1.897	-	-	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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>

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
ADS-B / M5L2 TIP	██████████																											
ADS-B / M5L2 TIP - AIMS Certification			██																									
Digital IFF Control Panel	██████████																											
Digital IFF Control Panel - AIMS Certification				██																								
AIMS Program Office Support	██████████																											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
ADS-B / M5L2 TIP	1	2014	3	2014
ADS-B / M5L2 TIP - AIMS Certification	3	2014	3	2014
Digital IFF Control Panel	1	2014	4	2014
Digital IFF Control Panel - AIMS Certification	4	2014	4	2014
AIMS Program Office Support	1	2014	4	2020

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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
--	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	4.561	2.392	4.736	-	4.736	4.407	3.877	3.970	4.059	Continuing	Continuing
64NATO: <i>Nato Coop R&D</i>	-	4.561	2.392	4.736	-	4.736	4.407	3.877	3.970	4.059	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 0603790, 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.

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	4.568	2.392	4.972	-	4.972
Current President's Budget	4.561	2.392	4.736	-	4.736
Total Adjustments	-0.007	-	-0.236	-	-0.236
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.007	-			
• Other Adjustments	-	-	-0.236	-	-0.236

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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
--	---

Change Summary Explanation

FY 2016 program funding increase due to the transfer of PE 0603791F International Space & Cooperative R&D to PE 0603790F NATO Research and Development to consolidate activities under one Program Element Code.

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

	FY 2014	FY 2015	FY 2016
<p>Title: International Cooperative Research and Development</p> <p>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.</p> <p>FY 2014 Accomplishments: FY14 cooperative projects included but were not limited to: First Generation Quad-Stimulus Laser Eye Protection; Hot Spots Structural Health Monitoring; Coalition Live, Virtual and Constructive Training Research; Bio-Inspired Technologies for Unmanned Aerial Systems (UAS); Air Vehicle Integrated Energy and Power Management Modeling and Simulation; Non-Invasive Rapid Detection of Stress Levels via Nano Devices; Solid Rocket Motor Critical Defect Analysis and Health Monitoring; Robust Affordable Network Global Navigation Satellite Systems Receiver for Military Applications; and others.</p> <p>FY 2015 Plans: 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.</p> <p>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 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,</p>	4.561	2.392	4.736

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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
--	---

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
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			
Accomplishments/Planned Programs Subtotals	4.561	2.392	4.736

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 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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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
--	---	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Research Projects	Various	Various : ,	-	3.561	Feb 2014	1.500	Feb 2015	3.468	Feb 2016	-		3.468	Continuing	Continuing	-
Subtotal			-	3.561		1.500		3.468		-		3.468	-	-	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Research Projects	Various	Various : ,	-	1.000	Feb 2014	0.892	Feb 2015	1.268	Feb 2016	-		1.268	Continuing	Continuing	-
Subtotal			-	1.000		0.892		1.268		-		1.268	-	-	-

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	4.561	2.392	4.736	-	4.736	-	-	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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 ICR&D Projects - Call Letter		■																										
FY16 ICR&D Projects - nomination package development		■	■																									
FY16 ICR&D Projects - Review panel			■																									
FY16 ICR&D Projects - Coordination of review panel results				■																								
FY16 ICR&D Projects - Approved projects letter sent to MAJCOMs				■																								
FY16 ICR&D Projects - Agreement development, negotiations, and signature						■	■	■																				
FY16 ICR&D Projects - RDTE cooperative project work										■	■	■	■	■	■	■												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
FY16 ICR&D Projects - Call Letter	2	2014	2	2014
FY16 ICR&D Projects - nomination package development	2	2014	3	2014
FY16 ICR&D Projects - Review panel	3	2014	3	2014
FY16 ICR&D Projects - Coordination of review panel results	4	2014	4	2014
FY16 ICR&D Projects - Approved projects letter sent to MAJCOMs	4	2014	4	2014
FY16 ICR&D Projects - Agreement development, negotiations, and signature	1	2015	4	2015
FY16 ICR&D Projects - RDTE cooperative project work	1	2016	4	2017

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
--	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	0.379	0.833	-	-	-	-	-	-	-	Continuing	Continuing
645035: <i>Intl Space Coop R&D</i>	-	0.379	0.833	-	-	-	-	-	-	-	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 0603790, 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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	0.379	0.833	0.796	-	0.796
Current President's Budget	0.379	0.833	-	-	-
Total Adjustments	-	-	-0.796	-	-0.796
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-0.796	-	-0.796

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
--	--

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
<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 2014 Accomplishments: FY14 cooperative projects included but were not limited to: Nanosatellites Plug and Play Architectures II; Hyper-Temporal Imaging Exploitation and Validation of Technology; and others.</p> <p>FY 2015 Plans: 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>	0.379	0.833	-
Accomplishments/Planned Programs Subtotals	0.379	0.833	-

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 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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force												Date: February 2015				
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>								
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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	
International Research Projects	Various	Various : ,	-	0.379	Feb 2014	0.833	Feb 2015	-		-		-	Continuing	Continuing	-	
Subtotal			-	0.379		0.833		-		-		-	-	-	-	
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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			-	0.379		0.833		-		-		-	-	-	-	
Remarks																

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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>

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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 ISCRD Projects - Call letter		■																										
FY16 ISCRD Projects - Project nomination package development		■	■																									
FY16 ISCRD Projects - Review panel			■																									
FY16 ISCRD Projects - Coordination of review panel results				■																								
FY16 ISCRD Projects - Approved projects letter sent to MAJCOMS				■																								
FY16 ISCRD Projects - Project agreement development, negotiations, and signature					■	■	■	■																				
FY16 ISCRD Projects - RDTE cooperative project work									■	■	■	■	■	■	■	■												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
FY16 ISCRD Projects - Call letter	2	2014	2	2014
FY16 ISCRD Projects - Project nomination package development	2	2014	3	2014
FY16 ISCRD Projects - Review panel	3	2014	3	2014
FY16 ISCRD Projects - Coordination of review panel results	4	2014	4	2014
FY16 ISCRD Projects - Approved projects letter sent to MAJCOMS	4	2014	4	2014
FY16 ISCRD Projects - Project agreement development, negotiations, and signature	1	2015	4	2015
FY16 ISCRD Projects - RDTE cooperative project work	1	2016	4	2017

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
--	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	23.986	31.613	30.771	-	30.771	32.722	31.786	31.250	31.810	Continuing	Continuing
64A025: <i>Space Protection Program</i>	-	23.986	31.613	30.771	-	30.771	32.722	31.786	31.250	31.810	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. The program works within existing processes spanning requirements, budgeting, acquisition, and operational development to carry-out its protection mission. 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. In the context of its projects and activities, the SSDP employs a cooperative, objective, and enterprise-level approach to implement the capabilities, plans and options to deter, defend against, and if necessary, defeat efforts to interfere with or attack U.S. or allied space systems in an increasingly constrained and hostile environment.

SSDP projects/activities center on identifying solutions to current space protection needs with a common sense approach to balancing near-term results with long-term acquisition, architecture, and strategic objectives. Given the ever-changing elements of the space protection landscape, the SSDP is designed to remain flexible and responsive to fluctuating NSS priorities and objectives. Protection projects/activities in one year are typically dependent upon or advised by the results/findings or progress made on tasks in the preceding FY, and must remain responsive to annual DEPSECDEF and PDDNI - approved SSDP Work Plans that take such variability into consideration. As such, SSDP's FY16 projects/activities will be structured to address the priorities and objectives of the SSDP Work Plan and meet the Nation's space survivability and protection needs as directed by the DEPSECDEF and PDDNI. In order to ensure resiliency in a contested space environment, FY16 efforts will leverage available resources to support NSS survivability requirements and address protection issues, options, and strategies in the priority articulated in the annual SSDP Work Plan; extending beyond space defense strategies, techniques, and solutions to include offensive space control and active defense. SSDP will translate resilience, protection, endurance, and survivability into protection strategy/policy and threat mitigation projects and/or activities in specific mission areas to inform/impact budget and program formulation, influence the development of system or segment requirements, provide technical parameters to systems and capabilities, improve

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
--	---

CONOPS / TTPs for operational systems, shape and inform protection-related policies, and identify areas for additional collection and/or analysis by the IC to feed threat mitigation efforts.

The FY16 President's Budget request represents the resources required to operate and execute a synchronized and effective space protection effort for the Nation; fulfilling a unique, objective and independent role that considers comprehensive, enterprise-level, space and non-space, material and non-material solutions across NSS systems and architectures. The FY16 request preserves the skill-set, knowledge base and multi-organizational construct required to remain ahead of the threat and to evolve programmatic direction and operational CONOPS across multiple orbital regimes in a way that minimizes duplication and inefficiency. This essentially enables the SSDP to deliver the research, analysis, studies, tools and capabilities necessary to identify, prioritize, develop, and implement the most effective and economical solutions to preserve NSS capabilities.

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.

The FY2016 funding request was reduced by \$2.326 million to account for the availability of prior execution balances.

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	24.764	32.313	33.302	-	33.302
Current President's Budget	23.986	31.613	30.771	-	30.771
Total Adjustments	-0.778	-0.700	-2.531	-	-2.531
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-0.700			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-0.778	-	-2.531	-	-2.531

Change Summary Explanation

The FY2016 funding request was reduced by \$2.326 million to account for the availability of prior execution balances.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Title: Threat Mitigation Project and Activities	14.436	25.904	25.957
Description: Entails the prioritized, project-specific technical efforts and activities supporting SSDP mission objectives. Encompasses all SSDP efforts to deliver and implement actionable solutions based on methodical, data-driven systems			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p>engineering and technical analysis to inform/impact both programmatic and operational domains. Includes associated program support/infrastructure and operating costs to sustain a coherent program effort and adhere to the legal demands/requirements of executing a program-specific baseline.</p> <p>FY 2014 Accomplishments: Engaged in a disciplined methodology to prioritize efforts and execute priority protection projects under a limited budget baseline. Completed efforts resulting in the delivery and implementation of actionable solutions for key mission areas: Operations, Satellite Communication (SATCOM), Position-Navigation and Timing (PNT), Missile Warning, Cyber/Non-Kinetic Operations, Space Situational Awareness (SSA), Indications and Warning (I&W), and Intelligence - Surveillance - Reconnaissance (ISR). Successfully increased the existing program's scope and capability to execute a more comprehensive National protection mission and make further progress on systematically developing, reviewing and integrating protection-specific measures into policy, requirements, acquisitions and operations. Specifically, SSDP delivered analysis and solutions to the Joint Space Operations Center (JSpOC) for a functional Electromagnetic Interference (EMI) architecture, implemented Cyber support to defensive space alternatives, delivered cyber protection threat assessments, provided assessments and solutions for hosted sensors, developed and delivered validated response options to Combatant Commanders (COCOMs) for various threats, provided strategic messages for a variety of key DoD and IC activities, supported key wargames and exercises to refine Tactics, Techniques, and Procedures (TTPs) and Concept of Operations (CONOPS) for space-protection tenets, and developed/integrated rapid prototyping capabilities for key mission areas.</p> <p>FY 2015 Plans: FY15 projects/activities are structured to address the priorities and objectives of the SSDP work plan and meet the Nation's space survivability and protection needs as directed by the DEPSECDEF and the PDDNI. The targeted objective of FY15 projects/activities is to increase emphasis on addressing a wider domain of capabilities and enhance the focus on offensive and active defense issues; but still retaining the program's vital role in the preservation of space missions through the optimal combination of offensive and defensive techniques. Increased project capacity in FY15 is directed at applying 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. FY15 projects/activities will provide effective and timely deliverables that approach space protection today as if we are in tomorrow's conflict, offer solutions to real problems in a methodical way consistent with National guidance, maintain appropriate balance between mitigating near-term threats and pursuing foundational analytical activities, and operate within DoD and ODNI authorities to provide value added injections into existing and future processes.</p> <p>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</p>				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 2014	FY 2015	FY 2016
<p>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, 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 and/or programmatic impact. Advanced Space Combat Tactics, Counter Network Exploitation Analysis, WGS Defense Exploration, and GEO Catalog Expansion will continue to be program priorities in FY16.</p> <p>Title: Strategic Protection Activities and Products</p> <p>Description: Efforts within this category were identified in the SSDP charter as a specific thrust area beginning in FY14. This 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. Strategic Protection efforts also provide essential data, support and insight to the program's Threat Mitigation Projects and Activities; enhancing and advancing those efforts for more efficient and effective implementation of those solutions for the Nation.</p> <p>FY 2014 Accomplishments: Engaged in amplified strategic protection efforts for the SSDP with a focus on establishing integrated activities to support space survivability and protection objectives across policy, requirements, threat analysis, and architecture evaluation regimes. Specifically, SSDP provided specialized technical support to assess, propose, inform/influence and develop policies and strategic communication relating to defensive space control and resilience. Additionally, the program formalized its function and process to recommend policy considerations related to space protection and analyze the impacts of such proposals on mitigation development options. Related to this effort, the SSDP also delivered a variety of strategic communication recommendations.</p> <p>FY 2015 Plans: Continue dedicated strategic protection and policy integration efforts across all facets of the NSS Enterprise. Complete the evolution of this function to be fully integrated into the strategic protection aspect of all SSDP stakeholder processes and responsibilities. Focus in FY15 will evolve to provide more comprehensive technical assistance, advice, and strategic solutions in support of policy-related processes across the NSS Enterprise. Moreover, SSDP will inform and assist policy-makers at every level on opportunities to shape policy to enhance space protection posture. Policy-makers will also receive specialized technical assistance, protection-specific data/findings, and validated recommendations regarding the impacts that policy/strategy changes may/can have on our protection of NSS capabilities.</p> <p>FY 2016 Plans:</p>	3.550	3.909	3.939

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p>With a fully-functional and integrated Strategic Protection capability by FY16, the SSDP plans to further impact policy across a broader range of DoD, IC and Civil space operations. With continued strategic protection and policy integration efforts across all facets of the NSS Enterprise, SSDP will also seek to provide operational actions/solutions that directly support the implementation of space strategies, policies or strategic communication actions; offering a higher level of in-depth data/findings as well as proven recommendations to enhance the Nation's space protection posture. Technical assistance, advice and strategic solution support in FY16 will also extend to COCOM decision support systems/workgroups and Lead Integrator decision processes.</p> <p>Title: SATCOM Resiliency Enhancement</p> <p>Description: This is a protection-related enhancement funded through and advised/informed by the SSDP. It is a four-year incremental effort to enhance the ground-based software and associated operating/processing procedures used to plan WGS operations. It will leverage current system capabilities and planned software updates to improve code that will make a manually-intensive build cycle more automated/responsive.</p> <p>FY 2014 Accomplishments: Kicked-off an incremental effort to implement a software code improvement to the ground based software used to plan WGS operations. With SSDP direction and oversight, Project Manager Defense Communications and Army Transmission Systems (PM DCATS) initiated development of specific software code improvements (within the framework of the existing system) to process data more efficiently. These improvements (within the scope of the current ground processing contract) enhance existing code to automate aspects of the planning software to make it more tactically responsive. The revised software passed Preliminary Qualification Testing (PQT) and Formal Qualification Testing in late FY14 as well as incorporating warfighter function requests into the design and operation.</p> <p>FY 2015 Plans: Efforts in FY15 will lead to an initial software code update in Dec 14 and implementation of the enhancement (to include revised operational techniques) by FY17. FY15 activities will encompass post 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. FY15 efforts will also entail technique development and operational integration through the wideband architecture by exploring enabling infrastructure such as spectrum monitoring for electromagnetic interference</p> <p>FY 2016 Plans: 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, SSDP will test the enhancement and inject it into a variety of relevant exercises. Additionally, the program will work to tie-in the functions of the new software</p>		6.000	1.800	0.875

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 2014	FY 2015	FY 2016
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			
Accomplishments/Planned Programs Subtotals	23.986	31.613	30.771

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> Base	<u>FY 2016</u> OCO	<u>FY 2016</u> Total	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> Complete	<u>Total Cost</u>
• NA: NA	-	-	-	-	-	-	-	-	-	-	-

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.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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,	-	11.556	Nov 2013	23.391	Nov 2014	23.401	Nov 2015	-		23.401	Continuing	Continuing	TBD
Strategic Protection Activities and Products	Various	Various : Various,	-	3.450	Nov 2013	3.587	Nov 2014	3.600	Nov 2015	-		3.600	Continuing	Continuing	TBD
SATCOM Resiliency Enhancement	Various	Various : Various,	-	6.000	Nov 2013	1.800	Nov 2015	0.875	Nov 2015	-		0.875	Continuing	Continuing	TBD
Subtotal			-	21.006		28.778		27.876		-		27.876	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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,	-	0.955	Dec 2013	0.985	Nov 2014	0.999	Nov 2015	-		0.999	Continuing	Continuing	-
Oversight, Advisory and other Technical Support (Contractor PMA)	Various	Various : Various,	-	2.025	Dec 2013	1.850	Nov 2014	1.896	Nov 2015	-		1.896	Continuing	Continuing	TBD
Subtotal			-	2.980		2.835		2.895		-		2.895	-	-	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force **Date:** February 2015

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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Ops Engagement COCOM Operational Planning (OPlans, ConPlans and Joint Warfighter Support)	[REDACTED]																											
Operational Products and Analytical Engagement (Dark Horizons Tactics, COAs and Implementation)	[REDACTED]																											
Cyber Protection of Blue Space Capabilities (Protection Projects)	[REDACTED]																											
Cyber Protection of Blue Space Capabilities (Risk Assessments, Testing and Solutions)	[REDACTED]																											
Cyber Prevention of Adversary Space Threats (Threat and Demo)	[REDACTED]																											
Cyber Prevention of Adversary Space Threats (Defense Initiatives)	[REDACTED]																											
SSA Enterprise Requirements (Low Hanging Fruit)	[REDACTED]																											
SSA Enterprise Requirements (Survivability, Protection-Level Rqts and Metrics/Analysis)	[REDACTED]																											
SSA Defensive Protection Initiatives (Priority Initiative and Implementation)	[REDACTED]																											
SSA Assessments and Solutions (Hosted Sensor, Cross-Cuing, Other Sensors, etc)	[REDACTED]																											
SSA Indications and Warning (GEO Catalog Expansion)	[REDACTED]																											
SSA Indications and Warning (Data Fusion, Sensor Employment, Joint Integration)	[REDACTED]																											
Strategic Protection Policy and Strategy	[REDACTED]																											
Strategic Protection Defensive Space Control Material Options	[REDACTED]																											

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force **Date:** February 2015

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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Strategic Protection Requirements and Acquisition Integration																												
Strategic Protection Resiliency Options and Solutions																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
Missile Warning Defensive Protection Initiatives (Resiliency Project)	1	2014	2	2016
Missile Warning Defensive Protection Initiatives (System Investigations)	3	2016	1	2019
Missile Warning Defensive Protection Initiatives (MW Initiative)	2	2019	4	2020
Missile Warning Assessments and Solutions (Alt TTPs, Protection Solutions and Implementation)	2	2014	4	2020
PNT Assessment and Solutions (GPS Threat Impact Assessment, Characterization and Implementation)	1	2014	2	2019
PNT Assessments and Solutions (Future Vulnerability Assessments)	2	2019	4	2020
PNT Assessments and Solutions (Survivability Option Refinement and Proof of Concept)	3	2014	4	2020
SATCOM Solution Implementation (WGS Enhancement)	1	2014	4	2017
SATCOM Solution Implementation (Project Dolly, EMI, Commercial, Wideband, EHF and UHF)	1	2015	3	2020
SATCOM Vulnerability Assessments/Mitigation Solutions (Commercial SATCO, EMI and UHF)	1	2014	1	2020
SATCOM Assured Communications (Resiliency and Counterspace Techniques)	1	2014	3	2020
Ops Engagement Wargame and Exercises (up to 5 events per year)	1	2014	4	2020
Ops Engagement COCOM Operational Planning (OPlans, ConPlans and Joint Warfighter Support)	1	2014	4	2020
Operational Products and Analytical Engagement (Dark Horizons Tactics, COAs and Implementation)	1	2014	4	2020
Cyber Protection of Blue Space Capabilities (Protection Projects)	1	2014	4	2020
Cyber Protection of Blue Space Capabilities (Risk Assessments, Testing and Solutions)	2	2014	4	2020
Cyber Prevention of Adversary Space Threats (Threat and Demo)	1	2014	3	2020
Cyber Prevention of Adversary Space Threats (Defense Initiatives)	1	2014	4	2020

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Events	Start		End	
	Quarter	Year	Quarter	Year
SSA Enterprise Requirements (Low Hanging Fruit)	1	2014	3	2020
SSA Enterprise Requirements (Survivability, Protection-Level Rqts and Metrics/Analysis)	2	2014	4	2020
SSA Defensive Protection Initiatives (Priority Initiative and Implementation)	1	2014	3	2020
SSA Assessments and Solutions (Hosted Sensor, Cross-Cuing, Other Sensors, etc)	1	2014	3	2020
SSA Indications and Warning (GEO Catalog Expansion)	2	2015	1	2020
SSA Indications and Warning (Data Fusion, Sensor Employment, Joint Integration)	2	2014	4	2020
Strategic Protection Policy and Strategy	2	2014	4	2020
Strategic Protection Defensive Space Control Material Options	2	2014	4	2020
Strategic Protection Requirements and Acquisition Integration	1	2014	4	2020
Strategic Protection Resiliency Options and Solutions	2	2014	4	2020

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>
--	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	72.696	30.885	39.765	-	39.765	83.660	73.309	68.310	65.508	Continuing	Continuing
641020: <i>ICBM Guidance Applications</i>	-	28.513	0.493	5.251	-	5.251	18.638	14.873	12.837	12.871	Continuing	Continuing
641021: <i>ICBM Propulsion Applications</i>	-	34.810	16.072	6.910	-	6.910	15.118	10.901	11.885	6.962	Continuing	Continuing
641022: <i>ICBM Reentry Vehicle Applications</i>	-	-	3.951	11.367	-	11.367	22.670	22.179	18.727	19.753	Continuing	Continuing
641024: <i>ICBM Command & Control (C2) Applications</i>	-	-	2.469	14.764	-	14.764	24.273	22.884	21.900	21.934	Continuing	Continuing
641025: <i>Ground Based Strategic Deterrence (GBSD)</i>	-	9.373	6.913	-	-	-	-	-	-	-	Continuing	Continuing
644209: <i>Long Range Planning (LRP)</i>	-	-	0.987	1.473	-	1.473	2.961	2.472	2.961	3.988	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. Efforts identify methods to reduce life cycle costs, improve nuclear safety and surety, and ensure strategic missile viability. On-going demonstration and validation projects include Guidance Application Program (GAP), GBSD, Propulsion Application Program (PAP), Reentry Vehicle Application Program (RVAP), Command and Control Applications (C2AP) and Long Range Planning (LRP).

Future GBSD efforts will be reflected in 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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0603851F / <i>Intercontinental Ballistic Missile - Dem/Val</i>

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	72.696	30.885	18.029	-	18.029
Current President's Budget	72.696	30.885	39.765	-	39.765
Total Adjustments	-	-	21.736	-	21.736
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	21.736	-	21.736

Change Summary Explanation

FY16 Significant Change: \$21.736M added across the applications programs to mature and develop advanced technologies to provide risk reduction for future programs related to the Ground Based Strategic Deterrent (GBSD).

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
641020: <i>ICBM Guidance Applications</i>	-	28.513	0.493	5.251	-	5.251	18.638	14.873	12.837	12.871	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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Guidance Application Program	28.513	0.493	5.251	-	5.251
Description: Develop and mature, in coordination with the Navy, advanced technologies and concepts to support future requirements.					
FY 2014 Accomplishments: Continued to develop, analyze and evaluate strategic guidance technologies, concepts and architectures for use in current or future ICBM systems. Efforts included the conceptual studies of guidance related systems and instruments, such as accelerometers and gyro technology. Assessed and tested strategic radiation hardened parts for consolidation into a AF/Navy rad hard parts library. Developed a capability to test current and future strategic guidance instruments. Continued GBSD pre-Milestone A activities and technology maturation for guidance system development risk reduction.					
FY 2015 Plans: Continue to identify, develop, analyze and evaluate advanced strategic guidance technologies for potential use in the current or future ICBM systems.					
FY 2016 Base Plans:					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Mature, analyze, and evaluate advanced strategic guidance technologies for potential use in the current or future ICBM systems, such as accelerometers and gyro technology. Advanced technologies will support GBSD risk reduction. <i>FY 2016 OCO Plans:</i> N/A					
Accomplishments/Planned Programs Subtotals	28.513	0.493	5.251	-	5.251

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE: BA04: PE 0605230F: <i>Ground Based Strategic Deterrent</i>	-	-	75.166	-	75.166	120.735	207.048	218.162	324.778	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.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Guidance Application Program Concept, Design and Architecture - Guidance (CDAG)	C/CPFF	Various* : Various**,	-	10.952	May 2014	-		-		-		-	Continuing	Continuing	10.952
Develop, analyze, evaluate, prototype and test instrument technologies	C/CPFF	Honeywell*** : Various****, NM	-	3.348	Apr 2014	-		-		-		-	Continuing	Continuing	31.017
Guidance Application Program Pre-acquisition Activities and studies	C/CPFF	Various : Various,	-	1.065	May 2014	-		-		-		-	Continuing	Continuing	1.065
Assess, evaluate and test radiation hard electronics	MIPR	Navy Crane : Crane, IN	-	0.265	Jun 2014	-		-		-		-	Continuing	Continuing	0.265
Sensor Technology - Evaluate, test (performance, environmental, thermal, radiation), maturity/integration	C/CPFF	Draper Labs : Various****,	-	-		0.482	Apr 2015	5.066	Apr 2016	-		5.066	Continuing	Continuing	26.000
Subtotal			-	15.630		0.482		5.066		-		5.066	-	-	69.299

Remarks

* Boeing, Lockheed, and General Dynamics
 ** Boeing - Huntington Beach, CA; Lockheed - King of Prussia, PA; General Dynamics - Pittsfield, PA
 ***Category II MIPR to AFRL/RV
 ****Clearwater, FL; Redmond, WA; Phoenix, AZ
 *****Cambridge, MA and Washington D.C.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Guidance Application Program Engineering Support	C/Various	TASC : Roy, UT	-	1.131	Jul 2014	-		-		-		-	Continuing	Continuing	-
Guidance Application Program Technical Services	C/CPAF	BAE : Clearfield, UT	-	7.752	Jul 2014	-		-		-		-	Continuing	Continuing	-
Subtotal			-	8.883		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Guidance Application Program Inertial Test Capability	MIPR	Various : Various,	-	0.560	Jun 2014	-		-		-		-	Continuing	Continuing	-
Subtotal			-	0.560		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Guidance Application Program Program Management Administrative Support Services	C/Various	Various : Various,	-	0.698	Jun 2014	0.011	Feb 2015	0.185	Feb 2016	-		0.185	Continuing	Continuing	-
Aerospace FFRDC	SS/FFP	Aerospace Corp. : Los Angeles, CA	-	2.742	May 2014	-		-		-		-	Continuing	Continuing	-
Subtotal			-	3.440		0.011		0.185		-		0.185	-	-	-

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.

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
Rad Hard Electronics	2	2014	4	2014
Electronics Hard Parts Library	2	2014	2	2015
Concept Design and Architecture	3	2014	2	2016
Strategic Fiber Optical Gyro Development	3	2014	4	2016
Guidance Studies and Maturation	3	2015	4	2020
Sensor Technology Report	4	2015	4	2015

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
641021: <i>ICBM Propulsion Applications</i>	-	34.810	16.072	6.910	-	6.910	15.118	10.901	11.885	6.962	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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Propulsion Application Program	34.810	16.072	6.910	-	6.910
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. - Support the research and development industrial base and critical infrastructure.					
FY 2014 Accomplishments: - Continued to support the Solid Rocket Motor research and development industrial base and critical infrastructure. - Conducted two successful Large Class Stage II Static Tests. - Continued assessment and demonstration of ordnance and post-boost technology development. - Continued Medium Class Stage III development. Continued to integrate and analyze medium class motors and technology insertion opportunities.					
FY 2015 Plans: - Continue to support the SRM research and development industrial base and critical infrastructure. - Continue assessment and demonstration of ordnance and post-boost technology development. - Continue propulsion system development and conduct MCS III static fire testing. - Continue to integrate and analyze medium class motors and technology insertion opportunities.					
FY 2016 Base Plans: - Continue to support the SRM research and development industrial base and critical infrastructure.					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
- Continue assessment and demonstration of propulsion systems to include ordnance, thrust vector control, and post-boost technology development. <i>FY 2016 OCO Plans:</i> N/A					
Accomplishments/Planned Programs Subtotals	34.810	16.072	6.910	-	6.910

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE: BA04: PE 065230F: <i>Ground Based Strategic Deterrent</i>	-	-	75.166	-	75.166	120.735	207.048	218.162	324.778	Continuing	Continuing

Remarks

D. Acquisition Strategy
Studies, analyses, limited engineering, hardware development and 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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Propulsion Application Program Medium Class Stage 3	C/CPFF	ATK : Magna, UT	-	15.622	Oct 2013	-		-		-		-	Continuing	Continuing	49.419
Propulsion Application Program Medium Class Stage 3	C/CPFF	Aerojet : Sacramento, CA	-	8.500	Oct 2013	-		-		-		-	Continuing	Continuing	28.939
Propulsion Application Program PAP/AFRL Studies	C/Various	Various : Various,	-	1.000	Feb 2014	1.500	Apr 2015	-		-		-	Continuing	Continuing	-
Propulsion Application Program Ground Based Strategic Deterrence Propulsion Studies	C/FFP	TBD : TBD,	-	-		2.000	Mar 2015	-		-		-	Continuing	Continuing	-
Propulsion Application Program Thrust Vector Control Study - Contractor #1	C/CPFF	TBD : TBD,	-	1.957	Mar 2015	-		2.877	Feb 2016	-		2.877	Continuing	Continuing	-
Propulsion Application Program Thrust Vector Control Study - Contractor #2	C/CPFF	TBD : TBD,	-	1.956	Mar 2015	-		2.877	Feb 2016	-		2.877	Continuing	Continuing	-
Propulsion Application Program Post Boost Study	C/CPFF	TBD : TBD,	-	-		8.678	Mar 2015	-		-		-	Continuing	Continuing	-
Propulsion Application Program Advanced Ordnance & Stage Separation Studies	C/CPFF	TBD : TBD,	-	-		1.000	Apr 2015	-		-		-	Continuing	Continuing	-
Subtotal			-	29.035		13.178		5.754		-		5.754	-	-	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Propulsion Application Program Integration Support	C/FFP	BAE Systems : Clearfield, UT	-	0.857	Aug 2014	0.656	Aug 2015	0.956	Aug 2016	-		0.956	Continuing	Continuing	-
Subtotal			-	0.857		0.656		0.956		-		0.956	-	-	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Propulsion Application Program Management Administration	Various	Various : Various,	-	4.918	Jun 2014	2.238	Feb 2015	0.200	Feb 2016	-		0.200	Continuing	Continuing	-
Subtotal			-	4.918		2.238		0.200		-		0.200	-	-	-

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	34.810	16.072	6.910	-	6.910	-	-	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
LCS 2 Static Test 1		■																										
LCS 2 Static Test 2			■																									
Advanced Ordnance & Stage Separation Studies									■	■	■	■																
Preliminary Concept Trade - Thrust Vector Control Study											■																	
MCS 3 Sea level Static Test											■																	
Preliminary Concept Trade - Post Boost Study											■																	
MCS 3 Altitude Static Test											■																	
Thrust Vector Control Prototype Test															■													
Post Boost Optional Prototype Test																											■	

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
LCS 2 Static Test 1	2	2014	2	2014
LCS 2 Static Test 2	3	2014	3	2014
Advanced Ordnance & Stage Separation Studies	3	2015	1	2017
Preliminary Concept Trade - Thrust Vector Control Study	4	2015	4	2015
MCS 3 Sea level Static Test	4	2015	4	2015
Preliminary Concept Trade - Post Boost Study	1	2016	1	2016
MCS 3 Altitude Static Test	2	2016	2	2016
Thrust Vector Control Prototype Test	3	2017	3	2017
Post Boost Optional Prototype Test	4	2017	4	2017

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
641022: <i>ICBM Reentry Vehicle Applications</i>	-	-	3.951	11.367	-	11.367	22.670	22.179	18.727	19.753	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 reductions 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 AF and Navy Force Development Evaluation (FDE) flights.

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

	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Reentry Vehicle Application Program	-	3.951	11.367	-	11.367
Description: Mature, evaluate, and test reentry system materials and technologies for use in current and future strategic applications.					
FY 2014 Accomplishments: N/A					
FY 2015 Plans: Assess, develop, and evaluate Penetration Aid Suites, Multiple Independently-Targeted RV (MIRV)/Shroud, Nosetip and Thermal Protection System (TPS) Material Development, RV types/range extension, antenna window, and conduct commonality testing with the Navy.					
FY 2016 Base Plans: Continue to mature and evaluate Penetration Aid Suites, Multiple Independently-Targeted RV (MIRV)/Shroud, Bulkhead Development, Nosetip and Thermal Protection System (TPS) Material Development, RV types/range extension, antenna window, and conduct commonality testing with the Navy.					
FY 2016 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	-	3.951	11.367	-	11.367

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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>

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

N/A

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Reentry Vehicle Application Program Penetration Aid Suites	C/CPFF	TBD : TBD,	-	-		2.723	Mar 2015	5.262	Mar 2016	-		5.262	Continuing	Continuing	9.521
Reentry Vehicle Application Program Thermal Protection System (TPS) Materials	C/CPFF	TBD : TBD,	-	-		0.871	Mar 2015	2.253	Jan 2016	-		2.253	Continuing	Continuing	-
Reentry Vehicle Application Program Air Force/Navy Collaborative Flight Test Effort (CFTE)	C/CPFF	TBD* : TBD,	-	-		-		1.011	Jan 2016	-		1.011	Continuing	Continuing	-
Subtotal			-	-		3.594		8.526		-		8.526	-	-	-

Remarks
*Category II MIPR being issued to Navy. Navy will award the contract.

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Reentry Vehicle Application Program Support	C/FFP	BAE Systems : Clearfield, UT	-	-		0.210	Mar 2015	0.210	Mar 2016	-		0.210	Continuing	Continuing	-
Subtotal			-	-		0.210		0.210		-		0.210	-	-	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Reentry Vehicle Application Program TPS Materials	C/CPAF	Various : Various,	-	-		-		2.279	Mar 2016	-		2.279	Continuing	Continuing	-
Subtotal			-	-		-		2.279		-		2.279	-	-	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force											Date: February 2015				
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>					

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Reentry Vehicle Application Program PMA-Government Costs	Various	Various : Various,	-	-		0.147	Mar 2015	0.352	Mar 2016	-		0.352	Continuing	Continuing	-
Subtotal			-	-		0.147		0.352		-		0.352	-	-	-

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-	3.951	11.367	-	11.367	-	-	-

Remarks

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
Penetration Aid Design Study	2	2015	4	2017
Multiple Independently-Targeting Reentry Vehicles (MIRV)/Shroud	1	2016	4	2017
Bulkhead Development	1	2016	1	2017
Thermal Protection System (TPS) Materials	1	2016	4	2017
Air Force/Navy Collaborative Flight Test Effort (CFTE)	1	2016	4	2019

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
641024: <i>ICBM Command & Control (C2) Applications</i>	-	-	2.469	14.764	-	14.764	24.273	22.884	21.900	21.934	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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Command and Control Application Program	-	2.469	14.764	-	14.764
Description: Examine and develop concepts for transforming ICBM Weapon System Command and Control to meet current and future requirements.					
FY 2014 Accomplishments: N/A					
FY 2015 Plans: - Initiating studies to identify, assess, and preserve unique strategic command and control skills and technologies to meet current and future requirements. - Beginning development of a WSC2 laboratory to facilitate development and testing of future WSC2 architectures.					
FY 2016 Base Plans: - Continue studies to identify, assess, and preserve unique strategic command and control skills and technologies to meet current and future requirements. - Continue development of WSC2 laboratory to facilitate development and testing of future WSC2 architectures.					
FY 2016 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	-	2.469	14.764	-	14.764

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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>

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

N/A

Remarks

D. Acquisition Strategy

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

E. Performance Metrics

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

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force											Date: February 2015				
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>							

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Command and Control Applications Program Studies*	C/CPFF	TBD : TBD,	-	-		1.973	Mar 2015	10.259	Jan 2016	-		10.259	Continuing	Continuing	-
Command and Control Applications Program Weapon System Command & Control Laboratory	SS/FFP	Aerospace Corporation : Los Angeles, CA	-	-		-		2.763	Jan 2016	-		2.763	Continuing	Continuing	6.855
Subtotal			-	-		1.973		13.022		-		13.022	-	-	-

Remarks
*Characterize current WSC2 architecture and capabilities as well as identify and assess WSC2 state-of-the-art options and trade-offs.

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Command and Control Applications Technical Services	C/FFP	BAE Systems : Clearfield, UT	-	-		0.210	Mar 2015	0.210	Feb 2016	-		0.210	Continuing	Continuing	-
Subtotal			-	-		0.210		0.210		-		0.210	-	-	-

Remarks
Support: Integrated Logistics Support, training development, configuration manangement support, etc--excluding PMA.

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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			-	-		-		-		-		-	-	-	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Command and Control Applications PMA	C/FFP	Various : Various,	-	-		0.094	Mar 2015	0.252	Feb 2016	-		0.252	Continuing	Continuing	-
Aerospace FFRDC	SS/FFP	Aerospace Corp : Los Angeles, CA	-	-		0.192	Mar 2015	1.280	Mar 2016	-		1.280	Continuing	Continuing	-
Subtotal			-	-		0.286		1.532		-		1.532	-	-	-

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

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-	2.469	14.764	-	14.764	-	-	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Command and Control Applications Program Studies & Characterization	[REDACTED]																											
Command and Control Applications Study Report	[REDACTED]																											
Command and Control Applications Program Weapon System Command & Control Laboratory	[REDACTED]																											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
Command and Control Applications Program Studies & Characterization	2	2015	4	2020
Command and Control Applications Study Report	4	2015	4	2015
Command and Control Applications Program Weapon System Command & Control Laboratory	2	2016	4	2017

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
641025: <i>Ground Based Strategic Deterrence (GBSD)</i>	-	9.373	6.913	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The 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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Ground Based Strategic Deterrent	9.373	6.913	-	-	-
Description: Perform Pre-Milestone A activities to identify potential materiel solutions for a future GBSD.					
FY 2014 Accomplishments: - Completed GBSD AoA. - Continued concept refinement, technology analyses, modeling and simulation support, engineering studies, program cost and schedule estimation, acquisition strategy development, risk reduction efforts, initial requirements definition, and Milestone A preparation.					
FY 2015 Plans: - Continue concept refinement, technology analyses, modeling and simulation support, engineering studies, program cost, schedule estimation, acquisition strategy development, risk reduction efforts, and initial requirements definition. - Complete Milestone A preparation to include development of Milestone A exit/Technology Development phase entrance documentation.					
FY 2016 Base Plans: Reflected in PE 0605230F, Ground Based Strategic Deterrent, Project 641025.					
FY 2016 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	9.373	6.913	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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)

N/A

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Ground Based Strategic Deterrent Pre-MS A activities	C/FFP	AFNWC : Albuquerque, NM	-	0.303	Jun 2014	-		-		-		-	Continuing	Continuing	0.303
Ground Based Strategic Deterrent SURVIAC Studies	C/FFP	Booz Allen Hamilton : Colorado Springs, CO	-	1.431	Aug 2014	-		-		-		-	Continuing	Continuing	1.431
Subtotal			-	1.734		-		-		-		-	-	-	1.734

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Ground Based Strategic Deterrent Integration Support	C/FFP	BAE Systems : Clearfield, UT	-	5.309	Sep 2014	4.692	Apr 2015	-		-		-	Continuing	Continuing	-
Subtotal			-	5.309		4.692		-		-		-	-	-	-

Remarks
FY15 award dates. \$1.8M award date: 2015-03; \$2.8M award date: 2015-04

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Ground Based Strategic Deterrence	C/FFP	Various : Various,	-	0.648	Nov 2014	0.302	May 2015	-		-		-	Continuing	Continuing	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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															
Aerospace FFRDC	SS/FFP	Aerospace Corp : Los Angeles, CA	-	1.682	Feb 2014	1.919	Mar 2015	-		-		-	Continuing	Continuing	-
Subtotal			-	2.330		2.221		-		-		-	-	-	-

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	9.373	6.913	-	-	-	-	-	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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 Analysis of Alternative	[REDACTED]																											
GBSD SURVIAC Studies	[REDACTED]																											
GBSD Integration Support	[REDACTED]																											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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 Analysis of Alternative	1	2014	4	2014
GBSD SURVIAC Studies	1	2014	3	2015
GBSD Integration Support	4	2014	4	2015

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
644209: <i>Long Range Planning (LRP)</i>	-	-	0.987	1.473	-	1.473	2.961	2.472	2.961	3.988	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, battlespace 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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Long Range Planning	-	0.987	1.473	-	1.473
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 2014 Accomplishments: N/A					
FY 2015 Plans: - Initiate feasibility and life extension studies. - Conduct early phase acquisition activities that are focused on the current ICBM system and development of any future ground based system.					
FY 2016 Base Plans: - Continue feasibility and life extension studies. - Conduct early phase acquisition activities that are focused on the current and future ICBM capability.					
FY 2016 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	-	0.987	1.473	-	1.473

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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>

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

N/A

Remarks

D. Acquisition Strategy

Studies and analyses 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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Long Range Planning Studies	C/FFP	BAE Systems : Clearfield, UT	-	-		0.715	Apr 2015	-		-		-	Continuing	Continuing	-
Launch Facility Restoration and Assessment/Physical Security	C/TBD	TBD : TBD,	-	-		-		1.201	Oct 2015	-		1.201	Continuing	Continuing	-
Subtotal			-	-		0.715		1.201		-		1.201	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Long Range Planning Integration Support	C/FFP	BAE Systems : Clearfield, UT	-	-		0.210	Mar 2015	0.210	Jan 2016	-		0.210	Continuing	Continuing	-
Subtotal			-	-		0.210		0.210		-		0.210	-	-	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Long Range Planning PMA	Various	Various : Various,	-	-		0.062	Apr 2015	0.062	Apr 2016	-		0.062	Continuing	Continuing	-
Subtotal			-	-		0.062		0.062		-		0.062	-	-	-

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force								Date: February 2015			
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>				
	Prior Years	FY 2014	FY 2015		FY 2016 Base	FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-	0.987		1.473	-		1.473	-	-	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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	██████████
Launch Facility Restoration and Assessment	██
Physical Security	██

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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	4	2015
Launch Facility Restoration and Assessment	1	2016	4	2017
Physical Security	3	2016	4	2018

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
--	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	0.953	0.998	-	-	-	-	-	-	-	Continuing	Continuing
644852: <i>Pollution Prevention</i>	-	0.953	0.998	-	-	-	-	-	-	-	Continuing	Continuing
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	0.953	1.798	1.750	-	1.750
Current President's Budget	0.953	0.998	-	-	-
Total Adjustments	-	-0.800	-1.750	-	-1.750
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-0.800			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-1.750	-	-1.750

Change Summary Explanation

FY2016 program termination due to higher Air Force priorities.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p>Title: Low Observable Laser De-coating System</p> <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 2014 Accomplishments: Transition effort from Strategic Environmental Research and Development Program (SERDP). Qualify lasers against technical requirements to remove low-observable coatings from weapon systems.</p> <p>FY 2015 Plans: Demonstrate ability to successfully remove low-observable coatings.</p> <p>FY 2016 Plans: N/A</p>		0.350	0.300	-
<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 2014 Accomplishments: Investigate technical requirements across multiple weapon systems; identify technically feasible hexavalent chromium alternatives.</p> <p>FY 2015 Plans: Demonstrate and validate alternative solutions for specific weapon system processes.</p> <p>FY 2016 Plans: N/A</p>		0.295	0.300	-
<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 2014 Accomplishments: Focus on repair operations and Cadmium plated fasteners for substitution.</p> <p>FY 2015 Plans:</p>		0.295	0.300	-

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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>I Pollution Prevention - Dem/Val</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016
Demonstrate and validate alternative solutions for Cadmium plated connectors. FY 2016 Plans: N/A				
Title: 2014 Emerging Environmental Issues 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 2014 Accomplishments: Address emerging environmental issues, reduce negative impact on aircraft availability. FY 2015 Plans: N/A FY 2016 Plans: N/A		0.013	-	-
Title: 2015 Emerging Environmental Issues 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 2014 Accomplishments: N/A FY 2015 Plans: Address emerging environmental issues, reduce negative impact on aircraft availability. FY 2016 Plans: N/A		-	0.098	-
Accomplishments/Planned Programs Subtotals		0.953	0.998	-
D. Other Program Funding Summary (\$ in Millions) N/A Remarks				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
--	---

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force												Date: February 2015			
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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,	-	0.924		0.998		-		-		-	Continuing	Continuing	TBD
Subtotal			-	0.924		0.998		-		-		-	-	-	-
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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	-	-		-		-		-		-	Continuing	Continuing	TBD
Subtotal			-	-		-		-		-		-	-	-	-
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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	-	-		-		-		-		-	Continuing	Continuing	TBD
Subtotal			-	-		-		-		-		-	-	-	-
Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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,	-	0.029		-		-		-		-	Continuing	Continuing	TBD
Subtotal			-	0.029		-		-		-		-	-	-	-
Project Cost Totals			-	0.953		0.998		-		-		-	-	-	-
Remarks															

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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>

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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					██████████																							
Potential Alternatives					██████████																							
Test Plan					██████████																							
Testing																												
Test Report																												
Demonstration																												
Final Report																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
Testing	1	2014	4	2016
Test Report	1	2014	4	2016
Demonstration	1	2014	4	2018
Final Report	1	2019	1	2019

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0604015F / <i>Long Range Strike</i>
--	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	348.625	913.728	1,246.228	-	1,246.228	2,240.728	2,898.491	3,688.032	3,790.286	Continuing	Continuing
643308: <i>Long Range Strike Bomber</i>	-	348.625	913.728	1,246.228	-	1,246.228	2,240.728	2,898.491	3,688.032	3,790.286	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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	359.437	913.728	1,590.578	-	1,590.578
Current President's Budget	348.625	913.728	1,246.228	-	1,246.228
Total Adjustments	-10.812	-	-344.350	-	-344.350
• Congressional General Reductions	-	-	-	-	-
• Congressional Directed Reductions	-	-	-	-	-
• Congressional Rescissions	-	-	-	-	-
• Congressional Adds	-	-	-	-	-
• Congressional Directed Transfers	-	-	-	-	-
• Reprogrammings	-	-	-	-	-
• SBIR/STTR Transfer	-10.812	-	-	-	-
• Other Adjustments	-	-	-344.350	-	-344.350

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 2014	FY 2015	FY 2016
Title: Long Range Strike Bomber	348.625	913.728	1,246.228
Description: Long Range Strike Bomber			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 0604015F / <i>Long Range Strike</i>
--	--

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
<p><i>FY 2014 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 2015 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 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>			
Accomplishments/Planned Programs Subtotals	348.625	913.728	1,246.228

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

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• MILCON: PE 0604015: <i>Long Range Strike Bomber</i>	-	-	77.130	-	77.130	-	-	-	-	-	-

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604015F / Long Range Strike	Project (Number/Name) 643308 / Long Range Strike Bomber
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 : ,	-	348.625		913.728		1,246.228		-		1,246.228	Continuing	Continuing	-
Subtotal			-	348.625		913.728		1,246.228		-		1,246.228	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	348.625	913.728	1,246.228	-	1,246.228	-	-	-

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.

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force **Date:** February 2015

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

FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
1	2	3	4	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	
--	--

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604015F / <i>Long Range Strike</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	2016	4	2020

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
--	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	2.531	4.769	3.512	-	3.512	3.402	3.317	3.087	3.144	Continuing	Continuing
646003: <i>Partnership Intermediary Agreement(s)</i>	-	2.531	4.769	3.512	-	3.512	3.402	3.317	3.087	3.144	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 OSD budgets. This program was devolved from OSD 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)	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>
Previous President's Budget	2.606	2.669	4.255	-	4.255
Current President's Budget	2.531	4.769	3.512	-	3.512
Total Adjustments	-0.075	2.100	-0.743	-	-0.743
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	2.100			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.075	-			
• Other Adjustments	-	-	-0.743	-	-0.743

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

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

Congressional Add: *Program Increase*

<u>FY 2014</u>	<u>FY 2015</u>
-	2.100

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 2014	FY 2015
Congressional Add Subtotals for Project: 646003	-	2.100
Congressional Add Totals for all Projects	-	2.100

Change Summary Explanation

The FY2016 funding request was reduced by \$0.721 million to account for the availability of prior execution balances.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
---	----------------	----------------	----------------

Title: Technology Transfer	2.531	2.669	3.512
Description: Enhance and expand transfer of technologies between DoD and the commercial sector.			
FY 2014 Accomplishments: Promoted and brokered patent license agreements and Cooperative Research and Development Agreements (CRADAs) between DoD Labs and industry for development of technology with both commercial and military applications. Examples are multiple patent licenses to industry for DoD and commercial use of the Aortic Occlusion System for emergency treatment of non-compressible internal hemorrhaging and providing assistance to a small business on the development of the Intermittent Fault Detection and Isolation System (IDIS).			
FY 2015 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 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.			
Accomplishments/Planned Programs Subtotals	2.531	2.669	3.512

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
--	--

	FY 2014	FY 2015
Congressional Add: Program Increase	-	2.100
FY 2015 Plans: Conduct congressionally directed effort.		
Congressional Adds Subtotals	-	2.100

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force												Date: February 2015			
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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	-	2.531		4.769		3.512		-		3.512	Continuing	Continuing	TBD
Subtotal			-	2.531		4.769		3.512		-		3.512	-	-	-
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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			-	2.531		4.769		3.512		-		3.512	-	-	-
Remarks TBD															

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
1	2	3	4	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																												
--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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	2014	4	2020

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
--	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	333.298	109.602	-	54.637	-	54.637	-	-	-	-	-	497.537
645341: <i>Direct Strike Penetrator Systems</i>	333.298	109.602	-	54.637	-	54.637	-	-	-	-	-	497.537
Quantity of RDT&E Articles	21	7	-	-	-	-	-	-	-	-		

MDAP/MAIS Code: 475

A. Mission Description and Budget Item Justification

Direct Strike Penetrator Systems project includes the 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. The Hard and Deeply Buried Target Defeat System (HDBTDS) development activity is based on the Initial Capabilities Document (ICD) for HDBTDS, 1 Aug 2005, and the MOP development is based on the 2007 Urgent Operational Need (UON) document (revalidated Oct 2014). The Direct Strike Penetrator System is an advanced precision guided penetrator munition that will provide the Air Force with an improved capability using air-to-surface conventional munitions to attack Hard & Deeply Buried Targets (HDBT), such as bunker and tunnel facilities. This system holds HDBTs at risk using fewer weapons and reducing the number of missions necessary to defeat targets, resulting in an increase to overall mission survivability. The Direct Strike Penetrator provides a critical global strike capability not currently met by inventory conventional weapons. It will hold at risk those highest priority assets essential to the enemy's warfighting ability, which are heavily defended and protected. The Direct Strike Penetrator Systems project is also conducting a HTM analysis-of-alternative (AoA) to determine the best weapons and/or development efforts for addressing the Hard and Deeply Buried Targets (HDBT) mission area. At the completion of the AoA, the Air Force will add funds to start the development, production, modification activities for the HDBT attack weapons identified in the AoA as the most effective and affordable weapons. The AoA will include the performance, operational suitability, and cost of alternative hard target defeat systems. HTM is a pre-MDAP program.

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

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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
---	--

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	0.103	-	-	-	-
Current President's Budget	109.602	-	54.637	-	54.637
Total Adjustments	109.499	-	54.637	-	54.637
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	109.500	-			
• SBIR/STTR Transfer	-0.001	-			
• Other Adjustments	-	-	54.637	-	54.637

Change Summary Explanation

Due to the delay in testing from late FY14 to FY15, reprogrammed \$5M into FY14 to complete flight testing for the second phase of Enhanced Threat Response (ETR-II) and gave up \$5M in FY13 funds. For further capability upgrade to the MOP weapon System, reprogrammed \$104.5M in FY14 and added \$54.637M in FY16.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
<p>Title: Massive Ordnance Penetrator (MOP) Weapon Development</p> <p>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.</p> <p>FY 2014 Accomplishments: Start development of the third and fourth phase of Enhanced Threat Response (ETR III & IV) capability for the current MOP weapon.</p> <p>FY 2016 Plans: Complete development of the the third and fourth phase of Enhanced Threat Response (ETR III & IV) capability for the current MOP weapon.</p>	51.000	-	22.000
<p>Title: Massive Ordnance Penetrator (MOP) Target Construction</p> <p>Description: Construct several hard and deeply buried targets for MOP ETR-II, ETR-III, and ETR-IV testing.</p> <p>FY 2014 Accomplishments:</p>	43.000	-	23.807

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016
Construct several hard and deeply buried targets for live testing of the the second (ETR-II) and third phase of the MOP Enhanced Threat Response (ETR-III) weapon modification. 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.				
Title: Massive Ordnance Penetrator (MOP) Testing Description: Conduct MOP ground, subscale and live testing in support of the Enhanced Threat Response II-IV development efforts. FY 2014 Accomplishments: Complete ETR-II flight testing to validate the ETR-II modifications. In support of ETR-III, conduct multiple subscale tests and multiple live drop tests . FY 2016 Plans: Conduct several live weapon tests to validate the MOP ETR-III and IV modifications.		9.000	-	6.520
Title: Massive Ordnance Penetrator (MOP) Analysis Description: Analyze MOP weapon effectiveness FY 2014 Accomplishments: Analyze weapons effects and develop methods to optimize the MOP weapon's effectiveness. FY 2016 Plans: Analyze weapons effects and develop methods to optimize the MOP weapon's effectiveness.		6.500	-	2.310
Title: Hard and Deeply Buried Target (HDBT) Capability Analysis Description: Conduct an Analysis of Alternatives (AoA) of HDBT: Evaluation of alternative hard target weapons to assess the performance, opertaional effectiveness, operational suitability, and estimated system procurement costs. FY 2014 Accomplishments: Complete the report of the HDBT AoA.		0.102	-	-
Accomplishments/Planned Programs Subtotals		109.602	-	54.637

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
--	---

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE: BA07: PE 0604240F: <i>B-2 Bomber</i>	-	-	-	-	-	-	-	-	-	-	80.683
• APAF: BA05: Line Item # B01B00: <i>B-2 Squadrons, PE 0101127F</i>	-	-	-	-	-	-	-	-	-	-	75.651
• PAAF: BA01: Line Item #353020: <i>WRM-Ammunition</i> <i>(General Purpose Bombs)</i>	16.500	-	-	-	-	-	-	-	-	-	73.498
• PAAF: BA01: Line Item #353190: <i>WRM-Ammunition (MOP)</i>	-	-	39.690	-	39.690	-	-	-	-	-	39.690

Remarks

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Weapon Development	SS/CPIF	Boeing : St Louis, MO	195.772	51.000	May 2015	-		22.000	Nov 2015	-		22.000	-	268.772	195.772
Hard Target Munitions (HTM) Capabilities Analysis	Various	Whitney, Bradley & Brown; ARA; Booz Allen : Eglin, FL	3.614	-		-		-		-		-	-	3.614	3.614
HTM Concept/Technology Study	Various	Several Local Companies : Eglin, FL	2.779	-		-		-		-		-	-	2.779	2.779
HTM Weapons Effects/ Target Analysis	RO	Defense Threat Reduction Agency : Eglin AFB, FL	1.087	-		-		-		-		-	-	1.087	1.087
HTM Concept Tech Data	Various	Several Local Companies : Eglin AFB, FL	1.811	-		-		-		-		-	-	1.811	1.811
HTM Technical Support	Various	Jacobs Engr. : Eglin, FL	1.751	-		-		-		-		-	-	1.751	1.751
Subtotal			206.814	51.000		-		22.000		-		22.000	-	279.814	206.814

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	10.199	5.000	Feb 2015	-	Feb 2015	0.967	Dec 2015	-		0.967	-	16.166	10.199
Subtotal			10.199	5.000		-		0.967		-		0.967	-	16.166	10.199

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	RO	AFLCMC : Eglin AFB, FL	6.369	4.000	Aug 2015	-		2.500	Dec 2015	-		2.500	-	12.869	6.369
MOP Flight Test Range Support	Various	White Sands Missile Range : White Sands Missile Range, NM	10.504	3.500	Aug 2015	-		4.020	Dec 2015	-		4.020	-	18.024	13.644
Target Construction and Instrumentation (MOP)	Various	Defense Threat Reduction Agency : Albuquerque, NM	76.527	25.000	Mar 2015	-		16.300	Dec 2015	-		16.300	-	117.827	81.527
MOP Test and Evaluation Activities	Various	AF Flight Test Center : Albuquerque, NM	13.123	18.000	Mar 2015	-		7.550	Dec 2015	-		7.550	-	38.673	13.123
Subtotal			106.523	50.500		-		30.370		-		30.370	-	187.393	114.663

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	9.252	3.000	Sep 2015	-		1.300	Dec 2015	-		1.300	-	13.552	-
Program Management Administration (PMA) for Hard Target Munitions	Various	AFLCMC/XR : Eglin AFB, FL	0.510	0.102	Jun 2014	-		-		-		-	-	0.612	-
Subtotal			9.762	3.102		-		1.300		-		1.300	-	14.164	-

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		333.298	109.602	-	54.637	54.637	-	497.537	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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					██████████																							
Conduct Hard Target Munitions (HTM) Analysis of Alternatives (AoA)	██████████																											
Complete Hard Target Munitions Analysis of Analysis Report					██████████																							
MOP ETR-III Modification Design and Qualification Testing					██████████																							
MOP ETR-IV Modification Design and Qualification Testing					████████████████████																							
MOP ETR-III Flight Testing									██████████																			
MOP ETR-IV Flight Testing													██████████															

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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	2014	1	2015
MOP ETR-II Flight Testing	3	2014	2	2015
Conduct Hard Target Munitions (HTM) Analysis of Alternatives (AoA)	1	2014	3	2014
Complete Hard Target Munitions Analysis of Analysis Report	3	2014	4	2014
MOP ETR-III Modification Design and Qualification Testing	1	2015	1	2016
MOP ETR-IV Modification Design and Qualification Testing	1	2015	1	2017
MOP ETR-III Flight Testing	4	2015	1	2016
MOP ETR-IV Flight Testing	3	2016	1	2017

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0604337F / <i>Requirements Analysis and Maturation</i>
--	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	11.486	-	-	-	-	-	-	-	-	Continuing	Continuing
645349: <i>Development Planning</i>	-	11.486	-	-	-	-	-	-	-	-	Continuing	Continuing

Note

In FY2015, PE 0604337F, Requirements Analysis and Maturation, Project 645349, Development Planning efforts were transferred to PE 0606017F, Requirements Analysis and Maturation to appropriately align activities to Budget Activity 6.

A. Mission Description and Budget Item Justification

The Requirements Analysis and Maturation (RAM) program funds early systems engineering and pre-acquisition planning and analysis activities. 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; for example, the Materiel Development Decision (MDD). A number of Department of Defense (DoD), Government Accountability Office (GAO), and independent industry studies point to a need for more disciplined, early phase systems engineering and pre-systems acquisition planning 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 effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P) because efforts are necessary to evaluate integrated technologies, representative models or prototype systems in a high fidelity and realistic operating environment.

B. Program Change Summary (\$ in Millions)

	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>
Previous President's Budget	11.884	-	-	-	-
Current President's Budget	11.486	-	-	-	-
Total Adjustments	-0.398	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.398	-			
• Other Adjustments	-	-			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604337F / <i>Requirements Analysis and Maturation</i>	Project (Number/Name) 645349 / <i>Development Planning</i>
--	---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
645349: <i>Development Planning</i>	-	11.486	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY2015, PE 0604337F, Requirements Analysis and Maturation, Project 645349, Development Planning efforts were transferred to PE 0606017F, Requirements Analysis and Maturation to appropriately align activities to Budget Activity 6.

A. Mission Description and Budget Item Justification

The Development Planning project is responsible for analyzing documented capability needs and requirements to identify potential materiel shortfalls and opportunities; devising candidate materiel solution options to address Air Force capability needs and shortfalls; and conducting coordinated pre-systems acquisition planning activities that address requirements, schedule, cost, technology, and acquisition strategy.

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

	FY 2014	FY 2015	FY 2016
<p>Title: Long-range Capability Analyses</p> <p>Description: Conduct long-range capability analyses by analyzing documented warfighter capability needs and requirements to identify potential materiel shortfalls and opportunities.</p> <p>FY 2014 Accomplishments: Developed capability roadmaps, advanced concept studies and analyses, and derive technology needs required to realize future materiel solutions to warfighter capability needs.</p> <p>FY 2015 Plans: N/A</p> <p>FY 2016 Plans: N/A</p>	1.840	-	-
<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 2014 Accomplishments:</p>	7.695	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604337F / <i>Requirements Analysis and Maturation</i>	Project (Number/Name) 645349 / <i>Development Planning</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
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. FY 2015 Plans: N/A FY 2016 Plans: N/A			
Title: Pre-systems Acquisition Planning Description: Conduct coordinated pre-systems acquisition planning activities that address requirements, schedule, cost, technology, and acquisition strategy. FY 2014 Accomplishments: Performed pre-systems acquisition planning activities, to include concept refinement, cost estimates, acquisition courses of action, and acquisition milestone documentation. FY 2015 Plans: N/A FY 2016 Plans: N/A	1.951	-	-
Accomplishments/Planned Programs Subtotals	11.486	-	-

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force												Date: February 2015				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 4				PE 0604337F / Requirements Analysis and Maturation				645349 / Development Planning								
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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 capability analyses	Various	TBD : TBD,	-	1.840	Dec 2013	-		-		-		-	Continuing	Continuing	TBD	
Concept development activities	Various	TBD : TBD,	-	7.695	Feb 2014	-		-		-		-	Continuing	Continuing	TBD	
Pre-systems acquisition planning	Various	TBD : TBD,	-	1.951	Feb 2014	-		-		-		-	Continuing	Continuing	TBD	
Subtotal			-	11.486		-		-		-		-	-	-	-	
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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			-	11.486		-		-		-		-	-	-	-	

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604337F / <i>Requirements Analysis and Maturation</i>	Project (Number/Name) 645349 / <i>Development Planning</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
RAM Effort Execution	1	2014	4	2014
Studies & Analyses Outbriefs	4	2014	4	2014

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
--	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	123.681	-	39.901	76.108	-	76.108	109.623	136.994	141.343	139.406	89.000	856.056
644289: <i>Weather Satellite Follow-On</i>	123.681	-	39.901	76.108	-	76.108	109.623	136.994	141.343	139.406	89.000	856.056
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

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.

WSF will deliver one space vehicle in 2021. Secondary investments may be supported to address weather gaps identified in the SBEM AoA and validated by the Joint Requirements Oversight Council.

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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
--	---

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	-	39.901	76.614	-	76.614
Current President's Budget	-	39.901	76.108	-	76.108
Total Adjustments	-	-	-0.506	-	-0.506
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-0.506	-	-0.506

Change Summary Explanation

FY16: -\$0.506M for non-pay inflation reduction

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Title: WSF	-	39.901	76.108
Description: The Weather System Follow-on (WSF) is the Department of Defense's weather system. The program will be comprised of a group of systems to provide timely, reliable, and high quality remote sensing capabilities that will make global environmental observations of atmospheric, terrestrial, oceanographic, and solar-geophysical conditions and meet other requirements validated by the Joint Staff.			
FY 2014 Accomplishments: N/A			
FY 2015 Plans: Conduct requirements development, definition and analysis. Perform acquisition planning and development for a Milestone A review in FY15/16. Begin sensor interface design and development to cover mission area capability gaps as identified in the SBEM AoA. Initiate operational design study for Compact Ocean Wind Vector Radiometer. Fund program support activities.			
FY 2016 Plans: Secure JROC validation of the WSF Capabilities Development Document (CDD) and Milestone Decision Authority (MDA) Milestone A decision. Release RFP for sensor technology maturation and satellite bus risk reduction. Begin ground processing system upgrades to ingest civil and international partner data. Perform acquisition planning and development for a Milestone B.			
Accomplishments/Planned Programs Subtotals			
	-	39.901	76.108

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force Date: February 2015

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>
--	---

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

N/A

Remarks

E. Acquisition Strategy

DoD established WSF as a Pre-Major Defense Acquisition Program (MDAP). The acquisition strategy for WSF will be informed by review and validation of the SBEM AoA results and the acquisition strategy development activities to be conducted in FY15.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
WSF Space Segment	TBD	TBD : TBD,	0.000	-		30.220	Aug 2015	60.085	Aug 2016	-		60.085	524.457	614.762	-
WSF Ground Segment	TBD	TBD : TBD,	0.000	-		2.110	Jan 2015	6.945	Jan 2016	-		6.945	34.181	43.236	-
Microwave: Modify Legacy GMI Sensor Design	SS/CPFF	Ball Aerospace and Technologies Corp : Boulder, CO	5.794	-		-		-		-		-	-	5.794	-
Microwave: Sensor Design Trades & Demonstration	SS/CPFF	Boeing Company Space and Intelligence Systems : El Segundo, CA	2.811	-		-		-		-		-	-	2.811	-
Sys/Spacecraft: Hosted Payload on Highly Elliptical Orbit Study	SS/CPFF	Loral Space Communications : Palo Alto, CA	1.000	-		-		-		-		-	-	1.000	-
Microwave: Research Concepts to Decrease MW Sensors size	SS/CPFF	JPL : Pasadena, CA	1.796	-		-		-		-		-	-	1.796	-
Systems/Spacecraft: Small Space Vehicle Options Study	SS/CPFF	Orbital Sciences Corp : Los Angeles, CA	3.545	-		-		-		-		-	-	3.545	-
WSF requirements analysis, risk reduction, and early pre-acquisition activities	SS/ Various	Various : ,	25.615	-		-		-		-		-	-	25.615	-
EO/IR - Advanced Very High Resolution Radiometer (AVHRR) Sensor Design Update/ Demo	SS/CPFF	ITT Exelis : Fort Wayne, IN	12.706	-		-		-		-		-	-	12.706	-
Electro-Optical/Infra-red (EO/IR) - Lightweight COTS	SS/CPFF	Johns Hopkins U Applied Physics Lab : Laurel, MD	8.844	-		-		-		-		-	-	8.844	-
Systems/Spacecraft: Net-Centric Architecture study	SS/CPFF	Alliant Techsystems, Incorporated : Beltsville, MD	5.983	-		-		-		-		-	-	5.983	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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/Spacecraft: Ground Architecture Alternatives	SS/CPFF	Harris Government Communications Systems Division : Melbourne, FL	2.034	-		-		-		-		-	-	2.034	-
Systems/Spacecraft: Flight-proven Class C mission bus	SS/FP	Millennium Space Systems : Torrance, CA	1.944	-		-		-		-		-	-	1.944	-
Sys/Spacecraft: Weather Architecture Trade Studies	SS/FP	U.S. Space LLC : Dulles, VA	1.592	-		-		-		-		-	-	1.592	-
Sys/Spacecraft: High-TRL Sensor for Space Weather	SS/CPFF	Johns Hopkins U Applied Physics Lab : Laurel, MD	2.997	-		-		-		-		-	-	2.997	-
Systems/Spacecraft: Leverage OPIR Data from Commercially Hosted Infra-red Payload (CHIRP)	SS/CPFF	SAIC : Seal Beach, CA	0.982	-		-		-		-		-	-	0.982	-
Microwave: Compact MW Sensor Study for Ocean Surface Vector Wind	SS/CPFF	JPL : Pasadena, CA	1.584	-		-		-		-		-	-	1.584	-
Spacecraft Risk Reduction Effort/Space Weather Launch Vehicle integration	SS/FP	Space Exploration Technology Corporation : Hawthorne, CA	3.030	-		-		-		-		-	-	3.030	-
Dosimeter Study - low cost Particle Counter	Various	Various : Various,	4.275	-		-		-		-		-	-	4.275	-
Risk Reduction - Microwave Sensor Activities	MIPR	Naval Research Laboratory : Washington, DC	9.900	-		-		-		-		-	-	9.900	-
Analysis of Alternatives (AoA) activities	Various	AFSPC/A5 : Peterson AFB, CO	7.000	-		-		-		-		-	-	7.000	-
Subtotal			103.432	-		32.330		67.030		-		67.030	558.638	761.430	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 & Integration	TBD	Various : ,	0.000	-		-		-		-		-	-	-	-
Requirements/Engineering Analysis Support	MIPR	Defense Information Technical Center (DTIC)/Surviac Contract : Los Angeles, CA	1.500	-		-		-		-		-	-	1.500	-
Engineering Risk Reduction Studies	Various	Various : ,	1.171	-		-		-		-		-	-	1.171	-
Subtotal			2.671	-		-		-		-		-	-	2.671	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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. : ,	0.000	-		-		-		-		-	-	-	-
Subtotal			0.000	-		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	MIPR	Aerospace : Los Angeles, CA	11.863	-		5.100	Oct 2014	6.115	Oct 2015	-		6.115	38.887	61.965	-
Program Office Support	Various	Various : ,	5.378	-		1.971	Nov 2014	2.363	Nov 2015	-		2.363	15.029	24.741	-
Business Operations Support	Various	Various : ,	0.337	-		0.500	Nov 2014	0.600	Nov 2015	-		0.600	3.812	5.249	-
Subtotal			17.578	-		7.571		9.078		-		9.078	57.728	91.955	-

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		123.681	-	39.901	76.108	-	76.108	616.366	856.056	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
--	---	---

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
--	-------------	---------	---------	--------------	-------------	---------------	------------------	------------	--------------------------

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Joint Requirements Oversight Council (JROC) AoA Review				■																								
Capabilities Development Document (CDD)					■																							
Milestone A									■																			
TMRR									■																			
Request for Proposals (RFP) Release Decision									■																			
Complete SRR													■															
Preliminary Design Review (PDR)																					■							
Milestone B																									■			
EMD																									■			

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Joint Requirements Oversight Council (JROC) AoA Review	4	2014	4	2014
Capabilities Development Document (CDD)	1	2015	1	2016
Milestone A	1	2016	1	2016
TMRR	1	2016	1	2019
Request for Proposals (RFP) Release Decision	1	2016	1	2016
Complete SRR	4	2017	4	2017
Preliminary Design Review (PDR)	4	2018	4	2018
Milestone B	1	2019	1	2019
EMD	1	2019	4	2020

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0604458F / <i>Air & Space Ops Center</i>
--	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	0.000	60.971	-	-	-	-	-	-	-	-	-	60.971
644945: <i>AOC Inc 10.2</i>	0.000	60.971	-	-	-	-	-	-	-	-	-	60.971
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	

MDAP/MAIS Code: N42

Note

In FY 2014, Project Number 644945, AOC Inc. 10.2, efforts were transferred from PE 0207410F, AOC WS, Project Number 675117 in order to improve transparency of ACAT 1 Acquisition programs.

AOC Increment 10.2 received a Milestone B decision 11 October 2013. In FY 2015, PE 0604458F, Air & Space Ops Center, project number 644945 AOC Increment 10.2 development efforts, were transferred to PE 0605458F Air & Space Ops Center 10.2, project number 654945 AOC 10.2 Development, in order to align post Milestone B development efforts with funding in RDT&E Budget Activity 05, System Development & Demonstration (SDD).

AOC 10.2 is PRCP Program Number (PNO) 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 sustainment 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 COCOMs, 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. The Modernization contractor, which was awarded the Modernization contract on 25 October 2011, conducted AOC 10.2 pre-Engineering and Manufacturing Development (EMD) activities, including a Systems Requirements Review (SRR), an Interim Design Review (IDR), and a delta-Preliminary Design Review (delta-PDR). In accordance with AOC 10.2 Milestone Decision Authority (MDA) direction (23 June 2010), the AOC 10.2 Modernization program conducted prototyping and Limited Early Install (LEI) activities through an iterative build methodology prior to Milestone B (MS B) to reduce integration risk and improve user feedback in the acquisition process. AOC 10.2 EMD

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 0604458F / <i>Air & Space Ops Center</i>
--	---

activities include the design (i.e., Critical Design Review), development, integration of 3rd party capabilities, testing (Contractor in-plant system testing, Developmental Test and Evaluation, Operational Test and Evaluation, Operational Assessment, Test Readiness Review, etc.) of the AOC 10.2 baseline, as well as build-up and fielding of the Help Desk (HD), Formal Training Unit (FTU), and Combined Air Operations Center-eXperimental (CAOC-X) suite.

Activities also include studies and analysis to support current program planning and execution, as well as future program planning.

This program is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P) for FY14 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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	58.861	-	-	-	-
Current President's Budget	60.971	-	-	-	-
Total Adjustments	2.110	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	4.000	-			
• SBIR/STTR Transfer	-1.890	-			
• Other Adjustments	-	-	-	-	-

Change Summary Explanation

Below Threshold Reprogramming (BTR) of \$4.000M FY14 from C2AOS-C2IS 0207410F to AOC 10.2 0604458F.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Title: AOC WS Inc 10.2	59.965	-	-
Description: AOC 10.2 infrastructure modernization and mission capability integration. Development of a robust, open, Net-Centric infrastructure with a Service Oriented Architecture (SOA).			
FY 2014 Accomplishments:			
Effort completed prototyping and LEI activities to support risk reduction and operational feedback. Following the Milestone B decision, the program entered into an Engineering Manufacturing Development contract award to perform development activities, including but not limited to the following: a) AOC 10.2 development, systems analysis, and corresponding documentation, b) capability provider engagement and integration, c) initiate build-up and fielding of the IOT&E sites including the help desk, FTU,			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0604458F / <i>Air & Space Ops Center</i>
--	---

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
CAOC-X and pre-planning for one Geographic site, d) Integration and Test Lab (ITL) operation and management, e) continued planning, coordination, and execution of Contractor System Testing / Developmental Test and Evaluation / Operational Test and Evaluation, f) planning, preparation, and analysis and design efforts for continued 10.2 baseline improvements, and g) other government costs to include government furnished equipment to include hardware, software, licenses, support, and costs in government integration facilities. Program continues risk mitigation and development / test execution activities to support upcoming MS C decision in FY15. Program Office completed Critical Design Review and the Integrated Baseline Review with prime contractor.			
Title: AOC WS Inc 10.2 Test and Evaluation Description: Test and Evaluation FY 2014 Accomplishments: Planned and implemented comprehensive Modernization contractor testing (in-plant integration and test, functional testing, security testing, etc.) on the AOC 10.2 baseline, to include test planning, conducting test, and documentation review. Completed Warfighter Analysis Workshop build 4 giving insight to system from a user perspective. Completed build 4 Risk Reduction Event reviewing current status of system build.	1.006	-	-
Accomplishments/Planned Programs Subtotals			
	60.971	-	-

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• RDTE: BA07: PE 0207410F: <i>Air and Space Operations Center Weapon System (AOC WS), Project 675117</i>	-	-	-	-	-	-	-	-	-	-	264.584
• RDTE: BA05: PE 0605458F: <i>Air & Space Operations Center Inc 10.2, Project 654945</i>	-	85.938	47.946	-	47.946	-	-	-	-	-	135.509
• OPAF: BA03: Line Item # 834560: <i>Air & Space Operations Ctr - Inc 10.2</i>	-	-	24.405	-	24.405	51.283	43.585	32.313	32.895	373.583	437.974

Remarks

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force Date: February 2015

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 0604458F / <i>Air & Space Ops Center</i>
--	---

E. Acquisition Strategy

The acquisition strategy builds on existing capabilities using evolutionary acquisition to standardize, modernize and sustain the AOC. The AOC Modernization Contract was competitively awarded on 25 October 2011, but due to contract protests and associated delays, the actual start date was 20 December 2011. The Modernization contractor is using a system of systems perspective, and is following systems engineering rigor, to evolve AOC to a Net-Centric environment, compliant with DoD Service Oriented Architecture (SOA) standards.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604458F / Air & Space Ops Center	Project (Number/Name) 644945 / AOC Inc 10.2
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	C/Various	Various : Various,	0.000	2.035	Oct 2013	-		-		-		-	-	2.035	TBD
AOC 10.2 Modernization Contract	C/Various	Northrop Grumman : Herndon, VA	0.000	49.147	Oct 2013	-		-		-		-	-	49.147	TBD
Training	C/Various	Various : Various,	0.000	-		-		-		-		-	-	-	TBD
Subtotal			0.000	51.182		-		-		-		-	-	51.182	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test	Various	Various : Various,	0.000	1.006	Oct 2013	-		-		-		-	-	1.006	TBD
Subtotal			0.000	1.006		-		-		-		-	-	1.006	-

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	SS/ Various	MITRE : Bedford, MA	0.000	4.014	Oct 2013	-		-		-		-	-	4.014	TBD
Program Management Administration	Various	Various : Hanscom AFB, MA	0.000	4.769	Oct 2013	-		-		-		-	-	4.769	TBD
Subtotal			0.000	8.783		-		-		-		-	-	8.783	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604458F / <i>Air & Space Ops Center</i>	Project (Number/Name) 644945 / <i>AOC Inc 10.2</i>
--	---	--

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	60.971	-	-	-	-	-	60.971	-

Remarks

In FY 2014, Project Number 644945, AOC Increment 10.2, efforts were transferred from PE 0207410F, AOC WS, project number 675117 in order to improve transparency of ACAT 1 Acquisition programs.

In FY 2015, PE 0604458F, Air & Space Ops Center project number 644945 AOC Increment 10.2, development efforts were transferred to PE 0605458F Air & Space Ops Center 10.2, project number 654945, AOC 10.2 Development, in order to align post Milestone B development efforts with funding in RDT&E Budget Activity 05, System Development & Demonstration (SDD).

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604458F / Air & Space Ops Center	Project (Number/Name) 644945 / AOC Inc 10.2
--	--	---

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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 B (OCT 2013)	■																											
AOC Inc 10.2 Critical Design Review (MAR 2014)	■																											
AOC Inc 10.2 Milestone C (NOV 2015)																					■							
AOC Inc 10.2 Full Deployment Decision (DEC 2016)													■															
AOC Inc 102 Design/Development	■																											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604458F / <i>Air & Space Ops Center</i>	Project (Number/Name) 644945 / <i>AOC Inc 10.2</i>
--	---	--

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AOC Inc 10.2 Milestone B (OCT 2013)	1	2014	1	2014
AOC Inc 10.2 Critical Design Review (MAR 2014)	2	2014	2	2014
AOC Inc 10.2 Milestone C (NOV 2015)	1	2016	1	2016
AOC Inc 10.2 Full Deployment Decision (DEC 2016)	1	2017	1	2017
AOC Inc 102 Design/Development	1	2014	3	2015

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0604618F <i>I Joint Direct Attack Munition</i>
--	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	0.000	2.417	-	-	-	-	-	-	-	-	-	2.417
641200: <i>JDAM DEVELOPMENT & PROTOTYPING</i>	0.000	2.417	-	-	-	-	-	-	-	-	-	2.417
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

MDAP/MAIS Code: 503
Other MDAP/MAIS Code(s): N42

Note

In FY2015, PE 0604618F Joint Direct Attack Munition Project 641200 JDAM Development & Prototyping efforts were transferred to Budget Activity 07 PE 0604618F Joint Direct Attack Munition Project 641200 JDAM Development & Prototyping to better align efforts to upgrade a system that have been fielded.

A. Mission Description and Budget Item Justification

The 5000 lb demonstration is an integration of BLU-113 warhead with a Joint Direct Attack Munition (JDAM) tail kit, scaled if necessary from smaller or larger warhead control design, to provide accurate, precision, reliable, hard target penetration capability. The required accuracy shall be "JDAM like" as defined by the operational requirements community. The greater overall system performance will tighten dispersion capability where multiple weapons are released from the same aircraft on the same pass, and hit the same impact crater. The BLU-113 is an objective requirement in the 2002 ORD JDAM Operational Requirements Document (ORD). Weapon system will have an identical Concept of Operations (CONOPS) as existing USAF inventory for Global Positioning System-aided Inertial Navigation System (GPS-aided INS) weapons, and compatibility with aircraft Operational Flight Profile (OFP).

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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 0604618F I Joint Direct Attack Munition
---	--

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	2.500	-	-	-	-
Current President's Budget	2.417	-	-	-	-
Total Adjustments	-0.083	-	-	-	-
• Congressional General Reductions	-	-	-	-	-
• Congressional Directed Reductions	-	-	-	-	-
• Congressional Rescissions	-	-	-	-	-
• Congressional Adds	-	-	-	-	-
• Congressional Directed Transfers	-	-	-	-	-
• Reprogrammings	-	-	-	-	-
• SBIR/STTR Transfer	-0.083	-	-	-	-
• Other Adjustments	-	-	-	-	-

Change Summary Explanation

No significant changes.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: 5,000 lbs JDAM demo	2.417	-	-	-	-
Description: The 5000 lb demonstration is an integration of the BLU-113 warhead with a guidance kit that provides accurate, reliable, tight dispersion, hard target penetration capability. With this capability, JDAM accuracy expands to a 5000 lb bomb, holding harder and deeper targets at risk.					
FY 2014 Accomplishments: Design and test of the JDAM kit for the 5,000 lbs bomb demonstration.					
FY 2015 Plans: N/A					
FY 2016 Base Plans: N/A					
Accomplishments/Planned Programs Subtotals	2.417	-	-	-	-

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0604618F I <i>Joint Direct Attack Munition</i>
--	---

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE: BA07: PE 0604618F: <i>Joint Direct Attack Munition</i>	-	2.469	-	-	-	-	-	-	-	-	2.468
• PAAF: BA01: Line Item #353620: <i>Joint Direct Attack Munition</i>	250.469	228.439	374.688	184.412	559.100	306.158	205.542	295.963	373.855	-	-

Remarks

E. Acquisition Strategy

Competitive with a Firm Fixed Price (FFP) 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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604618F / Joint Direct Attack Munition	Project (Number/Name) 641200 / JDAM DEVELOPMENT & PROTOTYPING
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Software Development and Hardware Fabrication	SS/FFP	TBD : TBD,	0.000	2.254	Feb 2015	-		-		-		-	-	2.254	-
Subtotal			0.000	2.254		-		-		-		-	-	2.254	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	0.163	Apr 2014	-		-		-		-	-	0.163	-
Subtotal			0.000	0.163		-		-		-		-	-	0.163	-

			Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	2.417	-	-	-	-	-	2.417	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604618F / <i>Joint Direct Attack Munition</i>	Project (Number/Name) 641200 / <i>JDAM DEVELOPMENT & PROTOTYPING</i>

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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																												
Airframe Design																												
Hardware Fabrication																												
Wind Tunnel Testing																												
Aero Database Development																												
Autopilot and OFP Development																												
Weapons Build-up																												
Flight Certification																												
Flight Test																												
Quick Look Analysis Report																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604618F / <i>Joint Direct Attack Munition</i>	Project (Number/Name) 641200 / <i>JDAM DEVELOPMENT & PROTOTYPING</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Requirements Development	3	2014	4	2014
Airframe Design	2	2015	3	2016
Hardware Fabrication	1	2016	1	2016
Wind Tunnel Testing	3	2015	3	2015
Aero Database Development	2	2015	3	2016
Autopilot and OFP Development	2	2015	3	2016
Weapons Build-up	1	2016	1	2016
Flight Certification	2	2016	2	2016
Flight Test	2	2016	3	2016
Quick Look Analysis Report	4	2016	4	2016

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0604635F / <i>Ground Attack Weapons Fuze Development</i>
--	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	17.271	-	-	-	-	-	-	-	-	-	17.271
645312: <i>Hard Target Void Sensing Fuze</i>	-	17.271	-	-	-	-	-	-	-	-	-	17.271
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2015, 645312, Hard Target Void Sensing Fuze, efforts were transferred to PE 0605214F, Ground Attack Weapons Fuze Development, 655313, 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

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. The program was created to include the whole spectrum of fuze 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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	17.764	-	-	-	-
Current President's Budget	17.271	-	-	-	-
Total Adjustments	-0.493	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.493	-			
• Other Adjustments	-	-			

Change Summary Explanation

None

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 0604635F <i>I Ground Attack Weapons Fuze Development</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016
<p>Title: HTVSF Development</p> <p>Description: Conducted HTVSF Engineering, Manufacturing, and Development (EMD) effort.</p> <p>FY 2014 Accomplishments: Continued EMD program effort to develop a joint use Air Force/Navy item to interface with legacy penetrator weapons to provide a capability to survive a 5K - 15K psi penetration environment and detonate in a specific void inside the target or at a specific delay time programmed into the fuze.</p> <p>FY 2015 Plans: N/A</p> <p>FY 2016 Plans: N/A</p>		6.930	-	-
<p>Title: Test Support</p> <p>Description: Build "hard" targets and execute sled/flight test range events.</p> <p>FY 2014 Accomplishments: Conducted HTVSF BLU 109/113 sled and flight developmental test program to include AFOTEC clearance, range support/development, weapon recovery and target demolition.</p> <p>FY 2015 Plans: N/A</p> <p>FY 2016 Plans: N/A</p>		5.885	-	-
<p>Title: External Support</p> <p>Description: Provide specialized expertise in manufacturing, testing and safety support for the HTVSF EMD program. Contracted for munitions-specific expertise to ensure testing can be meaningfully evaluated.</p> <p>FY 2014 Accomplishments: Provided expertise in manufacturing, testing, management and analysis support, and safety support for BLU 109/113 flight developmental testing.</p> <p>FY 2015 Plans:</p>		4.456	-	-

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0604635F / <i>Ground Attack Weapons Fuze Development</i>
--	---

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
N/A			
FY 2016 Plans: N/A			
Accomplishments/Planned Programs Subtotals	17.271	-	-

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• RDTE: BA05: PE 0605214F: <i>Ground Attack Weapons Fuze Development</i>	-	5.332	3.589	-	3.589	0.946	-	-	-	-	9.876
• PAAF: BA01: Line Item # 356120: <i>Fuzes</i>	-	13.280	31.451	-	31.451	25.013	28.013	-	-	-	-

Remarks

- PAAF dollars in War Reserve Materiel (WRM; Fuzes) fund initial procurement of 400/474/1574/2552 units. FY15 - FY18. Low-Rate Initial Production delayed due to extension of Engineering and Development (EMD) effort. Total quantity of fuzes is 5000 for USAF
- Navy PE 050120 to fund 50/225/225 units FY2016/FY2017/FY2018.

E. Acquisition Strategy
EMD contract awarded to Alliant TechSystems Operations LLC with an estimated contract completion date of 31 Mar 2015. Contract is fixed price incentive firm with an estimated contract length of 48 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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604635F / <i>Ground Attack Weapons Fuze Development</i>	Project (Number/Name) 645312 / <i>Hard Target Void Sensing Fuze</i>
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
HTVSF EMD	C/FPIF	Alliant Techsystems Operations Inc. : Plymouth, MN	-	6.930	Oct 2013	-		-		-		-	-	6.930	TBD
Subtotal			-	6.930		-		-		-		-	-	6.930	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
External Support	SS/CPAF	Raytheon, Boeing, SEEK EAGLE, AFOTEC : Various,	-	3.858	Jan 2014	-		-		-		-	-	3.858	-
Subtotal			-	3.858		-		-		-		-	-	3.858	-

Remarks
Raytheon - Tucson AZ; Boeing - St. Louis MO; SEEK EAGLE - Eglin AFB, FL; AFOTEC - Eglin AFB, FL

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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,	-	5.885	Jan 2014	-		-		-		-	Continuing	Continuing	-
Subtotal			-	5.885		-		-		-		-	-	-	-

Remarks
Eglin AFB, Fort Walton Beach FL: Holloman AFB, Alamogordo NM; White Sands Missile Range, Las Cruces NM

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0604635F / <i>Ground Attack Weapons Fuze Development</i>	Project (Number/Name) 645312 / <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 2011-31Mar 2015	1	2014	2	2015
Procure Flight Targets	1	2014	2	2015
Soil Box Flight Test	4	2014	4	2014
GBU-28 Sled Test	2	2015	2	2015
BLU-113 Flight Test DT	2	2015	2	2015
Milestone C	2	2015	2	2015

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0604857F / <i>Operationally Responsive Space</i>							
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	10.000	20.000	6.457	-	6.457	-	-	-	-	Continuing	Continuing
64A020: <i>AF Funded ORSSats</i>	-	10.000	20.000	6.457	-	6.457	-	-	-	-	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 the completion of the ORS-2 Modular Space Vehicle (MSV) Bus development, launch of the ORS-4 Super Stryki mission, development and launch of the ORS-5 space situational awareness mission, and the low cost automated manufacturing initiative. The ORS-3 enabler launch mission was successfully conducted in November 2013, demonstrating responsive launch and range capabilities. 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 \$60M 2007 NDAA cost target. 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 on the Super Stryki small launch vehicle to orbit the U of H's HiakaSat environmental monitoring satellite.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
--	---

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	10.000	-	-	-	-
Current President's Budget	10.000	20.000	6.457	-	6.457
Total Adjustments	-	20.000	6.457	-	6.457
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	20.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	6.457	-	6.457

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

Project: 64A020: *AF Funded ORSSats*

Congressional Add: *ORS: Tier-1 (1)*

Congressional Add: *Rapid AI&T (Tier-2) (1)*

Congressional Add: *ORS: Tier-3 (1)*

Congressional Add: *ORS: Cross Cutting*

Congressional Add Subtotals for Project: 64A020

Congressional Add Totals for all Projects

	FY 2014	FY 2015
	0.100	0.100
	0.067	0.690
	8.413	16.500
	1.420	2.710
Congressional Add Subtotals for Project: 64A020	10.000	20.000
Congressional Add Totals for all Projects	10.000	20.000

Change Summary Explanation

FY2015: +\$20.0M Congressional add for program increase.

FY2016: +6.457M to continue the ORS program.

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

	FY 2014	FY 2015	FY 2016
Title: ORS: Tier-1	-	-	0.350

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p>Description: Rapidly augment existing space capabilities when needed to expand operational capability, using existing deployed assets.</p> <p>FY 2016 Plans: Execute urgent needs as identified by USSTRATCOM. Continue to support combatant command (COCOM) war games. 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. Support the Space and Naval Warfare Systems Command (SPAWAR) program with small satellite capabilities to satisfy naval weather requirements.</p>				
<p>Title: Rapid AI&T (Tier-2)</p> <p>Description: Develop capability for Assembly Integration & Test/Rapid Response Space Works (RRSW).</p> <p>FY 2016 Plans: Continue developing the Rapid Response Space Works and its capability for rapid assembly integration and test, using the modular space vehicle bus.</p>		-	-	0.655
<p>Title: ORS: Tier-3</p> <p>Description: Rapidly exploit and infuse space technological or operational innovations to increase U.S. advantage.</p> <p>FY 2016 Plans: Continue development of the ORS-5 program. Begin a space based space surveillance follow-on system and a weather satellite system in conjunction with Space and Missile Systems Center program offices. Continue working ORS-4 technical issues and launch date.</p>		-	-	3.500
<p>Title: ORS: Cross Cutting</p> <p>Description: Provide systems engineering and program management support across all the ORS activities. Perform modeling, simulation, analysis, and assess alternative concepts and requirements.</p> <p>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.</p>		-	-	1.952
Accomplishments/Planned Programs Subtotals		-	-	6.457

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015	
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 2014	FY 2015	
Congressional Add: ORS: Tier-1 (1) FY 2014 Accomplishments: Coordinated integration of ORS Tier-1 solutions, experiments and demonstrations into Joint Force Commander (JFC) and Component exercises and operations in order to establish visibility and socialization of ORS concepts and solutions. Developed CONOPs for JFC use of assets. Supported JFC wargames. FY 2015 Plans: Incorporating ORS Resilient Space Layer (RSL) in three wargames: Advanced Concept Event-15 (ACE-15), Futures Wargame-15, and the Space Futures Wargame-15. Demonstrate 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).	0.100	0.100	
Congressional Add: Rapid AI&T (Tier-2) (1) FY 2014 Accomplishments: Characterized ORS-2 Bus capability and limitations for expanded payload options. FY 2015 Plans: Continue developing the Rapid Response Space Works and its capability for rapid assembly integration and test, using the modular space vehicle bus.	0.067	0.690	
Congressional Add: ORS: Tier-3 (1) FY 2014 Accomplishments: Continued the ORS-5 mission to develop the USSTRATCOM validated, ORS Executive Committee approved payload for space situational awareness and provide a risk reduction pathfinder for the Space Based Space Surveillance Follow-On program. Continued the ORS-4 Super Strypi launcher (employing an Autonomous Flight Safety System) to launch a 300Kg microsatellite class space vehicle; includes the development of a new rail launcher, and installation of a new launch pad at the Pacific Missile Range Facility (PMRF), the University of Hawaii's HiakaSat primary payload and an additional 11 CubeSats flying as secondary payloads. FY 2015 Plans: Perform ORS-5 System Capability Demonstration 1 and Preliminary Design Review (PDR) milestones. ORS-4 launch date was originally scheduled for Jan 2015, but first stage motor complications have caused a delay. The restoration of the first stage motor is expected to delay the launch until mid-2016. Define 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.	8.413	16.500	
Congressional Add: ORS: Cross Cutting	1.420	2.710	

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 2014	FY 2015
<p>FY 2014 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. Refined ORS CONOPS, Enterprise and Architecture, and Systems Engineering Processes. Led, participated in, and supported, as appropriate, the solidification of space doctrine.</p> <p>FY 2015 Plans: Continue systems engineering and program management Independent Verification & Validation (IV&V) for ORS rapid Assembly, Integration and Test (AI&T) capability and the MSV. Continue ongoing systems engineering support of future mission development. Continue ORS-1 Mission Operations and Lessons Learned studies. Conduct Modeling and Simulations for Mission Evaluations. Refine ORS CONOPS, Enterprise and Architecture, and Systems Engineering Processes. Lead, participate in, and support, as appropriate, the solidification of space doctrine.</p>		
Congressional Adds Subtotals	10.000	20.000

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE: BA04: 0603438F: <i>Space Control Technology</i>	2.000	-	-	-	-	-	-	-	-	-	-
• RDTE: BA04: 0604858F: <i>Tech Transition Program</i>	3.000	3.000	3.000	-	3.000	3.000	3.000	3.000	-	-	-
• RDTE: BA05: 0604441F: <i>Space Based Infrared System (SBIRS) High EMD</i>	2.000	2.000	2.000	-	2.000	2.000	2.000	2.000	-	-	-
• RDTE: BA07: 0603423F: <i>Global Positioning System III - Operational Control Segment</i>	1.500	1.500	1.500	-	1.500	1.500	1.500	1.500	-	-	-

Remarks

E. Acquisition Strategy

Expediently award contracts through ORS Office or partner organizations.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0604857F / <i>Operationally Responsive Space</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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Tier 1 operational capabilities, development, and integration	Various	Various : Various,	-	0.100	Dec 2014	0.100	Mar 2015	0.350	Dec 2015	-		0.350	Continuing	Continuing	TBD
Rapid AI&T (Tier-2, RRSW)	C/CPFF	Millennium Engineering : Arlington, VA	-	0.067	Jun 2014	0.690	Jun 2015	0.655	Dec 2015	-		0.655	Continuing	Continuing	TBD
ORS-5 (Tier 3)	SS/CPFF	MIT/LL : Boston, MA	-	2.759	Feb 2015	9.950	Mar 2015	2.350	Feb 2016	-		2.350	Continuing	Continuing	TBD
MSV Modular Bus/Open Manufacturing (Tier 3)	C/CPFF	Raytheon : Tucson, AZ	-	1.500	Apr 2015	-		-		-		-	Continuing	Continuing	500.000
Space Common Data Link (Tier 3)	C/CPFF	L3 Comm. : Salt Lake, UT	-	-		-		-		-		-	Continuing	Continuing	TBD
Responsive Launch Capability (ORS-3)(Tier-3)	C/FPIF	Orbital : Chandler, AZ	-	-		-		-		-		-	Continuing	Continuing	TBD
Responsive Launch Capability (ORS-4)(Tier-3)	SS/CPFF	U. of HI : Honolulu, HI	-	3.954	Jul 2014	6.350	Jul 2015	0.950	Dec 2015	-		0.950	Continuing	Continuing	TBD
Subtotal			-	8.380		17.090		4.305		-		4.305	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Eng. and Technical Asst. (Tier 3)	C/T&M	GSA : San Antonio, TX	-	0.200	Oct 2014	0.200	Oct 2015	0.200	Jun 2016	-		0.200	Continuing	Continuing	TBD
Perform modeling, simulation, analysis, and assess alternative concepts/requirements (Cross Cutting)	Various	Various : Various,	-	0.660	Jun 2014	1.455	Mar 2015	1.000	Jan 2016	-		1.000	Continuing	Continuing	TBD
Subtotal			-	0.860		1.655		1.200		-		1.200	-	-	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
TacSat-4 launch and ops	██████████																											
Tier-1 Operational Capabilities Development and Integration	██████████				██████████																							
ORS-1 (CENTCOM Urgent Need)	██████████				██████████																							
Rapid AI&T (RRSW, Tier 2)	██████████																											
ORS-5 Space Situational Awareness					██████████				██████████				██████████															
MSV Modular Bus/Open Manufacturing	██████████				██████████																							
C2 & TPED Enablers	██████████																											
ORS-3 Enabler Mission	████																											
ORS-4 Super Strypi	██████████				██████████																							
Cross-Cutting Activities: Modeling, Sim, Analysis; JFC Needs	██████████				██████████																							

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
TacSat-4 launch and ops	1	2014	1	2015
Tier-1 Operational Capabilities Development and Integration	1	2014	4	2016
ORS-1 (CENTCOM Urgent Need)	1	2014	4	2015
Rapid AI&T (RRSW, Tier 2)	1	2014	4	2014
ORS-5 Space Situational Awareness	3	2014	3	2018
MSV Modular Bus/Open Manufacturing	1	2014	4	2015
C2 & TPED Enablers	1	2014	4	2014
ORS-3 Enabler Mission	1	2014	1	2014
ORS-4 Super Strypi	1	2014	3	2016
Cross-Cutting Activities: Modeling, Sim, Analysis; JFC Needs	1	2014	4	2016

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
--	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	48.194	79.004	246.514	-	246.514	288.148	416.547	525.555	598.930	Continuing	Continuing
645350: <i>Transition Prioritization</i>	-	48.194	79.004	246.514	-	246.514	288.148	416.547	525.555	598.930	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Technology Transition Program (TTP) provides funding to mature and demonstrate technologies to enable or accelerate their transition to legacy or acquisition programs of record. It addresses the gap that exists between when a technology is first demonstrated and when it can be successfully acquired as an operational capability. TTP bridges that gap by funding promising system and subsystem concepts for technology integration and demonstration to continue beyond the laboratory. It allows acquisition program managers (the developers and providers) and warfighters (the end users) to integrate, prototype, and demonstrate candidate technologies and assess them in an operational environment. As a result, the warfighters can assess the capability first-hand and accurately fund the follow-on acquisition program during the next budgeting cycle. TTP includes research and development funds for the following transition activities: prototyping of promising, high-priority concepts and technologies in an operational environment to lower acquisition risk by raising the technology readiness level; performing pre-acquisition systems engineering to facilitate transition from a demonstration program into acquisition programs of record; assessing interface requirements of candidate concepts, technologies, and demonstration projects to better understand true engineering costs resulting from insertion of new technologies into the Air Force architecture; and capturing data through information technology tools and databases to help formulate strategies and gather proposals for development that have the potential to perform Department of Defense (DoD) missions. 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. It will enable multiple high confidence engine acquisition programs through the common engine architecture, and accomplishment of early risk reduction and early competition prior to an acquisition 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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
--	--

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	48.636	59.004	78.153	-	78.153
Current President's Budget	48.194	79.004	246.514	-	246.514
Total Adjustments	-0.442	20.000	168.361	-	168.361
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	20.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.442	-			
• Other Adjustments	-	-	168.361	-	168.361

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

Project: 645350: *Transition Prioritization*

Congressional Add: *Alternative Energy Research*

	FY 2014	FY 2015
	35.000	20.000
Congressional Add Subtotals for Project: 645350	35.000	20.000
Congressional Add Totals for all Projects	35.000	20.000

Change Summary Explanation

FY16 increase due to accelerated funding to support Adaptive Engine Transition Program.

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

	FY 2014	FY 2015	FY 2016
Title: Propulsion Technology Transition	12.306	57.854	243.670
Description: Next generation jet engine technology.			
FY 2014 Accomplishments: Completed component risk reduction and core engine preliminary design. Continued preliminary engine design activities, as well as weapons systems integration, common core studies, and material manufacturing readiness activities.			
FY 2015 Plans:			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
--	--

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Complete 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.			
Title: Sustainment Technology Transition Technology Description: Product support and sustainment technologies. FY 2014 Accomplishments: Continued prototype of high-priority concepts and technologies in an operational or operational-like environment. FY 2015 Plans: Continue 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.	0.888	1.150	2.844
Accomplishments/Planned Programs Subtotals	13.194	59.004	246.514

	FY 2014	FY 2015
Congressional Add: Alternative Energy Research FY 2014 Accomplishments: Conducted congressionally directed effort. FY 2015 Plans: Conducted congressionally directed effort.	35.000	20.000
Congressional Adds Subtotals	35.000	20.000

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

N/A

Remarks

E. 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 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 Service Acquisition Executive approved TTP projects.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
--	--

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Various	TBD : TBD,	-	-		1.150	Jul 2015	2.844	Jul 2016	-		2.844	Continuing	Continuing	-
Propulsion Technologies	C/CPFF	GE and P&W : Various,	-	13.194	Oct 2013	57.854	Oct 2014	243.670	Jun 2016	-		243.670	Continuing	Continuing	TBD
Congressional Add	C/CPAF	Various : ,	-	35.000	Aug 2015	20.000	Aug 2016	-		-		-	Continuing	Continuing	-
Subtotal			-	48.194		79.004		246.514		-		246.514	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	48.194	79.004	246.514	-	246.514	-	-	-

Remarks
N/A

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force **Date:** February 2015

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>
--	--	---

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force **Date:** February 2015

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>
--	--	---

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Sustainment Technology Transition	1	2016	4	2020
Propulsion Technology Transition	1	2014	4	2020

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
--	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	-	-	75.166	-	75.166	120.735	207.048	218.162	324.778	Continuing	Continuing
641025: <i>GROUND BASED STRATEGIC DETERRENT (GBSD)</i>	-	-	-	75.166	-	75.166	120.735	207.048	218.162	324.778	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

MDAP/MAIS Code: 493

Note

In FY 2016, PE 0605230F, Project 641025, Ground Based Strategic Deterrent (GBSD) efforts were transferred from the Solid Rocket Motor Modernization (SRMM) and Guidance Modernization Program (GMP) efforts in PE 0101213F, Project 672987, MM Ops Equipment.

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. GBSD is scoped to deliver an integrated flight system beginning in FY27 and continue to advance GBSD data management, systems modeling and simulation, and analytical capabilities to integrate GBSD's Weapon System Command & Control (WSC2) systems and infrastructure required to execute, operate, sustain, and secure a fully integrated GBSD weapon system to address capability requirements identified in the GBSD Capabilities Based Assessment and GBSD Initial Capabilities Document, and examined in the GBSD Analysis of Alternatives to mitigate ground-based deterrent degradations due to MM III component age-out and attrition.

The major activities in the GBSD program include 1) Flight System (FS); 2) Weapon System Command and Control (WSC2); 3) Infrastructure [e.g. Launch Facilities (LF) and Launch Control Centers (LCC)]; 4) Weapon System Integration. Flight System is an integrated missile stack which includes the following major sub-components: propulsion, post-boost, guidance, and re-entry systems (RS). WSC2 encompasses all weapon system C2 components and interfaces, associated ground hardware, ground control equipment and associated software directly related to the sustainment, survivability, monitoring and launch of the replacement flight system. Infrastructure includes 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.

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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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
---	--

B. Program Change Summary (\$ in Millions)	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	75.166	-	75.166
Total Adjustments	-	-	75.166	-	75.166
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	75.166	-	75.166

Change Summary Explanation

FY16 - funding transfered from PE11213F BPAC 672987.

C. Accomplishments/Planned Programs (\$ in Millions)	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>
Title: Guidance	-	-	20.580
Description: The GBSD Guidance effort will provide replacements for the current MM III guidance subsystem necessary to ensure continued operations and to support GBSD requirements.			
FY 2016 Plans: Analyze, select, and assess advanced guidance instruments and electronic components to support GBSD strategic guidance requirements. Conduct technology development and concept analysis and design efforts to identify areas for guidance integration to support GBSD tradespace considerations.			
Title: Propulsion	-	-	22.786
Description: The GBSD Propulsion effort will provide replacements for the current MM III solid rocket motor subsystem necessary to ensure continued operations and to support GBSD requirements.			
FY 2016 Plans: Analyze, select, and assess solid rocket motors and associated components to support GBSD strategic propulsion requirements. Conduct technology development and concept analysis and design efforts to identify areas for booster integration to support GBSD trade space considerations.			
Title: GBSD Weapon System Integration	-	-	31.800

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 2014	FY 2015	FY 2016
<p>Description: Identify and assess weapon system integration of GBSD's Command & Control (WSC2) systems, flight systems and infrastructure required to execute, operate, sustain, and secure the GBSD weapon system. Assess the current MMIII launch and control facilities to determine the extent of degradation and evaluate for future upgrade or replacement.</p> <p>FY 2016 Plans: Identify and assess an integrated GBSD weapon system to include areas where component consolidation may provide maintenance, security and performance advantages. Assess areas where flight systems, communications and infrastructure may support fielding and transitioning the MM III to GBSD to meet capabilities requirements.</p>			
Accomplishments/Planned Programs Subtotals	-	-	75.166

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE:BA04:PE 0603851F: <i>Intercontinental Ballistic Missile - Dem/Val</i>	72.696	30.885	39.765	-	39.765	83.660	73.309	68.310	65.508	Continuing	Continuing
• RDTE:BA07:PE 0101213F: <i>Minuteman III Ops Equipment</i>	-	16.359	-	-	-	-	-	-	-	-	-

Remarks

E. Acquisition Strategy
The GBSD program will deliver a weapon system capability that meets Air Force requirements with initial fielding in FY27. For the pre-Milestone A and Technology Maturation/Risk Reduction (TMRR) phases of this strategy, contracts will be competitively awarded. The TMRR phase will include a System Requirements Review (SRR), a System Design Review (SDR) and will culminate in a system Preliminary Design Review (PDR). As appropriate, the contract will 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. After MS B approval, Engineering, Manufacturing and Development (EMD) contract will be competitively awarded.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Crane Guidance Parts	MIPR	Navy Crane : Crane, IN	-	-		-		1.000	Feb 2016	-		1.000	Continuing	Continuing	TBD
Propulsion Systems Concept Development 1	C/TBD	TBD : TBD,	-	-		-		11.143	Jan 2016	-		11.143	Continuing	Continuing	TBD
Propulsion Systems Concept Development 2	C/TBD	TBD : TBD,	-	-		-		11.143	Jan 2016	-		11.143	Continuing	Continuing	TBD
Subtotal			-	-		-		23.286		-		23.286	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 : Layton, UT	-	-		-		11.500	Dec 2015	-		11.500	Continuing	Continuing	TBD
Tech/Engineering Support - Guidance	C/FFP	BAE : Layton, UT	-	-		-		11.417	Jun 2016	-		11.417	Continuing	Continuing	TBD
Tech/Engineering Support - Propulsion	C/FFP	BAE : Layton, UT	-	-		-		2.573	Jan 2016	-		2.573	Continuing	Continuing	TBD
Subtotal			-	-		-		25.490		-		25.490	-	-	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Enhanced Ground Test	MIPR	Draper Labs : Cambridge, MA	-	-		-		8.280	Jan 2016	-		8.280	Continuing	Continuing	TBD
Guidance Instrument Ground Simulation	C/TBD	Little Mountain : Clearfield, UT	-	-		-		11.300	Mar 2016	-		11.300	Continuing	Continuing	TBD
Subtotal			-	-		-		19.580		-		19.580	-	-	-

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
Technology Maturation and Risk Reduction Phase	2	2016	2	2019
Milestone A (2Q16)	2	2016	2	2016
TMRR Contract Award (March 2017)	2	2017	2	2017
PDR (Dec 2019)	1	2019	1	2019
Milestone B (March 2019)	2	2019	2	2019
Engineering, Manufacturing and Development (EMD) Phase	2	2019	4	2020
EMD Contract Award (June 2019)	3	2019	3	2019
Guidance Concept Development and Architecture	2	2016	4	2020
Propulsion Solid Rocket Motor Concept Development	2	2016	4	2020
GBSD Weapon System Integration	2	2016	4	2020

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0105921F / <i>Service Support to STRATCOM - Space Activities</i>
--	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	2.685	-	-	-	-	-	-	-	-	-	2.685
643833: <i>Joint NavWar Center</i>	-	2.685	-	-	-	-	-	-	-	-	-	2.685
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	

MDAP/MAIS Code: 447

Note
In 2015, Projet 643833 Joint NavWar Center (JNWC) Space Activities, efforts were transferred to PE 0105921F Service Support to STRATCOM - Space Activities, Project 672486 Joint NAVWAR Center in order to align efforts with Budget Activity 7, Operational System Development.

A. Mission Description and Budget Item Justification
Navigation Warfare (NAVWAR) is deliberate defensive and offensive action to assure and prevent positioning, navigation, and timing (PNT) information through coordinated employment of space, cyberspace, and electronic warfare (EW) operations. The term NAVWAR is sometimes equated with "PNT Superiority". The Joint Navigation Warfare Center (JNWC) was established by DEPSECDEF Memo, 17 November 2004, as the DoD Center of Excellence, tasked to integrate and coordinate NAVWAR PNT capabilities across electronic spectrum, cyberspace, and space operations. NAVWAR leverages various techniques and technologies from these mission areas to negate or prevent hostile use of PNT information and protect unimpeded use of PNT information by U.S., Allied, and Coalition Forces while not unduly disrupting peaceful use outside an area of operation. The JNWC develops and maintains the Department's premier collection of NAVWAR knowledge, and provides subject matter expertise support to warfighters, Department decision makers, the Federal Interagency (the Department of Homeland Security and other civil agencies concerned with the Critical National Infrastructure), and the Coalition. NAVWAR expertise is developed in part by execution of PNT Operational Field Assessments (POFAs), modeling and simulation, analysis, and exercise and training support. In recent years, the Global Positioning System (GPS) has become one of the most critical enablers of modern advanced technology warfare. In an era where everything from advanced weapons systems and networks to basic goods and services are tracked, guided or disciplined by PNT systems such as GPS, NAVWAR is an ever increasing capability of interest and concern, especially if PNT systems are interrupted or lost. Likewise, as Global Navigation Satellite Systems (GNSS) proliferate, it becomes necessary to consider not only denying adversary use of GPS but also negating adversary use of alternate GNSS systems for PNT. Recent revisions to National Defense Strategy and Defense Planning Guidance require Combatant Commands to account for denied / degraded PNT environments in deliberate planning. Projecting force in the Asia-Pacific Region and other theaters of operation requires an understanding of how evolving global asymmetric anti-access / area denial (A2/AD) threats may affect joint warfighting functions. JNWC-conducted POFAs are a key element in evaluating Coalition NAVWAR capabilities and vulnerabilities and adversary capabilities and vulnerabilities, both crucial to executing PNT superiority mission sets in potentially denied / degraded PNT environments. JNWC helps develop defensive and offensive PNT capabilities by focusing on four Joint Mission Essential Tasks (JMETS):

1. Enable Defensive PNT Operations: enable operations that will protect blue force PNT capabilities.
2. Enable Offensive PNT Operations: enable PNT superiority capabilities that can take advantage of GNSS vulnerabilities.
3. Establish and Maintain PNT Situational Awareness (SA): assess current and projected blue force and red force PNT related capabilities.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 0105921F / <i>Service Support to STRATCOM - Space Activities</i>
--	---

4. Develop and Execute NAVWAR Operational Assessments and Analysis for Future NAVWAR Operations and conduct field assessments to evaluate blue force and red force capabilities and vulnerabilities.

The JNWC executes its assigned mission responsibilities through three lines of operation (LOO):

1. Create Knowledge for PNT Superiority: PNT operational field assessments, studies and analysis, assessment and dissemination of PNT related intelligence, and managing the PNT Superiority data repository
2. Operationalize PNT Superiority: Joint Force and Contingency Operations support to Combatant Commands, Services, and other customers through outreach; creating and demonstrating operational capability for PNT Superiority in the near term
3. Institutionalize PNT Superiority: Acquisition, policy, doctrine, and coalition support; creating the environment for robust PNT Superiority capability in the future

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	2.779	-	-	-	-
Current President's Budget	2.685	-	-	-	-
Total Adjustments	-0.094	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.094	-			
• Other Adjustments	-	-	-	-	-

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Title: PNT Operational Field Assessments (GYPSY)	2.386	-	-
Description: The JNWC will investigate, operationally assess, and simulate potential threats and mitigation strategies for potential denial of blue force PNT capabilities as well as preventing the hostile use of Positioning, Navigation and Timing (PNT) information. This will be accomplished primarily through the use of operational field assessments, laboratories, employment of competitively selected contractors, universities, other government agencies, and Federally Funded Research and Development Centers (FFRDCs).			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 0105921F / <i>Service Support to STRATCOM - Space Activities</i>
--	---

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
<p><i>FY 2014 Accomplishments:</i> GYPSY Juliet POFA will assess operational effects and effectiveness of red and blue force NAVWAR equipment in a live, joint environment; develop, assess and revise Joint NAVWAR Techniques, Tactics, and Procedures; upgrade NAVWAR Modeling and Simulation tools; provide Combatant Command staffs the expertise to inform planning and operations in a PNT denied area.</p> <p><i>FY 2015 Plans:</i> N/A</p> <p><i>FY 2016 Plans:</i> N/A</p>			
<p><i>Title:</i> PNT Operational Field Assessments (FORTUNE)</p> <p><i>Description:</i> The JNWC will investigate, operationally assess, and simulate potential threats and mitigation strategies for potential denial of blue force PNT capabilities as well as preventing the hostile use of Positioning, Navigation and Timing (PNT) information. This will be accomplished primarily through the use of operational field assessments, laboratories, employment of competitively selected contractors, universities, other government agencies, and Federally Funded Research and Development Centers (FFRDCs).</p> <p><i>FY 2014 Accomplishments:</i> The FORTUNE Operational Field Assessments serve as a series of risk mitigation events as a lead up to the FY14 GYPSY Juliet POFA. FORTUNE POFAs are planned and executed to demonstrate various PNT system capabilities and platform vulnerabilities to increase the Joint Navigation Center's understanding of test objectives to be undertaken during a GYPSY event.</p> <p><i>FY 2015 Plans:</i> N/A</p> <p><i>FY 2016 Plans:</i> N/A</p>	0.299	-	-
Accomplishments/Planned Programs Subtotals	2.685	-	-

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

Remarks

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0105921F / <i>Service Support to STRATCOM - Space Activities</i>

E. Acquisition Strategy

Studies and assessments will be accomplished using a combination of competitively selected contractors, universities, other government agencies, and Federally Funded Research and Development Centers.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0105921F / <i>Service Support to STRATCOM - Space Activities</i>	Project (Number/Name) 643833 / <i>Joint NavWar Center</i>
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Assessment Event Planning	MIPR	Joint Navigation Warfare Center: Kirtland AFB, NM : Albuquerque, NM	-	0.650	Oct 2013	-		-		-		-	-	0.650	-
Subtotal			-	0.650		-		-		-		-	-	0.650	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Assessment Range Support	MIPR	Joint Navigation Warfare Center: Kirtland AFB, NM : Albuquerque, NM	-	0.906	Oct 2013	-		-		-		-	-	0.906	-
Additional Operational Assessment Support	MIPR	Joint Navigation Warfare Center: Kirtland AFB, NM : Albuquerque, NM	-	0.299	Oct 2013	-		-		-		-	-	0.299	-
Subtotal			-	1.205		-		-		-		-	-	1.205	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Assessment Execution	MIPR	Joint Navigation Warfare Center: Kirtland AFB, NM : Albuquerque, NM	-	0.830	Oct 2013	-		-		-		-	-	0.830	-
Subtotal			-	0.830		-		-		-		-	-	0.830	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0105921F / <i>Service Support to STRATCOM - Space Activities</i>	Project (Number/Name) 643833 / <i>Joint NavWar Center</i>

FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Gypsy Juliet																												
--------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0105921F / <i>Service Support to STRATCOM - Space Activities</i>	Project (Number/Name) 643833 / <i>Joint NavWar Center</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Gypsy Juliet	3	2014	4	2014

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0201184F / <i>Counter Narco-Terrorism Program Office</i>							
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	0.510	-	-	-	-	-	-	-	-	Continuing	Continuing
641403: <i>Counter Narcotics Technology Program Office</i>	-	0.510	-	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

This project provides for Counter-Drug activities.

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	0.510	-	-	-	-
Total Adjustments	0.510	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.510	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-			

Change Summary Explanation

FY14 transfer from Drug Interaction and Counter-Drug Activities, Defense consistent with provisions in Public Law 113-46.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0201184F / Counter Narco-Terrorism Program Office	Project (Number/Name) 641403 / Counter Narcotics Technology Program Office
--	--	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
641403: Counter Narcotics Technology Program Office	-	0.510	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This project provides for Counter-Drug activities.

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

	FY 2014	FY 2015	FY 2016
Title: Counter Narcotics Technology Program Office (CNTPO)	0.510	-	-
Description: Funding to support efforts of the CNTPO program office.			
FY 2014 Accomplishments: Support Counter-Drug activities			
FY 2015 Plans: N/A			
FY 2016 Plans: N/A			
Accomplishments/Planned Programs Subtotals	0.510	-	-

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

N/A

Remarks

D. Acquisition Strategy

Contracting approach varies based on support required.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0201184F / <i>Counter Narco-Terrorism Program Office</i>	Project (Number/Name) 641403 / <i>Counter Narcotics Technology Program Office</i>
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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,	-	0.510	Sep 2014	-		-		-		-	-	0.510	-
Subtotal			-	0.510		-		-		-		-	-	0.510	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	0.510	-	-	-	-	-	0.510	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0201184F / <i>Counter Narco-Terrorism Program Office</i>	Project (Number/Name) 641403 / <i>Counter Narcotics Technology Program Office</i>

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020							
	1	2	3	4	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																																

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 4	R-1 Program Element (Number/Name) PE 0201184F / <i>Counter Narco-Terrorism Program Office</i>	Project (Number/Name) 641403 / <i>Counter Narcotics Technology Program Office</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Counter Drug activities	4	2014	2	2015

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
--	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	-	15.722	8.830	-	8.830	-	-	-	-	Continuing	Continuing
646007: <i>2030+ AIR DOMINANCE AOS</i>	-	-	15.722	8.830	-	8.830	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Next Generation Air Dominance, PE27110F was an FY14 New Start. BPAC 646007, 2030+ Air Dominance AOS was created in FY15.

A. Mission Description and Budget Item Justification

This program develops a next generation Air Dominance capability in support of Air Force Air Superiority doctrine and 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 supports program management support, operational concept exploration, technology assessments and development, operational and system architecture development, maturation and risk reduction of advanced 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)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	-	15.722	3.889	-	3.889
Current President's Budget	-	15.722	8.830	-	8.830
Total Adjustments	-	-	4.941	-	4.941
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	4.941	-	4.941

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
--	--

Change Summary Explanation

FY16 - \$5.0M add to fund pre-AoA concept development & integration assessment and technology risk reduction activities.

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

	FY 2014	FY 2015	FY 2016
<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 complete concept studies.</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: The 2030+ Air Dominance Concept Development working groups will be methodically assessing the candidate concepts utilizing USAF directives and guidance</p> <p>FY 2016 Plans: The 2030+ Air Dominance Concept Development working groups will be methodically assessing the candidate concepts utilizing USAF directives and guidance</p>	-	8.722	5.580
<p>Title: Air Dominance Studies</p> <p>Description: Studies that support the 2030+AD program in refining system concepts and operational/system architectures to include family of systems and system of systems.</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: The 2030+AD candidate concepts are integrating leading edge 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 Analysis of Alternatives.</p> <p>FY 2016 Plans:</p>	-	1.000	0.500

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 2014	FY 2015	FY 2016
The 2030+AD candidate concepts are integrating leading edge 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 Analysis of Alternatives.			
<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 as well as operational analysis to inform system performance trades.</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: 2030+ Air Dominance technology integration, operational and system trade space analysis required to support Concept Development.</p> <p>FY 2016 Plans: 2030+ Air Dominance technology integration, operational and system trade space analysis required to support Concept Development.</p>	-	5.000	2.000
<p>Title: Program Management Support</p> <p>Description: PMA includes A&AS, travel, supplies and other program office costs</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: PMA includes A&AS, travel, supplies and other program office costs</p> <p>FY 2016 Plans: PMA includes A&AS, travel, supplies and other program office costs</p>	-	1.000	0.750
Accomplishments/Planned Programs Subtotals	-	15.722	8.830

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• N/A: None	-	-	-	-	-	-	-	-	-	-	-

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
--	--

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
------------------	----------------	----------------	-------------------------------	------------------------------	--------------------------------	----------------	----------------	----------------	----------------	-----------------------------------	-------------------

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 capability teams will conduct war-games and experiments to quantify the operational value of alternative advanced concepts and the advanced technologies to provide solutions to current and future air superiority capability gaps.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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
--	---	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Various	Not specified. : ,	-	-		1.000		0.750		-		0.750	Continuing	Continuing	-
Subtotal			-	-		1.000		0.750		-		0.750	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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. : ,	-	-		14.722		8.080		-		8.080	Continuing	Continuing	-
Subtotal			-	-		14.722		8.080		-		8.080	-	-	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	-	15.722	8.830	-	8.830	-	-	-

Remarks
Details of contract data are not shown because of the level of security classification.

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Pre-Material Development Decision	1	2015	4	2016
Pre-Analysis of Alternatives	1	2015	1	2017
Material Development Decision	4	2016	4	2016
Analysis of Alternatives	2	2017	3	2018
Milestone A	3	2018	3	2018

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
--	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	0.000	52.891	88.825	14.939	-	14.939	69.985	50.864	13.916	24.816	-	316.236
646002: <i>Three Dimensional Expeditionary Long Range Radar</i>	0.000	52.891	88.825	14.939	-	14.939	69.985	50.864	13.916	24.816	-	316.236
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

MDAP/MAIS Code: 393

Note

Prior to FY14, 3DELRR funding was contained in PE 0604283F

A. Mission Description and Budget Item Justification

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). 3DELRR will respond to the operational need to detect and report highly maneuverable, small radar cross section targets to enable battlefield awareness while at the same time mitigating the reliability, maintainability, and sustainability issues plaguing the AN/TPS-75 radar system. 3DELRR 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. It will replace an aging USAF AN/TPS-75 radar system that is incapable of detecting some current and emerging threats. In addition, as the AN/TPS-75 is reaching the end of its service life, it is 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 the Airspace Control Authority (ACA) and the Area Air Defense Commander (AADC) roles as well as improving the 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 and reduce 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) 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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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)
---	---

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	54.191	88.825	98.250	-	98.250
Current President's Budget	52.891	88.825	14.939	-	14.939
Total Adjustments	-1.300	-	-83.311	-	-83.311
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-1.300	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-83.311	-	-83.311

Change Summary Explanation

FY14 reduced by 1.3M due to Below Threshold Reprogramming

FY16 Current President's Budget reduced by \$83.311M due to efficiencies gained in the competitive acquisition strategy.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Title: Technology Development (TD)/EMD Phases	43.396	79.549	0.001
Description: Technology Development (TD)/EMD efforts associated with delivering a new long-range ground-based sensor.			
FY 2014 Accomplishments: Acquisition activities in FY14 included: EMD Phase Request for Proposal (RFP) development and release, MS-B preparation and MS-B decision, limited competition source selection to award a single EMD contract, test planning/preparation, and studies and analyses to support both current program planning and execution of future program planning.			
FY 2015 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), Integrated Baseline Review (IBR), test planning/preparation and fabrication/test of system components/subsystems. A CDR is conducted during this timeframe to ensure the program has properly matured the system design and is postured for successful development of 3 Production Representative Units (PRUs). Activities also include studies and analyses to support both current program planning and execution and future program planning.			
FY 2016 Plans: Will continue acquisition activities for the EMD Phase including, but not limited to: test planning/preparation, fabrication/test of system components/subsystems, initial physical configuration audit (PCA), continued efforts to ensure the program has properly			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
matured the system design and is postured for successful completion of 3 Production Representative Units (PRUs) to be delivered in FY17. Activities will also include studies and analyses to support both current program planning and execution and future program planning.				
<p>Title: Test and Evaluation Support</p> <p>Description: Test and Evaluation Support</p> <p>FY 2014 Accomplishments: Continued test and evaluation support activities for development of the test strategy and test related documentation, planning of future developmental test and evaluation events, and information assurance planning.</p> <p>FY 2015 Plans: Test and Evaluation activities include, but are not limited to: test and evaluation support activities for development of the test strategy and test related documentation, planning of future developmental test and evaluation events, information assurance planning, and participation in technical and test related working groups.</p> <p>FY 2016 Plans: Specific Test and Evaluation activities include but are not limited to: develop the test strategy and test related documentation, conduct site surveys, plan developmental test and evaluation events, conduct cyber security planning, support contractor testing, and participate in technical and test related working groups. Test and Evaluation personnel, training and travel will significantly increase to accommodate Contractor developmental test monitoring and execution of Government developmental testing.</p>		0.672	1.507	6.797
<p>Title: Systems Engineering/Technical Support</p> <p>Description: Systems Engineering/Technical Support</p> <p>FY 2014 Accomplishments: Developed EMD Request for Proposal and conducted source selection. Prepared and planned EMD efforts to further mature program technologies and manufacturing capabilities. Documented and monitored changes to the program that could affect the system baseline. Identified, monitored and mitigated technical risks.</p> <p>FY 2015 Plans: Will continue Engineering and Manufacturing efforts to further mature program technologies and manufacturing capabilities. Will lead Delta-PDR, EDRR, and CDR technical reviews. Will participate in IBR. Will document and monitor changes to the program that could affect the system baseline. Will support reliability growth efforts during contractor test and will continue to identify, monitor, and mitigate technical program risks.</p> <p>FY 2016 Plans:</p>		8.823	7.769	8.141

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 2014	FY 2015	FY 2016
Engineering support activities include, but are not limited to the following: preparation and planning for EMD efforts to further mature program technologies and manufacturing capabilities, document and monitor 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 risks.			
Accomplishments/Planned Programs Subtotals	52.891	88.825	14.939

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF: BA04: Line Item # 833060: <i>3D Expeditionary Long Range Radar</i>	-	-	-	-	-	-	44.714	154.230	163.433	753.800	1,116.177

Remarks

E. Acquisition Strategy
Three Dimensional Expeditionary Long-Range Radar (3DELRR) will provide full capability via competition to further advance Command and Control capabilities supporting Theater Battle Management.

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

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Raytheon Integrated Defense Systems : Sudbury, MA	0.000	43.396	Oct 2014	79.549	Aug 2015	0.001	Oct 2015	-		0.001	144.981	267.927	265.000
Subtotal			0.000	43.396		79.549		0.001		-		0.001	144.981	267.927	265.000

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	0.000	1.900	Oct 2013	1.600	Oct 2014	1.015	Oct 2015	-		1.015	1.396	5.911	TBD
System Engineering - C	SS/CPFF	Carnegie Mellon University : Pittsburgh, PA	0.000	0.119	Oct 2013	0.150	Oct 2014	0.150	Oct 2015	-		0.150	-	0.419	TBD
Subtotal			0.000	2.019		1.750		1.165		-		1.165	1.396	6.330	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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/Other Test Agencies	Various	Various : Various,	0.000	0.672	Oct 2013	1.507	Oct 2014	6.797	Oct 2015	-		6.797	6.550	15.526	TBD
Subtotal			0.000	0.672		1.507		6.797		-		6.797	6.550	15.526	-

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Administration	Various	Various : Various,	0.000	6.804	Oct 2013	6.019	Oct 2014	6.976	Oct 2015	-		6.976	6.654	26.453	TBD

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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</i>
--	--	--

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	6.804		6.019		6.976		-		6.976	6.654	26.453	-
Project Cost Totals			0.000	52.891		88.825		14.939		-		14.939	159.581	316.236	-

Remarks
Prior to FY14 3DELRR resided in a different PE

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Source Selection for EMD and LRIP Contract	2	2014	4	2014
Milestone B	4	2014	4	2014
EMD Contract Award	1	2015	1	2015
EMD Phase	4	2014	2	2018
Critical Design Review (CDR)	3	2015	3	2015
Developmental Test & Evaluation Test Readiness Review	2	2017	2	2017
Government Development Test	2	2017	2	2018
Production Representative Units Delivery	2	2017	3	2017
Operational Test Readiness Review (OTRR)	3	2018	3	2018
Government Operational Test	4	2018	4	2019
Milestone C	4	2018	4	2018
Low Rate Initial Production (LRIP)	4	2018	2	2020
Full Rate Production Decision	4	2019	4	2019
Production and Deployment Phase	4	2019	4	2020

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 / <i>NAVSTAR Global Positioning System (User Equipment) (SPACE)</i>
--	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	63.687	123.081	156.221	142.288	-	142.288	219.043	221.884	189.800	171.827	55.700	1,343.531
643833: <i>MILITARY GLOBAL POSITIONING SYSTEM USER EQUIP</i>	63.687	123.081	156.221	142.288	-	142.288	219.043	221.884	189.800	171.827	55.700	1,343.531
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

MDAP/MAIS Code: 447

A. Mission Description and Budget Item Justification

The Global Positioning System (GPS) is a space-based radio Positioning, Navigation, and Time (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 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 Development acquisition phase. The program received direction in February 2014 from the Under Secretary of Defense for Acquisition, Technology, and Logistics to execute a new acquisition strategy, accelerating the program to provide units faster for military end users. The MGUE program is seeking a tailored Milestone B/C decision in FY16.

The MGUE Increment 2 effort is planned to begin in FY17 and will continue to employ M-Code receiver technology into additional applications to meet service requirements. This effort builds on the MGUE Increment 1 technology bringing improved capability to meet applications beyond the four lead platforms.

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.

Funding for this exhibit contained in PE 0305164F.

The FY2016 funding request was reduced by \$0.078 million to account for the availability of prior execution balances.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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)
---	--

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	127.172	156.659	152.011	-	152.011
Current President's Budget	123.081	156.221	142.288	-	142.288
Total Adjustments	-4.091	-0.438	-9.723	-	-9.723
• Congressional General Reductions	-	-0.438			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-4.083	-			
• Other Adjustments	-0.008	-	-9.723	-	-9.723

Change Summary Explanation

FY14: -\$4.083 for SBIR/STTR Transfer

FY16: -\$9.723M to reduce MGUE Alt Acq Strat as estimated by OSD CAPE

FY16: funding request was reduced by \$0.078 million to account for the availability of prior execution balances.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
---	----------------	----------------	----------------

Title: MGUE Increment 1 Technology Development	78.080	119.142	68.744
---	--------	---------	--------

Description: The MGUE Increment 1 program will develop standard modernized receiver form factors for the service-nominated lead platforms identified in the MGUE CDD.

FY 2014 Accomplishments:

Executed MGUE Increment 1 Technology Development phase. Reviewed contractor submitted documents with Systems Engineering and Integration (SE&I) team for technical accuracy, completeness and compliance with contractual agreements. Completed 3 System Design Reviews (SDR) and 3 Preliminary Design Reviews (PDRs). Drafted and implemented new Acquisition Strategy to accelerate M-Code capable units to the warfighter. Completed Technology Readiness Assessment (TRA) with all critical Technology Elements rated at Technology Readiness Level (TRL) 6 or higher.

FY 2015 Plans:

Complete MGUE Increment 1 Technology Development phase. Complete development of software and provide initial hardware prototypes. Implement advanced cryptography and electronic warfare defense for two form factors (aviation/maritime and ground).

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 / <i>NAVSTAR Global Positioning System (User Equipment) (SPACE)</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016
Participate in operational demonstrations, pilot initial manufacturing process, assess component reliability, and begin security certifying M-Code capable receivers for sale to military customers. FY 2016 Plans: Complete MGUE combined Milestone B/C. Begin reliability testing on security and compatibility certified M-Code receivers. Assist each lead platform office to acquire, integrate, and test MGUE on the respective platform. Begin security and compatibility certifying receiver cards to develop industrial base and a competitive environment for M-Code receivers.				
Title: MGUE Demonstrations Description: The MGUE program will demonstrate the ability to insert M-Code capability into various platforms. These platforms are in addition to the service lead platforms. FY 2014 Accomplishments: Began integrating M-Code receivers onto US Army Precision Guided Munitions (PGM). Developed interface control documents and plans for testing PGM receivers in a test bed environment before launch. FY 2015 Plans: N/A FY 2016 Plans: N/A		15.000	-	-
Title: Advanced Technology Description: Advanced Technology includes efforts to mature technology for future GPS receivers called out in the MGUE CDD. Look for opportunities to increase resiliency in GPS performance and improve on size, weight, power, and cost of military receivers. FY 2014 Accomplishments: Researched new technologies to augment military GPS capabilities and explored alternate sources of position, navigation, and timing for the warfighter. Developed critical applications to boost current fielded capabilities such as the Small Antenna System (SAS) that enables close air support of helicopters with greater protection against enemy jamming threats. Coordinated interoperability of Electronic Attack (EA) capabilities with other navigation warfare disciplines. Upgraded designs and technologies for chip scale atomic clocks and software based radios. Researched alternate ways to protect GPS cryptography and electronic information against enemy threats. FY 2015 Plans:		6.200	6.100	4.800

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p>Continue researching new technologies to augment military GPS capabilities and exploring alternate sources of position, navigation, and timing for the warfighter. Invest 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 2016 Plans: Continue researching new technologies to augment military GPS and also 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>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 2014 Accomplishments: Established communications with lead program offices for execution of new MGUE receivers and coordinated cost, schedule, and performance issues relevant to the integration process. Conducted external navigation warfare testing in support of Service lead platform integration. Supported Army migration from handheld to embedded GPS in a variety of platforms. Assisted in current integration of GPS receivers for joint service platforms.</p> <p>FY 2015 Plans: Continue Lead platform integration efforts. Begin prototype integration and testing of the aviation form factor into a GPS receiver box. Prepare to integrate M-Code ground receiver card into Air Force. Army, Navy, and Marine Corps nominated lead platforms. Begin initial integration efforts and plan for testing, to include starting developmental testing. Continue to assist in integration of Legacy current GPS receivers for joint service platforms. Update Interface Control Documents to account for modernized capabilities.</p> <p>FY 2016 Plans: Continue Lead platform integration efforts. Fly prototype receiver unit including the aviation form factor in a live flight test. Continue developmental testing and begin operational testing of the platform including the M-Code GPS receiver unit. Integrate and test M-code receiver cards in Air Force, Army, Navy, and Marine Corps nominated lead platforms. Continue to assist in integration of current GPS receivers for joint service platforms.</p>		9.943	17.179	54.938
<p>Title: Information Assurance and Test/Evaluation</p> <p>Description: Develop, implement and maintain GPS Security Certification programs.</p>		13.858	13.800	13.806

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 2014	FY 2015	FY 2016
<p><i>FY 2014 Accomplishments:</i> Conducted Modernized Security Evaluations/Tests for Selective Availability Anti-Spoofing Module (SAASM) receivers and other legacy GPS receiver equipment. Achieved lower security handling for M-Code capable receiver cards. Reviewed, approved and tracked integrated platforms using the military GPS signal for every military user. Continued pilot program with Modernized User Equipment (MUE) and developed requirements to security approve MUE and MGUE receivers. Developed process to security approve MGUE receivers.</p> <p><i>FY 2015 Plans:</i> Continue Modernized Security Evaluations/Tests for SAASM and other legacy GPS receiver equipment. Continue to review, approve, and track SAASM/legacy receiver certified platforms and integrated applications for all of the Department of Defense. Accomplish validation and verification required for security certification of MGUE designs. Continue MGUE security activities to include security approval for other than lead platforms, such as munitions, ground monitoring stations, and potentially handhelds. Continue to enforce policy and other requirements related to receiver compatibility accreditation with the GPS signal in space.</p> <p><i>FY 2016 Plans:</i> 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. Update Security Certification for any changes coming from Operational Test of MGUE.</p>			
Accomplishments/Planned Programs Subtotals	123.081	156.221	142.288

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2014	FY 2015	FY 2016	FY 2016	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
			Base	OCO	Total						
• P-46: 836730/ Navstar GPS Space	2.053	2.065	2.029	-	2.029	2.187	2.209	2.216	2.255	-	15.014

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 Enterprise modernization.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force Date: February 2015

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 0305164F I NAVSTAR Global Positioning System (User Equipment) (SPACE)

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 Development Phase through design and includes Developmental and Operational testing of 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.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force											Date: February 2015				
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						

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	12.555	21.760	Nov 2013	42.000	Nov 2014	19.394	Jan 2016	-		19.394	30.995	126.704	-
MGUE Increment 1 Technology Development (Raytheon)	C/CPIF	Raytheon : El Segundo, CA	11.530	20.127	Dec 2013	40.408	Nov 2014	19.000	Jan 2016	-		19.000	30.995	122.060	-
MGUE Increment 1 Technology Development (L3)	C/CPIF	L3 : Anaheim, CA	15.545	16.905	Dec 2013	16.062	Nov 2014	9.917	Jan 2016	-		9.917	13.745	72.174	-
MGUE Increment 1 Pre-Tech Development	C/CPAF	Various : Various,	1.588	6.200	Feb 2014	6.100	Jan 2015	4.800	Jan 2016	-		4.800	26.600	45.288	-
MGUE Increment 1 MGUE Demonstrations	C/CPFF	TBD : TBD,	0.000	15.000	Jun 2014	-	Jun 2015	-		-		-	8.500	23.500	-
MGUE Increment 1 Platform Integration	C/CPAF	Various : Various,	1.749	2.904	Jan 2014	9.200	Jan 2015	32.333	Jan 2016	-		32.333	112.053	158.239	-
MGUE Increment 1 Compatibility Certification	C/CPAF	Various : Various,	0.876	2.172	Jan 2014	2.500	Jan 2015	2.500	Jan 2016	-		2.500	16.100	24.148	-
MGUE Increment 1 Information Assurance	C/CPAF	Various : Various,	2.139	2.991	Jan 2014	4.987	Jan 2015	4.986	Jan 2016	-		4.986	31.070	46.173	-
MGUE Increment 1 Enterprise Studies	C/CPAF	Various : El Segundo, CA	4.036	4.867	Nov 2013	5.479	Nov 2014	5.305	Nov 2015	-		5.305	30.603	50.290	-
MGUE Increment 1 Security Certification	C/CPAF	Various : Various,	3.895	6.910	Jan 2014	4.700	Jan 2015	4.900	Jan 2016	-		4.900	26.500	46.905	-
MGUE Increment 1 Reliability Testing	C/CPFF	Various : Various,	0.000	-		-		14.800	Jan 2016	-		14.800	-	14.800	-
Subtotal			53.913	99.836		131.436		117.935		-		117.935	327.161	730.281	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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
--	--	---

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	0.000	1.472	Jan 2014	2.113	Jan 2015	1.920	Jan 2016	-		1.920	4.288	9.793	-
MGUE Increment 1 Test and Evaluation (2)	Various	Various : Various,	0.350	2.486	Jan 2014	2.000	Jan 2015	2.000	Jan 2016	-		2.000	9.000	15.836	-
Subtotal			0.350	3.958		4.113		3.920		-		3.920	13.288	25.629	-

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 1	Various	Aerospace : El Segundo, CA	3.600	11.105	Dec 2013	10.000	Dec 2014	10.000	Dec 2015	-		10.000	61.020	95.725	-
MGUE Increment 1 FFRDC 2	Various	MITRE : El Segundo, CA	3.828	1.622	Dec 2013	1.229	Dec 2014	1.457	Dec 2015	-		1.457	12.250	20.386	-
MGUE Increment 1 Program Management Administration (PMA)	Various	Various : Various,	1.996	6.560	Dec 2013	9.443	Dec 2014	8.976	Dec 2015	-		8.976	34.386	61.361	-
Subtotal			9.424	19.287		20.672		20.433		-		20.433	107.656	177.472	-

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		63.687	123.081	156.221	142.288	142.288	448.105	933.382	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Preliminary Design Review (PDR)				■																								
Security Risk Reduction					■																							
Security Certification											■																	
Milestone B/C											■	■																
Compatibility Certification												■																
Lead Platforms Operational Test Complete																■												
MGUE Increment 2 applications of M-Code receivers																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
Preliminary Design Review (PDR)	4	2014	4	2014
Security Risk Reduction	1	2015	1	2015
Security Certification	4	2015	4	2015
Milestone B/C	4	2015	1	2016
Compatibility Certification	3	2016	3	2016
Lead Platforms Operational Test Complete	4	2017	1	2018
MGUE Increment 2 applications of M-Code receivers	1	2017	4	2020

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	-	-	81.732	-	81.732	94.643	94.754	93.593	95.179	Continuing	Continuing
646008: <i>US Cyber Command Technology Development</i>	-	-	-	81.732	-	81.732	94.643	94.754	93.593	95.179	Continuing	Continuing

Note

In FY 2016, funding in PECs 0208059F and 0306250F, Project 676002 Cyber Systems Modernization, BA 07, was transferred to PE 0306250F, Cyber Operations Technology Development, Project 646008, US Cyber Command Technology Development, BA 04 in order to align efforts.

This is not a new start.

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 modules 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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	81.732	-	81.732
Total Adjustments	-	-	81.732	-	81.732
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	81.732	-	81.732

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0306250F / <i>Cyber Operations Technology Development</i>
--	--

Change Summary Explanation

In FY16, 676002, Cyber Systems Modification, efforts were transferred to PE 030650F, Cyber Operations Technology Development, 646008, US Cyber Command Technology Development, to align all USCYBERCOM investment funding into one Program Element and WSC.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
646008: <i>US Cyber Command Technology Development</i>	-	-	-	81.732	-	81.732	94.643	94.754	93.593	95.179	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2016, funding in PECs 0208059F and 0306250F, Project 676002 Cyber Systems Modernization, BA 07, was transferred to PE 0306250F, Cyber Operations Technology Development, Project 646008, US Cyber Command Technology Development, BA 04 in order to align efforts.

This is NOT a new start.

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 modules to support Cyber Mission Forces.

Defend the Nation - CYBERCOM in conjunction with the Services and Agencies will develop the tools and capabilities, as well as tactics, techniques and procedures (TTPs) to be prepared to Defend the Nation. 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.

Combatant Command Support - CYBERCOM in conjunction with the Services and Agencies will 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. Increase the cyberspace capability portfolio by investing in the tools and capabilities that will be able to cause the desired effects using cyber at the exact time and place required by the Combatant Commander (CCDR). This essential development work is focused exclusively on CCMD priorities and will ensure achievement of CCMD military objectives.

Operate and Defend the DODIN - CYBERCOM in conjunction with the Services and Agencies will develop essential tools, and TTPs to defend the DoD Information Networks and cyber key terrain. CYBERCOM conducts global cyberspace operations to deter, disrupt, and defeat adversary cyberspace operations in order to defend U.S. Critical Infrastructure and Key Resources (CIKR). Enabling active defense of key terrain, operationally linked to aggressive counter-cyber threat actions, improvement of overall mission security posture, and reinforcement of organic network defenders during a cyber event.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force	Date: February 2015
---	----------------------------

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>
--	--	---

CYBER Situational Awareness - To develop a Common Operating Picture for cyber situational awareness for the Services and CCMDs. Cyber Situational Awareness is critical to a Commander's ability to plan, execute, and assess the mission by providing an IT over-watch environment to decision makers. This capability will enable Commanders to understand their network topology, identify cyber terrain, determine mission impact, increase Commander information flow while enabling decisions and action within operationally relevant timelines.

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

	FY 2014	FY 2015	FY 2016
<p>Title: Defend the Nation</p> <p>Description: Funding supports the development of a diverse cyber capability portfolio to enable SEE, BLOCK, and MANEUVER efforts in order to defeat a wide variety of cyber attacks. Efforts include research, integration, analysis, access development, training, testing, and assessments for offensive, and defensive cyber capabilities. Any further details are held at higher classification levels.</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: N/A</p> <p>FY 2016 Plans: Will continue to support 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 networks. Funding will support tool development for Joint Cyber Centers with an event detection capability and engineering support to ensure smooth integration and development. Funding will also support efforts to solve operational limitations, vulnerabilities and requirements.</p>	-	-	35.218
<p>Title: Combatant Command Support</p> <p>Description: Funding 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.</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: N/A</p> <p>FY 2016 Plans:</p>	-	-	19.051

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
Will continue to support studies, analysis, testing and development of cyber operations capabilities and tools in support of Combatant Command military objectives. Will also support advanced reverse engineering efforts, development of EW 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.				
<p>Title: Operate and Defend the DODIN and Cyber Situational Awareness</p> <p>Description: Funding 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.</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: N/A</p> <p>FY 2016 Plans: Continue to support 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 networks. Funding supports tool development for Joint Cyber Centers with an event detection capability and engineering support to ensure smooth integration and development. Funding supports efforts to solve operational limitations, vulnerabilities and requirements.</p>		-	-	27.463
Accomplishments/Planned Programs Subtotals		-	-	81.732
C. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				
D. Acquisition Strategy				
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.				

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Service Partners: Various : ,	-	-		-		19.051	Nov 2015	-		19.051	Continuing	Continuing	TBD
Defend the Nation	Various	Service Partners: Various : ,	-	-		-		35.218	Nov 2015	-		35.218	Continuing	Continuing	TBD
Operate and Defend the DoDIN and Cyber Situational Awareness	Various	Service Partners: Various : ,	-	-		-		17.962	Nov 2015	-		17.962	Continuing	Continuing	TBD
Subtotal			-	-		-		72.231		-		72.231	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 - FFRDC	C/CPAF	Various: Ft Meade, MD : ,	-	-		-		9.501	Oct 2015	-		9.501	Continuing	Continuing	TBD
Subtotal			-	-		-		9.501		-		9.501	-	-	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force							Date: February 2015				
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals	-	-	-	81.732	-	81.732	-	-	-		

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Command Command Support	[REDACTED]																											
Defend the Nation	[REDACTED]																											
GIG Ops and Defense and Cyber Situational Awareness	[REDACTED]																											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
Command Command Support	1	2016	4	2020
Defend the Nation	1	2016	4	2020
GIG Ops and Defense and Cyber Situational Awareness	1	2016	4	2020

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0603260F / <i>Intelligence Advanced Development</i>
---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	0.977	-	-	-	-	-	-	-	-	-	0.977
652053: <i>National Air Intel Center</i>	-	0.977	-	-	-	-	-	-	-	-	-	0.977
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	

Note

In FY 2015, PE 0603260F (BA5), Intelligence Advanced Development (IAD), Project Number 652053, National Air Intelligence Center efforts were transferred to PE 0603260F (BA4), Intelligence Advanced Development (IAD), Project Number 64537A, Intelligence Analysis Capabilities (IAC), in order to properly align efforts, increase management efficiency, and reduce administrative actions.

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 projects provide better on-time information to the warfighter using new and existing data sources, streamlining data analysis, reducing footprint required, and extending life of sensors in place and enhancing performance. The Air Force Research Lab, Rome Research Site, Information and Intelligence Exploitation Division (AFRL/RIE), works directly with users, employing evolutionary approaches and integrating finished modules directly in 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, focusing on technology insertion correcting AF intelligence deficiencies at the tactical and operational levels. This PE bridges the technology transition from Advanced Technology Demonstrations (ATDs) and Integrated Technology Thrust Programs (ITTPs) to current/new systems, and also 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 gathered and prioritized by the 25th Air Force (25 AF). Development of new/improved capabilities to meet the requirements is managed by AFRL/RIE. Prototype products, usually in the form of software, once evaluated by the users, are transferred to the operational environment.

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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 0603260F / <i>Intelligence Advanced Development</i>
---	--

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	0.977	-	-	-	-
Current President's Budget	0.977	-	-	-	-
Total Adjustments	-	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-	-	-

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
<p>Title: Project Theo</p> <p>Description: Continues development of prototype to query and retrieve information across all available National Air & Space Intelligence Center (NASIC) Corporate Object Repositories (COR), metadata and their supported features; thereby assisting the Intel Analyst in identifying intelligence gaps and allowing the analyst to nominate intel collection in those areas.</p> <p>FY 2014 Accomplishments: Released prototype 1.3 to operational community for evaluation and initiated final combination of Project Theo's components. Released Final prototype.</p>	0.350	-	-
<p>Title: High Performance Aero Vehicle Modeler (HP-AVM)</p> <p>Description: Continues development of the HP-AVM tool, with the focus on modeling previously unknown airframes, that provides detailed engineering assessments of threat aircraft performance and characteristics.</p> <p>FY 2014 Accomplishments: Released prototype 1.2 and initiated and released final prototype of HP-AVM.</p>	0.266	-	-
<p>Title: Space, Air, and Terrestrial Modeling & Simulation Initiative</p> <p>Description: Initiates SATM&S to add a space communications modeling capability to the previously fielded terrestrial communications focused TEL-SCOPE tool. This effort will complete modeling of an adversary's total C4ISR system and assist nomination of terrestrial and space targets.</p> <p>FY 2014 Accomplishments:</p>	0.361	-	-

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 0603260F / <i>Intelligence Advanced Development</i>
---	--

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Initiated development of prototype.			
Accomplishments/Planned Programs Subtotals	0.977	-	-

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

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• RDTE: BA04: 0603260F: <i>Intelligence Advanced Development</i>	-	5.408	5.032	-	5.032	5.654	5.691	5.663	5.764	Continuing	Continuing

Remarks

E. Acquisition Strategy
Requirements of new/upgraded intelligence analysis tools are identified and prioritized by the 25th Air Force (25 AF). Development of capabilities to meet these requirements is managed by the AF 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.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 652053 / <i>National Air Intel Center</i>
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Project Theo	C/CPFF	Northrop Grumman Mission Systems, General Dynamics, and Janya : Beavercreek, OH	-	0.316	Nov 2013	-		-		-		-	-	0.316	1.372
High Performance Aero Vehicle Modeler (HP-AVM)	C/CPFF	Northrop Grumman Mission Systems : Beavercreek, OH	-	0.231	Nov 2013	-		-		-		-	-	0.231	1.112
Space Air & Terrestrial Modeling & Simulation Initiative	C/CPFF	Northrop Grumman Mission Systems : Beavercreek, OH	-	0.325	Jun 2014	-		-		-		-	-	0.325	-
Subtotal			-	0.872		-		-		-		-	-	0.872	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	0.105	Oct 2013	-		-		-		-	-	0.105	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 652053 / <i>National Air Intel Center</i>

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Electronic Warfare (EW) Flagging Development/Prototype	██████																											
Project Theo Development/Prototype	██████████																											
HP-AVM Development/Prototype	██████████																											
Space, Air, and Terrestrial M&S Development/Prototype			██████																									

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0603260F / <i>Intelligence Advanced Development</i>	Project (Number/Name) 652053 / <i>National Air Intel Center</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Electronic Warfare (EW) Flagging Development/Prototype	1	2014	2	2014
Project Theo Development/Prototype	1	2014	4	2014
HP-AVM Development/Prototype	1	2014	4	2014
Space, Air, and Terrestrial M&S Development/Prototype	3	2014	4	2014

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	291.751	3.601	13.324	-	-	-	-	-	-	-	-	308.676
654102: <i>Joint Primary Aircraft Training System (JPATS)</i>	288.900	1.407	6.212	-	-	-	-	-	-	-	-	296.519
654376: <i>T-38 Avionics Upgrade Program (AUP)</i>	0.000	0.225	7.112	-	-	-	-	-	-	-	-	7.337
655340: <i>Advanced Trainer Replacement T-X</i>	2.851	1.969	-	-	-	-	-	-	-	-	-	4.820

MDAP/MAIS Code: 560

Note

In FY 2015 PE 0604233F Specialized Undergraduate Flight Training, Project 655340, Advanced Trainer Replacement T-X, efforts were transferred to Program Element 0605223F, Advanced Pilot Training, Project 655340, Advanced Trainer Replacement T-X, to improve transparency on ACAT I acquisition programs.

In FY15 PE 0604233F Specialized Undergraduate Flight Training, Project 654376 T-38C AUP was Completed.

In FY16 PE 0604233F Specialized Undergraduate Flight Training, Project 654102 JPATS was transferred to Budget Activity 7 as it no longer met the criteria for Budget Activity 5.

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.

The Advanced Trainer Replacement, T-X, will replace AETC's T-38C aircraft and associated GBTS currently used in the fighter/bomber advanced SUPT track as well as in the Introduction to Fighter Fundamentals (IFF) program. The T-38 was first introduced in 1961.

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

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	3.601	13.324	9.810	-	9.810
Current President's Budget	3.601	13.324	-	-	-
Total Adjustments	-	-	-9.810	-	-9.810
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-9.810	-	-9.810

Change Summary Explanation

PE 0604233F Specialized Undergraduate Flight Training, Project 654102 JPATS was transferred to Budget Activity 7

PE 0604233F Specialized Undergraduate Flight Training, Project 654376 T-38C AUP was transferred to Budget Activity 7

All funding has been transferred to PE 0604233F Specialized Undergraduate Flight Training BA07; no funds remain in PE 0604233F Specialized Undergraduate Flight Training BA05

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
654102: <i>Joint Primary Aircraft Training System (JPATS)</i>	288.900	1.407	6.212	-	-	-	-	-	-	-	-	296.519
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY16 PE 0604233F Specialized Undergraduate Flight Training, Project 654102 JPATS was transferred to Budget Activity 07 as it no longer met the criteria for Budget Activity 05.

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 will be purchasing 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.

This project upgrades software and threat libraries for the T25 Simulator for Electronic Combat Technology (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. Although in the same project, SECT is unrelated to the JPATS program.

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

	FY 2014	FY 2015	FY 2016
Title: Joint Primary Aircraft Training System (JPATS) Studies	1.407	0.359	-
Description: JPATS studies & development efforts.			
FY 2014 Accomplishments: Continued JPATS studies and development activities include development of the T-6 Power Management Unit (PMU) software upgrade, parachute surveillance study, safe/arm handle development, and Engine Component Improvement Program (CIP) study.			
FY 2015 Plans: Continued JPATS studies and development activities including: - Development of the T-6 Power Management Unit (PMU) software upgrade - Parachute surveillance study			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<ul style="list-style-type: none"> - Safe/arm handle development - Engine Component Improvement Program (CIP) study. <p>FY 2016 Plans: N/A</p>				
<p>Title: T25 SECT</p> <p>Description: Funding upgrades to the Simulator for Electronic Combat Technology (SECT)</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: Updated threat database definitions and threat library.</p> <p>N/A</p> <p>FY 2016 Plans: N/A</p>		-	1.118	-
<p>Title: Avionics Upgrades for FAA (Federal Aviation Administration) Compliance</p> <p>Description: Funding supports component selection, integration, test and certification of Automated Dependent Surveillance Broadcast (ADS-B Out) capability for use in T-6A aircraft and Ground Based Training System (GBTS).</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: Developed and tested upgrades and enhancements to hardware and software components to include Avionics Upgrades for Federal Aviation Administration (FAA) Compliance. Supported development, integration, test and certification of the Automated Dependent Surveillance Broadcast (ADS-B Out) capability in the T-6 Training System to comply with the January 1, 2020 Federal Aviation Administration (FAA) ADS-B Out mandate.</p> <p>FY 2016 Plans: NA</p>		-	3.100	-
<p>Title: GBTS ATD IOS Joystick & Throttle</p>		-	0.451	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015	
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 2014	FY 2015
<p>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).</p> <p>FY 2015 Plans: 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).</p> <p>FY 2016 Plans: N/A</p>			
<p>Title: GBTS ATD DAS II Control Loading/Flight Deck Retrofit</p> <p>Description: Elements of the legacy platforms to the Electronic Control Loading System (ECLS) and Flight Deck I/O of the JPATS ATDs are obsolete and have limited supportability and must be replaced before student training is impacted. This ECP will develop and retrofit the JPATS ATD fleet to the updated Control Loading Baseline (DAS-II)</p> <p>FY 2015 Plans: Developed and retrofitted the JPATS ATD fleet with Electronic Control Loading System (ECLS) and Flight Deck I/O to update the Control Loading Baseline (DAS-II)</p> <p>FY 2016 Plans: N/A</p>		-	0.325
<p>Title: Engine Study Upgrade</p> <p>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.</p> <p>FY 2015 Plans: 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>FY 2016 Plans: N/A</p>		-	0.636
<p>Title: High Cycle Fatigue Research</p>		-	0.223

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016
<p>Description: 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>FY 2015 Plans: Provided High Cycle Fatigue (HCF) and Structural Health Monitoring (SHM) research and development analysis of the T106-PW-100 gas turbine engine</p> <p>FY 2016 Plans: N/A</p>			
Accomplishments/Planned Programs Subtotals	1.407	6.212	-

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• APAF: BA06: Line Item # 000999: <i>Initial Spares/Repair Parts</i>	0.538	0.948	0.910	-	0.910	2.556	2.605	2.653	2.716	Continuing	Continuing
• APAF: BA05: Line Item # JPAT00: <i>T-6</i>	5.392	14.486	17.968	-	17.968	26.300	25.844	26.245	26.689	Continuing	Continuing
• APN: BA03: Line Item # 033900: <i>JPATS</i>	249.080	-	8.914	-	8.914	5.913	-	-	-	-	2,036.802
• APN: BA05: Line Item # 057100: <i>JPATS Series</i>	1.576	1.085	7.594	-	7.594	14.439	22.200	27.613	24.652	Continuing	Continuing
• APN: BA06: Line Item # 060500: <i>Spares and Repair Parts</i>	3.046	0.011	0.264	-	0.264	0.099	0.102	-	-	Continuing	Continuing
• APA: BA01: Line Item # A11300: <i>Utility F/W Aircraft</i>	12.617	-	-	-	-	-	-	-	-	-	29.919

Remarks

D. Acquisition Strategy
Avionics Upgrades for FAA Compliance are outside of the JPATS Major Defense Acquisition Program and will be established as a new Joint Acquisition Program with the Navy. For the JPATS Avionics Upgrades for FAA Compliance effort, an competitive award is anticipated to be the strategy for the T-6A air vehicles due to their federated design.

The SECT upgrade effort is an Engineering Change Proposal (ECP) to the competitively awarded Firm Fixed Price Contractor Logistics Support (CLS) contract.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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>

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	--	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Engine CIP	PO	Arnold Engineering Development Center : Arnold AFB, TN	1.157	0.521	Jun 2015	0.359	Sep 2015	-		-		-	-	2.037	5.676
JPATS Engine Study Upgrade	C/CPFF	BDC : Various,	0.000	-		0.636	Jan 2015	-		-		-	-	0.636	-
JPATS Engine High Cycle Fatigue	C/CPFF	Universal Technology Corp : Dayton, OH	0.194	-	Apr 2014	0.223	Jan 2015	-		-		-	-	0.417	0.233
JPATS PMU	Various	Various : Various,	0.082	-	Dec 2013	-		-		-		-	-	0.082	TBD
GBTS ATD IOS Joystick & Throttle	C/FFP	NAS Pensacola : Pensacola, FL	0.000	-		0.451	Feb 2015	-		-		-	-	0.451	0.706
GBTS ATD DAS II Control Loading/Flight Deck Retrofit	C/FFP	Various : Various,	0.000	-		0.325	Mar 2015	-		-		-	-	0.325	0.325
SECT Upgrade	C/FFP	BowHead Systems Management, Inc. : King George, VA	2.395	0.886		1.118		-		-		-	-	4.399	-
Avionics Upgrades for FAA Compliance	C/FFP	TBD : TBD,	0.000	-		3.100	Aug 2015	-		-		-	-	3.100	TBD
JPATS Completed Contracts	C/Various	Various : Various,	285.072	-		-		-		-		-	-	285.072	288.900
Subtotal			288.900	1.407		6.212		-		-		-	-	296.519	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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			-	-		-		-		-		-	-	-	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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>

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

JPATS Parachute Surveillance System Development	████████████████████																							
JPATS Engine Studies	████████████████████				████████████████████																			
JPATS Avionics Upgrades for FAA Compliance									████████████████████															
JPATS Continuing USN / USA T-6 Deliveries	████████████████████				████████████████████																			
JPATS Continuing USN T-6B Aircrew Training Device (ATD) Deliveries	██████																							
JPATS US Army Variant	████████████████████																							
JPATS GBTS ATD IOS Joystick & Throttle					████████████████████																			
JPATS GBTS ATD DAS II Control Loading/ Flight Deck Retrofit									████████████████████															
JPATS Engine Upgrade Study					████████████████████																			
JPATS High Cycle Fatigue Research	████████████████████				████████████████████																			
SECT Update Software and Threat Library (FY2015/FY2016)					████████████████████																			

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
JPATS Parachute Surveillance System Development	1	2014	4	2015
JPATS Engine Studies	1	2014	1	2017
JPATS Avionics Upgrades for FAA Compliance	4	2016	4	2017
JPATS Continuing USN / USA T-6 Deliveries	1	2014	2	2016
JPATS Continuing USN T-6B Aircrew Training Device (ATD) Deliveries	1	2014	2	2014
JPATS US Army Variant	1	2014	3	2015
JPATS GBTS ATD IOS Joystick & Throttle	1	2015	2	2016
JPATS GBTS ATD DAS II Control Loading/Flight Deck Retrofit	2	2015	3	2017
JPATS Engine Upgrade Study	1	2015	1	2017
JPATS High Cycle Fatigue Research	1	2014	1	2017
SECT Update Software and Threat Library (FY2015/FY2016)	2	2015	3	2016

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
654376: <i>T-38 Avionics Upgrade Program (AUP)</i>	-	0.225	7.112	-	-	-	-	-	-	-	-	7.337
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY15 PE 0604233F Specialized Undergraduate Flight Training, Project 654376 T-38C AUP was Completed.

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). This effort also includes development of the aircraft Mission Planning System (MPS) support to obtain Joint Mission Planning System (JMPS) 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 also includes an avionics obsolescence remediation effort to qualify updated instruments in the T-38C.

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

	FY 2014	FY 2015	FY 2016
Title: T-38C Avionics Post Production Support (APPS)	0.225	7.112	-
Description: T-38C APPS hardware and software block upgrades, Communication, Navigation, Surveillance/Air Traffic Management (CNS/ATM) compliance and Joint Mission Planning System (JMPS) support.			
FY 2014 Accomplishments: Finalized requirement analysis for Block 10 Finalized JMPS mission planning software upgrade requirements			
FY 2015 Plans: Completed initial work on development solutions for T-38C avionics component obsolescence including a replacement Active Matrix Liquid Crystal Display (AMLCD) for the Electronic Engine Heads-Up Display, Up-Front Control panel and Mission Display Processor.			
FY 2016 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016
N/A			
Accomplishments/Planned Programs Subtotals	0.225	7.112	-

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

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• APAF: BA05: Line Item # T03800: T-38	19.334	34.845	38.974	-	38.974	37.562	25.409	25.824	-	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 contract with a period of performance from April 2012 through March 2017. The block 10 software update will be a Firm Fixed Price effort based on AETC operational requirements. Unknown/unforeseen 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 are mitigated incrementally and prioritized based on funding availability and impact to aircraft airworthiness.

The Avionics Component Integration (AvCI) contract is currently in the source selection process. The current contract strategy is projected to be a Type D IDIQ contract competitively awarded to address T-38C avionics system obsolescence issues and provide CLS follow-on support.

E. Performance Metrics

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

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
APPS - T-38 Avionics Upgrade Program (AUP)	C/FFP	Various : ,	0.000	0.120	Jul 2014	-		-		-		-	-	0.120	-
APPS - Solutions for avionics component obsolescence	C/FFP	TBD : ,	0.000	-		7.007	Jul 2015	-		-		-	-	7.007	-
Subtotal			0.000	0.120		7.007		-		-		-	-	7.127	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Travel	C/Various	Various : ,	0.000	0.055	Feb 2014	0.055	Oct 2014	-		-		-	-	0.110	-
PMA Contract Support	C/FFP	Not specified. : ,	0.000	0.050	Jan 2014	0.050	Dec 2014	-		-		-	-	0.100	-
Subtotal			0.000	0.105		0.105		-		-		-	-	0.210	-

Remarks
T-38 SPO and program A&AS support.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force										Date: February 2015			
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>					
	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	0.225		7.112		-		-		-	-	7.337	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

APPS Solutions for T-38C avionics component obsolescence

[REDACTED]																											
------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
APPS Solutions for T-38C avionics component obsolescence	4	2015	1	2018

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604233F / <i>Specialized Undergraduate Flight Training</i>				Project (Number/Name) 655340 / <i>Advanced Trainer Replacement T-X</i>			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
655340: <i>Advanced Trainer Replacement T-X</i>	2.851	1.969	-	-	-	-	-	-	-	-	-	4.820
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2015, Project 655340, Advanced Trainer Replacement T-X, efforts were transferred to Program 0605223F, Advanced Pilot Training, Project 655340, Advanced Trainer Replacement T-X, in order to comply with OSD direction that Major Defense Acquisition Programs (MDAP) be in separately identifiable program elements.

A. Mission Description and Budget Item Justification

The Advanced Trainer Replacement, T-X, will replace AETC's T-38C aircraft and associated Ground Based Training System (GBTS) 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 T-38C was first introduced in 1961.

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

	FY 2014	FY 2015	FY 2016
Title: Advanced Pilot Training (APT) Family of Systems (FoS)	1.969	-	-
Description: Conduct studies, analysis and acquisition activities to reduce risk in support of technology, engineering and manufacturing development. Includes APT PMA costs such as travel, Other Govt Costs (OGC) and Advisory and Assistance Services (A&AS).			
FY 2014 Accomplishments: Conducted studies, analysis and acquisition activities to reduce risk in support of technology, engineering and manufacturing development. Funds APT PMA costs such as travel, Other Govt Costs (OGC) and Advisory and Assistance Services (A&AS).			
FY 2015 Plans: N/A			
FY 2016 Plans: N/A			
Accomplishments/Planned Programs Subtotals	1.969	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604233F / <i>Specialized Undergraduate Flight Training</i>	Project (Number/Name) 655340 / <i>Advanced Trainer Replacement T-X</i>

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

Line Item	FY 2014	FY 2015	FY 2016	FY 2016	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	Cost To	
			Base	OCO	Total					Complete	Total Cost
• RDTE: BA05: PE 0605223F: <i>Advanced Pilot Training</i>	-	8.201	11.920	-	11.920	71.685	166.595	408.618	-	Continuing	Continuing

Remarks

D. Acquisition Strategy

A full and open competitive source selection is anticipated with a specific acquisition strategy to be developed after acquisition milestone entry point determination.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604233F / <i>Specialized Undergraduate Flight Training</i>	Project (Number/Name) 655340 / <i>Advanced Trainer Replacement T-X</i>
--	--	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 (APT) Family of Systems (FoS) - Studies and Analyses	Various	Various : Various,	0.971	-		-		-		-		-	-	0.971	-
Subtotal			0.971	-		-		-		-		-	-	0.971	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 (APT) Family of Systems (FoS) - PMA - Contractor Services	C/FFP	AFRLCMC : Dayton, OH	1.481	0.950	Mar 2014	-		-		-		-	-	2.431	-
Training (APT) Family of Systems (FoS) - PMA - Government Costs	C/Various	AFRLCMC : Dayton, OH	0.399	1.019		-		-		-		-	-	1.418	-
Subtotal			1.880	1.969		-		-		-		-	-	3.849	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force								Date: February 2015			
Appropriation/Budget Activity 3600 / 5			R-1 Program Element (Number/Name) PE 0604233F / <i>Specialized Undergraduate Flight Training</i>			Project (Number/Name) 655340 / <i>Advanced Trainer Replacement T-X</i>					
	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals	2.851	1.969	-	-	-	-	-	4.820	-		

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604233F / <i>Specialized Undergraduate Flight Training</i>	Project (Number/Name) 655340 / <i>Advanced Trainer Replacement T-X</i>

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Capability Development Document	██████████																											
Analysis of Alternatives Update Support	██████████																											
USAF Source Selection Tool Development	██████████																											
AFIT Source Selection Tool Development	██████████																											
RAND Study	██████████																											
Live / Virtual / Constructive Training Enhancement Study	██████████																											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604233F / <i>Specialized Undergraduate Flight Training</i>	Project (Number/Name) 655340 / <i>Advanced Trainer Replacement T-X</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Capability Development Document	1	2014	4	2014
Analysis of Alternatives Update Support	1	2014	2	2014
USAFA Source Selection Tool Development	1	2014	2	2014
AFIT Source Selection Tool Development	1	2014	2	2014
RAND Study	1	2014	2	2014
Live / Virtual / Constructive Training Enhancement Study	1	2014	4	2014

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0604270F / <i>Electronic Warfare Development</i>							
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	1.971	7.815	0.929	-	0.929	2.601	2.434	2.062	2.100	Continuing	Continuing
653891: <i>Advanced IR Counter Measures (AIRCM)</i>	-	1.971	7.815	0.929	-	0.929	2.601	2.434	2.062	2.100	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program consolidates Air Force funding and management of common Electronic Warfare (EW) systems from Materiel Solutions Analysis through Engineering and Manufacturing Development and transition to operational capability. EW is an integral warfighting effect supporting AF Global Strike, Global Persistent Attack and Global Mobility operations as well as Joint-Coalition operations. EW systems influence, deceive, disrupt, degrade, deny, and destroy threats to air operations throughout the electromagnetic spectrum. This program supports Electronic Support (ES), Electronic Protection (EP), and Electronic Attack (EA). ES programs support the collection, analysis, and dissemination of information related to the detection, geo-location, characterization, and identification of threats to air operations. EP Programs preserve the electromagnetic spectrum for use by friendly forces. EA programs provide self-protection through active and passive measures that deceive threats to air operations using kinetic and non-kinetic means to defeat threats that rely on the electromagnetic spectrum (Radio Frequency (RF), Electro-Optical (EO), Infrared (IR)).

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	1.971	1.965	1.967	-	1.967
Current President's Budget	1.971	7.815	0.929	-	0.929
Total Adjustments	-	5.850	-1.038	-	-1.038
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-1.900			
• Congressional Adds	-	7.750			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-1.038	-	-1.038

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

Project: 653891: *Advanced IR Counter Measures (AIRCM)*
 Congressional Add: *ANG Digital Radar Warning Receiver (RWR)*

FY 2014	FY 2015
-	7.750

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
---	---

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

	FY 2014	FY 2015
Congressional Add Subtotals for Project: 653891	-	7.750
Congressional Add Totals for all Projects	-	7.750

Change Summary Explanation

FY15 - Congressional Add for +\$7.750M for Digital Radar Warning Receiver for ANG; Congressional Reduction for -\$1.9M for Forward financing. The FY2016 funding request was reduced by \$1.038 million to account for the availability of prior execution balances.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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>			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
653891: <i>Advanced IR Counter Measures (AIRCM)</i>	-	1.971	7.815	0.929	-	0.929	2.601	2.434	2.062	2.100	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Advanced Infrared Countermeasure (AIRCM) 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. AIRCM will provide advanced IR expendable countermeasures and/or IRCM 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.

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

	FY 2014	FY 2015	FY 2016
Title: IR Flare Testing	1.971	0.065	0.929
Description: IR flare testing and qualification on aircraft			
FY 2014 Accomplishments: Qualified IR flare cocktails on various aircraft.			
FY 2015 Plans: Activities include 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.			
Accomplishments/Planned Programs Subtotals	1.971	0.065	0.929

	FY 2014	FY 2015
Congressional Add: ANG Digital Radar Warning Receiver (RWR)	-	7.750
FY 2015 Plans: Activities include development, integration and test of digital radar warning receivers on ANG aircraft.		
Congressional Adds Subtotals	-	7.750

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• PAAF: BA01: Line Item # 356010: <i>Flares</i>	49.194	73.356	103.565	-	103.565	114.623	97.451	109.359	101.185	Continuing	Continuing

Remarks

Qualified flares, if not in AF inventory, will be procured under program 0208030F War Reserve Munitions, Flares.

D. Acquisition Strategy

Do not anticipate need to award contracts as activities will be completed with Military Interdepartmental Purchase Requests.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 : ,	-	-		7.750		-		-		-	Continuing	Continuing	-
Subtotal			-	-		7.750		-		-		-	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	0.326	May 2014	-		0.225	May 2016	-		0.225	Continuing	Continuing	-
Mission Planning	MIPR	TBD : ,	-	0.250	May 2014	0.045	May 2015	0.125	May 2016	-		0.125	Continuing	Continuing	-
Subtotal			-	0.576		0.045		0.350		-		0.350	-	-	-

Remarks
Performing activities dependent on test participants.

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	0.275	May 2014	-		0.125	May 2016	-		0.125	Continuing	Continuing	-
Range Test	MIPR	96th Test Wing : Eglin AFB, FL	-	1.000	May 2014	-		0.357	May 2016	-		0.357	Continuing	Continuing	-
Test Support	MIPR	Various : ,	-	0.100	May 2014	-		0.077	May 2016	-		0.077	Continuing	Continuing	-
Subtotal			-	1.375		-		0.559		-		0.559	-	-	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014	0.020	May 2015	0.020	May 2016	-		0.020	Continuing	Continuing	-
Subtotal			-	0.020		0.020		0.020		-		0.020	-	-	-

Remarks
Performing activity dependent on test participants.

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	1.971	7.815	0.929	-	0.929	-	-	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

FY15 Test Event								■																				
FY16 Test Event											■																	
First FY17 Semi-Annual Test Event															■													
Second FY17 Semi-Annual Test Event																											■	

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
FY15 Test Event	4	2015	4	2015
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

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	41.388	39.059	60.256	-	60.256	37.240	37.490	22.287	22.714	Continuing	Continuing
655050: <i>TDL System Integration</i>	-	13.545	18.713	33.055	-	33.055	37.240	37.490	22.287	22.714	Continuing	Continuing
655262: <i>Family of Gateways</i>	-	8.328	20.346	27.201	-	27.201	-	-	-	-	Continuing	Continuing
657003: <i>Airborne Networking Enterprise</i>	-	19.515	-	-	-	-	-	-	-	-	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Tactical Data Networks Enterprise (TDNE) contributes to the development, delivery and deployment of the next generation aerial layer network through a portfolio of legacy and advanced waveforms and airborne network management/development efforts that advance interoperability and connectivity. This will be accomplished via fielded and future ground and gateway investments while addressing warfighter urgent demands through the establishment of Quick Reaction Capabilities (QRC). The TDNE conceptualizes, acquires and fields aerial layer networking capabilities supporting legacy, current, in-development, future and proposed systems across all domains of information exchange enabling strike, mobility, special operations, command and control (C2), intelligence, surveillance and reconnaissance (ISR), air, surface, subsurface and space operations. These capabilities ensure a robust and agile extension of the global information domain out to the tactical edge in support of increasing air domain awareness.

Funding 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 operating 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) and Multifunction Advanced Data Link (MADL). TDLs typically include both a waveform specification as well as the standards for exchanging messages.

Funding also supports Family of Gateways study (acquisitions current and proposed), analysis, enhancement, development, integration, demonstration, test, and evaluation efforts that will allow 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 (i.e. Battlefield Airborne Communication Node). 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

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
---	--

data forwarding, and system monitoring/network management. Funding will also support quick reaction response capability requests by the warfighter and support activities (including ramp-up) associated with the Joint Aerial Layer Network (JALN) Enterprise Analysis of Alternatives and its follow-on activities as directed by the JALN Council, in line with applicability of existing TDL performance, upgrade plans, engineering analysis, cost analysis of system designs and TDN Performance Improvements. This includes studies and planning for gateway nodes with the JALN Enterprise. Funding will ensure continued enhanced interoperability of 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.

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 FY2016 funding request was reduced by \$2.114 million to account for the availability of prior execution balances.

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	42.745	39.110	50.373	-	50.373
Current President's Budget	41.388	39.059	60.256	-	60.256
Total Adjustments	-1.357	-0.051	9.883	-	9.883
• Congressional General Reductions	-	-0.051			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.357	-			
• Other Adjustments	-	-	9.883	-	9.883

Change Summary Explanation

Total FY16 funding change is \$9.883 and includes an FY16 funding increase of \$12.427 for 5th to 4th Generation Gateway development. The FY16 funding request was reduced by \$2.144M to account for the availability of prior execution balances. The FY16 funding request was further reduced by \$.400M to adjust for inflation.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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>			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
655050: <i>TDL System Integration</i>	-	13.545	18.713	33.055	-	33.055	37.240	37.490	22.287	22.714	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Funding will provide 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 operating 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, 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 cryptological 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, Tactical Edge Network C2 (TEN C2), integration analysis of the Joint Warfighting Integrated NetOps (JWIN) Joint Concept Technology Demonstration (JCTD), 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/

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force	Date: February 2015
---	----------------------------

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>
--	--	--

coordination of all TDN standards and management capabilities, configuration management, platform/system interoperability assessments, development of government reference architectures, integration of cyber technologies, interoperability certification testing, and flight testing.

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 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 Tactical Edge Network (TENC2).

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

	FY 2014	FY 2015	FY 2016
<p>Title: Tactical Data Networks (TDN) Integration</p> <p>Description: Tactical Data Networks (TDN) Integration activities include, but are not limited to, Data Link Test Facility (DTF), Air Force Participating Test Unit (AFPTU), Network Centric Capability Assessment (NCCA), NATO/Coalition Interoperability, Joint Aerial Layer Network (JALN) Analysis of Alternatives (AoA) follow-on, JALN gateway planning, and Joint Warfighting Integrated NetOps (JWIN) Joint Concept Technology Demonstration (JCTD) Tactical Edge Network (TENC2).</p> <p>FY 2014 Accomplishments: Funding provided for development, certification, developmental training, and to develop logistics plans for individual TDL implementations to joint/allied standards. Funding also provided management with the necessary engineering, costing, technical, and administrative support needed to facilitate development.</p> <p>FY 2015 Plans: Funding provides for development, certification, developmental training, and to develop logistics plans for individual TDL implementations to joint/allied standards, and provides management with the necessary engineering, technical and administrative support needed to facilitate development. Funding also supports testing, integration and fielding of all MIDS LVT and MIDS JTRS current and upgrade configurations. Activities include support to TDL interoperability testing of development and fielded systems through the DTF; DoD mandated TDL MIL-STD conformance testing and interoperability assessments for all TDL capable Air Force platforms through the AFPTU; and 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). Activities also include studies and analysis 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. Activities also include efforts identified in the AF Airborne Networking Roadmap to advance capability sets that contribute to the AF vision for airborne networking. Activities also include Coalition</p>	6.186	11.133	12.204

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016
<p>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> <p>FY 2016 Plans: Funding will provide for 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. Funding will also aide in the testing integration and fielding of all MIDS LVT and MIDS JTRS current and upgrade configurations. Activities include support to TDL interoperability testing of development and fielded systems through the DTF; DoD mandated TDL MIL-STD conformance testing and interoperability assessments for all TDL capable Air Force platforms through the AFPTU; and 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). Activities will also include studies and analysis 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. Activities will also include Coalition Interoperability that provides program office system engineering to support NATO C3I, Foreign Military Sales (FMS) case development, FMS planning for tech refresh modifications, Crypto-Modernization and TENC2.</p>			
<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 development, interoperability certification, TDL message standard implementation utilizing interoperable System Management and Requirements Transformation (iSMART) (e.g., Links 11A/B, 16, 22, Variable Message Format (VMF), Integrated Broadcast Service (IBS), Multifunction Advanced Data Link (MADL), and configuration management of standards.</p> <p>FY 2014 Accomplishments: Funding ensured compatibility and interoperability of TDLs by conducting necessary joint compatibility and interoperability tests.</p> <p>FY 2015 Plans: Funding provides compatibility and interoperability of TDLs by conducting necessary joint compatibility and interoperability tests. Funding provides management with the necessary engineering, technical, and administrative support needed to facilitate development.</p> <p>FY 2016 Plans:</p>	5.812	6.026	6.850

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
Funding will ensure compatibility and interoperability of TDLs and message standards by conducting necessary joint compatibility and interoperability tests. Funding will also provide management with the necessary engineering, technical, and administrative support needed to facilitate development.				
<p>Title: Cursor on Target (CoT)</p> <p>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, 14 tailored sub-schemas, and a set of 10 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.</p> <p>FY 2014 Accomplishments: Funding supported development, test, certification and accreditation of new Cursor on Target (CoT) apps/plugin/schema, development of the Cursor on Target(CoT) MIL-STD and transitioning of apps/plugin to sustainment. Funding also provided management with the necessary engineering, technical, and administrative support needed to facilitate development.</p> <p>FY 2015 Plans: Funding supports development, test, certification and accreditation of new Cursor on Target (CoT) apps/plugin, development of the Cursor on Target (CoT) commercial standard and transitioning of apps/plugin to sustainment. Funding also provides management with the necessary engineering, technical, and administrative support needed to facilitate development.</p> <p>FY 2016 Plans: Funding will support development, test, certification and accreditation of new Cursor on Target (CoT) apps/plugin/debugger, development of the Cursor on Target (CoT) commercial standard and transitioning of apps/plugin to sustainment. Funding will also provide management with the necessary engineering, technical, and administrative support needed to facilitate development.</p>		1.547	1.554	1.574
<p>Title: 5th to 4th</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 fuse/correlate data from multiple sources to improve accuracy.</p> <p>FY 2016 Plans:</p>		-	-	12.427

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016
Funding will support development of the 5th to 4th Generation Gateway, to include support for source selection and award of a 5th to 4th development and production contract. This activity was previously bound to Project 655262 Family of Gateways. This is not a New Start.			
Accomplishments/Planned Programs Subtotals	13.545	18.713	33.055

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE: BA07: PE 0207448F: <i>C2ISR TDL</i>	1.373	1.744	1.681	-	1.681	1.748	1.766	1.767	1.798	Continuing	Continuing
• APAF: BA05: Line Item #F01500: <i>F-15</i>	-	0.002	2.837	-	2.837	42.694	43.027	57.283	46.618	Continuing	Continuing
• APAF: BA05: Line Item #F01600: <i>F-16</i>	-	-	3.200	-	3.200	6.504	6.166	6.810	8.435	Continuing	Continuing
• APAF: BA05: Line Item #B00200: <i>B-2A</i>	-	0.049	0.474	-	0.474	0.419	0.297	0.249	0.203	Continuing	Continuing
• APAF: BA05: Line Item #B01B00: <i>B-1B</i>	-	1.261	1.011	-	1.011	1.392	0.539	0.800	-	Continuing	Continuing
• APAF: BA05: Line Item #OTHACF: <i>Other Aircraft</i>	-	0.037	2.494	-	2.494	1.593	1.501	1.502	1.528	Continuing	Continuing
• OPAF: BA03: Line Item #834010: <i>General Information Technology</i>	0.153	0.168	1.602	-	1.602	1.857	0.311	0.176	0.179	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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	--	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 - Tactical Edge Network C2	MIPR	Various : Various,	-	-		1.609	Jun 2015	2.793	Jan 2016	-		2.793	Continuing	Continuing	TBD
Gateways Integration - JETPack JCTD	C/FFP	Northrop Grumman : Redondo Beach, CA	-	-		-		-		-		-	-	-	TBD
5th to 4th Generation Gateway	MIPR	Various : Various,	-	-		-		12.427	Jun 2016	-		12.427	Continuing	Continuing	-
Subtotal			-	-		1.609		15.220		-		15.220	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	0.415	Nov 2013	1.622	Nov 2014	2.230	Nov 2015	-		2.230	Continuing	Continuing	TBD
TDN Integration - Coalition Interoperability	RO	NATO Support Agency in Luxembourg :	-	0.067	Jan 2014	0.070	Dec 2014	0.067	Dec 2015	-		0.067	Continuing	Continuing	TBD
Cursor on Target	C/T&M	MITRE : Bedford, MA	-	0.951	Nov 2013	1.231	Oct 2014	1.209	Oct 2015	-		1.209	Continuing	Continuing	TBD
Subtotal			-	1.433		2.923		3.506		-		3.506	-	-	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	0.999	Dec 2013	1.338	Jan 2015	1.358	Feb 2016	-		1.358	Continuing	Continuing	TBD
JINTACCS	C/FFP	Spectrum Comm Inc : Newport News, VA	-	2.451	Feb 2014	3.684	Feb 2015	2.376	Feb 2016	-		2.376	Continuing	Continuing	TBD
TDN Integration - AFPTU	MIPR	Various : Various,	-	1.561	May 2014	2.131	May 2015	2.312	May 2016	-		2.312	Continuing	Continuing	TBD
TDN Integration - JALN AoA	MIPR	Various : Various,	-	3.173	Mar 2014	4.153	Mar 2015	3.993	Mar 2016	-		3.993	Continuing	Continuing	TBD

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	--	--

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 - JWJN JCTD	PO	Rome Labs : Rome, NY	-	0.219	Jul 2014	-		-		-		-	-	0.219	TBD
Cursor on Target	PO	46th Test Squadron : Eglin AFB, FL	-	-		-		-		-		-	Continuing	Continuing	-
Subtotal			-	8.403		11.306		10.039		-		10.039	-	-	-

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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,	-	0.784	Jan 2014	0.682	Jan 2015	0.515	Jan 2016	-		0.515	Continuing	Continuing	-
Cursor on Target PMA - A&AS support	C/CPAF	Various : Various,	-	0.197	Apr 2014	0.328	Dec 2014	0.221	Dec 2015	-		0.221	Continuing	Continuing	-
Gateways Integration PMA - A&AS support - JETPack JCTD	C/CPAF	Various : Various,	-	-		-		-		-		-	-	-	TBD
TDN Integration PMA - FFRDC support - NCCA	C/T&M	MITRE : Bedford, MA	-	1.162	May 2014	0.271	Jan 2015	1.708	Oct 2015	-		1.708	Continuing	Continuing	TBD
TDN Integration PMA - FFRDC support - Coalition Interoperability, JALN AoA	C/T&M	MITRE : Bedford, MA	-	1.295	Nov 2013	1.236	Nov 2014	1.470	Oct 2015	-		1.470	Continuing	Continuing	-
TDN Integration PMA - Travel, Government Purchase Cards, etc...DTF, NCCA, Coalition Interoperability, AFPTU, JALN AoA	Various	Various : Various,	-	0.161	Dec 2013	0.223	Jan 2015	0.158	Jan 2016	-		0.158	Continuing	Continuing	-
JINTACCS PMA - Travel, Government Purchase Cards, etc...	Various	Various : Various,	-	0.098	Dec 2013	0.120	Jan 2015	0.045	Jan 2016	-		0.045	Continuing	Continuing	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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]																											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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	2014	4	2020
JINTACCS	1	2014	4	2020
Cursor on Target (CoT)	1	2014	4	2020
5th to 4th Generation Gateway - Development	1	2016	4	2018

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
655262: <i>Family of Gateways</i>	-	8.328	20.346	27.201	-	27.201	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Funding supports Family of Gateways 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, and the STRATCOM Distributed Nuclear Command and Control (DNC2) capabilities. Additionally, funding will support activities associated with the JALN Enterprise Analysis of Alternatives and follow-on recommendation, 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 TEN C2. 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.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p>Title: STRATCOM Distributed Nuclear Command and Control (DNC2)</p> <p>Description: STRATCOM Distributed Nuclear Command and Control (DNC2) efforts provide for the distribution of data from airborne assets to ground components for analysis, decision-making and re-tasking of critical assets.</p> <p>FY 2014 Accomplishments: Funding supported development, test and fielding of operational-hardened, wideband Ground Entry Points (GEPs) and testing with up to three aircraft to ensure functionality of the system in an operational environment.</p> <p>FY 2015 Plans: N/A</p> <p>FY 2016 Plans: N/A</p>		5.512	-	-
<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 fuse/correlate data from multiple sources to improve accuracy.</p> <p>FY 2014 Accomplishments: Funding supported projects including 5th to 4th Generation gateway with engineering, technical, and administrative support.</p> <p>FY 2015 Plans: Funding is supporting 5th to 4th Generation gateway including risk reduction projects and engineering, technical, and administrative support required for Request For Proposal (RFP) development.</p> <p>FY 2016 Plans: Funding will support development of the 5th-4th Generation Gateway, to include support for source selection and award of a 5th-4th development and production contract.</p>		2.816	20.346	27.201
Accomplishments/Planned Programs Subtotals		8.328	20.346	27.201

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force	Date: February 2015
---	----------------------------

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>
--	--	--

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

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• RDTE:BA07:PE 0207448F: <i>C2ISR TDL</i>	1.373	1.744	1.681	-	1.681	1.748	1.766	1.767	1.798	Continuing	Continuing
• APAF:BA05:Line Item #F01500: <i>F-15</i>	-	0.002	2.837	-	2.837	42.694	43.027	57.283	46.618	Continuing	Continuing
• APAF:BA05:Line Item #F01600: <i>F-16</i>	-	-	3.200	-	3.200	6.504	6.166	6.810	8.435	Continuing	Continuing
• APAF:BA05:Line Item #B00200: <i>B-2A</i>	-	0.049	0.474	-	0.474	0.419	0.297	0.249	0.203	Continuing	Continuing
• APAF:BA05:Line Item #B01B00: <i>B-1B</i>	-	1.261	1.011	-	1.011	1.392	0.539	0.800	-	Continuing	Continuing
• APAF:BA05:Line Item #OTHACF: <i>Other Aircraft</i>	-	0.037	2.494	-	2.494	1.593	1.501	1.502	1.528	Continuing	Continuing
• OPAF:BA03:Line Item #834010: <i>General Information Technology</i>	0.153	0.168	1.602	-	1.602	1.857	0.311	0.176	0.179	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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	--	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
5th To 4th Generation Gateway development	MIPR	Various : Various,	-	1.934	Sep 2014	14.960	Jun 2015	21.600	May 2016	-		21.600	Continuing	Continuing	TBD
STRATCOM DNC PAGCN development	MIPR	DMEA : McClellan, CA	-	3.100	Jan 2014	-		-		-		-	Continuing	Continuing	-
Subtotal			-	5.034		14.960		21.600		-		21.600	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
5th-4th Generation Gateway Engineering services	C/CPAF	MITRE : Bedford, MA	-	0.774	Oct 2013	2.121	Oct 2014	0.800	Oct 2015	-		0.800	Continuing	Continuing	-
STRATCOM DNC engineering services	C/CPFF	Northrop Grumman : Redondo Beach, CA	-	-		-		-		-		-	-	-	TBD
Subtotal			-	0.774		2.121		0.800		-		0.800	-	-	-

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
5th To 4th Generation Gateway PMA - A&AS support	C/Various	Various : Various,	-	1.204	Jan 2014	1.065	Jan 2015	1.995	Jan 2016	-		1.995	Continuing	Continuing	TBD

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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>

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
STRATCOM DNC - Risk-Reduction Activities	[REDACTED]																											
5th to 4th Generation Gateway - Development	[REDACTED]																											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
STRATCOM DNC - Risk-Reduction Activities	1	2014	4	2014
5th to 4th Generation Gateway - Development	1	2014	4	2016

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604281F / <i>Tactical Data Networks Enterprise</i>				Project (Number/Name) 657003 / <i>Airborne Networking Enterprise</i>			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
657003: <i>Airborne Networking Enterprise</i>	-	19.515	-	-	-	-	-	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This is a classified effort. Details provided upon request.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	-	3.926	5.973	-	5.973	4.122	4.201	4.280	4.357	Continuing	Continuing
655120: <i>Physical Security Equipment - SD ED</i>	-	-	3.926	5.973	-	5.973	4.122	4.201	4.280	4.357	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 and power) 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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
---	--

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	-	3.926	4.036	-	4.036
Current President's Budget	-	3.926	5.973	-	5.973
Total Adjustments	-	-	1.937	-	1.937
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	1.937	-	1.937

Change Summary Explanation

FY16 PB increase of \$1.937M due to higher AF priorities.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Title: Integrated Base Defense Security Systems (IBDSS)	-	3.926	5.973
Description: IBDSS qualifies, demonstrates, and tests Physical Security Equipment (PSE) systems to include Force Protection. This continuing effort was previously named Physical Security Equipment.			
FY 2014 Accomplishments: N/A			
FY 2015 Plans: 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.			
Also continuing previously developed or modified COTS efforts to improve IBDSS physical security equipment: - 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.			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
---	--

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
<ul style="list-style-type: none"> - 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 industry. - Conduct analyses to include the adversary needs assessment and System Effectiveness Assessment (SEA) of the Nuclear Environment. - Investigate 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 			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
<ul style="list-style-type: none"> - 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. - 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. 			
Accomplishments/Planned Programs Subtotals	-	3.926	5.973

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• OPAF: BA03: Line Item #30: <i>Air Force Physical Security System</i>	32.089	19.582	103.849	-	103.849	57.280	45.176	53.984	54.940	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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
HQ Hanscom AFB (Air Force)	Various	Various : Various,	-	-		3.531		5.833		-		5.833	Continuing	Continuing	-
Subtotal			-	-		3.531		5.833		-		5.833	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
HQ Hanscom AFB	Various	Various : ,	-	-		0.395		0.140		-		0.140	Continuing	Continuing	-
Subtotal			-	-		0.395		0.140		-		0.140	-	-	-

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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	-	3.926	5.973	-	5.973	-	-	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force							Date: February 2015			
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
--	-------------	---------	---------	--------------	-------------	---------------	------------------	------------	--------------------------

Remarks
 Various delivery orders will be awarded throughout the fiscal year for numerous projects.

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
TASS Modernization (Tactical Security Sensors)	1	2015	2	2018
Wide Area Detection	2	2015	3	2016
WSTI Upgrade	3	2015	3	2016
LRTI Upgrade	3	2015	3	2016
Portable Advanced Security System	3	2015	2	2017
Narrow Width IDS (NWIDS)	3	2015	3	2017
Annunciator (Phase 1 and 2)	1	2016	1	2018
Clear Zone Sensors	4	2016	2	2018
Assessment Devices	3	2016	2	2017
Balanced Magnetic Switch Sensors	3	2017	3	2018
Fence,Interior,break beam sensors	2	2016	2	2019
Long Range Assessment/Surveillance	3	2019	3	2020
Interior Video Motion Detection	3	2019	3	2020
Common Operational Picture	1	2014	3	2017

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	856.957	109.580	68.738	32.624	-	32.624	47.489	15.416	15.707	6.477	-	1,152.988
655191: <i>SDB Increment II</i>	856.957	109.580	68.738	32.624	-	32.624	47.489	15.416	15.707	6.477	-	1,152.988
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

MDAP/MAIS Code: 439

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, and the F/A-18 E/F. The AC-130 is being considered as an additional objective platform. 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. Milestone B approval to enter the Engineering and Manufacturing Development (EMD) phase was received on 29 July 2010 and the subsequent Acquisition Program Baseline was signed on 08 October 2010. A Fixed Price Incentive Firm EMD contract was awarded on 09 August 2010. 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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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
--	---

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	113.334	68.759	32.842	-	32.842
Current President's Budget	109.580	68.738	32.624	-	32.624
Total Adjustments	-3.754	-0.021	-0.218	-	-0.218
• Congressional General Reductions	-	-0.021			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-3.754	-			
• Other Adjustments	-	-	-0.218	-	-0.218

Change Summary Explanation

No Significant Changes

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

	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Development	84.504	31.826	20.301	-	20.301
Description: Engineering and Manufacturing Development (EMD): Development of SDB II design that delivers the capability described in the SDB II Capability Development Document (CDD) as specified in the government approved SDB II System Performance Specification (SPS) and prepare for production, deployment, and sustainment.					
FY 2014 Accomplishments: Continued to conduct ground and flight testing and target procurement to support testing. Began Live Fire testing. Began update to F-15E training devices. Began OFP update and qualification efforts for BRU-61. Continued Advanced Joint Effectiveness Model (AJEM) lethality modeling and testing. Continued collaboration with National Security Agency (NSA) and Joint Interoperability Test Command (JITC) on weapon data link key management software. Continued Aviation and Missile Research Development and Engineering Center (AMRDEC) support for modeling and simulation tasks and Verification, Validation and Accreditation (VV&A). Continued integration of SDB II with Command and Control Infrastructure, including Air and Space Operations Center (AOC) and integration with ground controller kits. Continued mission planning support during Development Test (DT). Contract awarded for Government Confidence Test (GCT) assets.					
FY 2015 Plans:					

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

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

	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Conduct Production Readiness Review. Complete System Verification Review and conduct Milestone C review. Continue Guided Test Vehicle (GTV) and Captive Flight Test (CFT) DT for Normal Attack Mode, Coordinate Attack Mode and Semi-Active Laser Mode. Continue Live Fire testing. Begin the DT Captive Carry Reliability Test (CCRT) program. Begin GCT program which consists of 28 Normal Attack GTV test shots. Activities include, but are not limited to, designing, developing, and verifying production capability that delivers production quantities while ensuring the "as built" items conform to the EMD design and meet System Performance Specification (SPS) requirements. Continue integration of SDB II with Command and Control Infrastructure, including AOC and integration with ground controller kits.					
<p>FY 2016 Base Plans: Complete Guided Test Vehicle (GTV) and Captive Flight Test (CFT) DT for Normal Attack Mode, Coordinate Attack Mode and Semi-Active Laser Mode. Complete Government Confidence Test (GCT) and CCRT program. Begin Operational Testing (OT) with up to 55 test shots. Continue OFP update and qualification efforts for BRU-61. Continue AJEM lethality modeling and testing. Continue collaboration with NSA and JITC on weapon data link key management software. Continue AMRDEC support for modeling and simulation tasks and VV&A. Continue integration of SDB II with Command and Control Infrastructure, including AOC and integration with ground controller kits. Continue mission planning support during DT. Continue data link software updates.</p>					
<p>Title: Integration and Qualification Testing</p> <p>Description: F-15E Aircraft Integration incorporates tests and targets, Modeling and Simulation (M&S), target lethality, data link and mission planning. Develop Suite 8E Operational Flight Program (OFP) upgrade to provide the capability to program the 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.</p> <p>FY 2014 Accomplishments: Continued to conduct ground and flight testing and target procurement to support testing. Began update to F-15E training devices. Began OFP update and qualification efforts for BRU-61. Continued AJEM lethality modeling and testing. Continued collaboration with NSA and JITC on weapon data link key management software. Continued AMRDEC support for modeling and simulation tasks and VV&A. Continued integration of SDB II with Command and Control Infrastructure, including AOC and integration with ground controller kits. Continued mission planning support during DT.</p> <p>FY 2015 Plans:</p>	25.076	36.912	12.323	-	12.323

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

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

	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Continue Live Fire testing. Conduct AFOTEC Operational Assessment to support Milestone C. Continue DT for Normal Attack Mode. Complete System Verification Review (SVR) and conduct Milestone C review. Begin DT for Coordinate Attack Mode and Semi-active Laser Mode. Continue Live Fire testing. Begin CCRT program. Begin Government Confidence Test (GCT) program which consists of 28 Normal Attack GTV test shots. Complete update to F-15E training devices. Continue OFP update and qualification efforts for BRU-61. Continue AJEM lethality modeling and testing. Continue collaboration with NSA and JITC on weapon data link key management software. Continue AMRDEC support for modeling and simulation tasks and VV&A. Continue integration of SDB II with Command and Control Infrastructure, including AOC and integration with ground controller kits. Continue mission planning support during DT. Begin data link software updates.					
<i>FY 2016 Base Plans:</i> Complete Guided Test Vehicle (GTV) and Captive Flight Test (CFT) DT for Normal Attack Mode, Coordinate Attack Mode and Semi-Active Laser Mode. Complete Government Confidence Test (GCT). Begin Operational Testing with up to 55 test shots. Continue collaboration with NSA and JITC on weapon data link key management software. Continue AMRDEC support for modeling and simulation tasks and VV&A. Continue integration of SDB II with Command and Control Infrastructure, including AOC and integration with ground controller kits. Continue data link software updates.					
Accomplishments/Planned Programs Subtotals	109.580	68.738	32.624	-	32.624

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• MPAF: BA05: Line Item # SDB000: <i>Small Diameter Bomb</i>	-	51.298	133.697	2.520	136.217	90.621	92.401	77.151	154.555	1,361.912	1,893.960
• RDT&E: BA05: PE 0604329N: <i>Small Diameter Bomb</i>	17.975	13.353	29.329	-	29.329	38.288	59.590	80.611	105.815	92.993	550.559
• WPN: BA05: Line Item # 223800: <i>Small Diameter Bomb</i>	-	-	-	-	-	-	20.000	94.000	94.975	466.779	675.754

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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
---	--

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
FY16 MPAF BA05 Line Item #SDB000 includes \$67.680M Base and \$2.52M 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. 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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-		-		-		-		-	-	151.922	151.922
Risk Reduction Contract 2	C/CPFF	Raytheon : Tucson, AZ	150.800	-		-		-		-		-	-	150.800	150.800
EMD Contract	C/FPIF	Raytheon : Tucson, AZ	384.394	43.412	Oct 2013	15.500	Oct 2014	15.400	Oct 2015	-		15.400	1.463	460.169	460.169
Technical Support Contract	SS/ Various	Raytheon : Tucson, AZ	5.739	38.351	Dec 2013	9.489	Dec 2014	3.426	Dec 2015	-		3.426	16.757	73.762	73.762
MPACT High Pressure Air Compressor System	SS/FFP	Boeing : St. Charles, MO	3.175	-		-		-		-		-	-	3.175	3.175
F-15E Integration and Test Support	SS/ Various	Boeing : St. Louis, MO	38.370	2.409	Jan 2014	2.234	Jan 2015	0.883	Jan 2016	-		0.883	0.080	43.976	43.976
BRU-61/A Integration and Test Support	SS/ Various	Boeing : St. Charles, MO	4.906	3.511	Mar 2014	3.031	Mar 2015	1.954	Mar 2016	-		1.954	-	13.402	13.402
Mission Planning	Various	Various : Various,	4.914	0.055	Dec 2013	0.055	Dec 2014	0.056	Dec 2015	-		0.056	-	5.080	5.080
Data Link Integration & Support	Various	Various : Various,	2.714	0.101	Dec 2013	0.138	Dec 2014	0.037	Dec 2015	-		0.037	3.489	6.479	6.479
System Performance & Lethality	Various	Various : Various,	31.125	2.364	Nov 2013	0.827	Nov 2014	0.754	Nov 2015	-		0.754	0.052	35.122	35.122
Other Product Development	Various	Various : Various,	8.487	1.846	Nov 2013	3.806	Nov 2014	0.663	Nov 2015	-		0.663	62.774	77.576	77.576
Subtotal			786.546	92.049		35.080		23.173		-		23.173	84.615	1,021.463	1,021.463

Remarks
None.

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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,	2.652	0.684	Apr 2014	0.505	Apr 2015	-	Apr 2016	-		-	-	3.841	3.841
Subtotal			2.652	0.684		0.505		-		-		-	-	3.841	3.841

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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
None.

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	13.857	5.489	Nov 2013	12.545	Nov 2014	4.762	Nov 2015	-		4.762	-	36.653	36.653
DT&E: UTTR, WSMR	Various	Various : Various,	3.960	3.225	Nov 2013	10.329	Nov 2014	-		-		-	-	17.514	17.514
Targets	PO	Various : Various,	21.153	2.822	Jan 2014	2.666	Jan 2015	1.059	Jan 2016	-		1.059	-	27.700	27.700
Other Test Support	Various	Various : Various,	3.973	2.815	Dec 2013	5.085	Dec 2014	3.435	Dec 2015	-		3.435	-	15.308	15.308
Subtotal			42.943	14.351		30.625		9.256		-		9.256	-	97.175	97.175

Remarks
None.

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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)	Various	COLSA Corp : Eglin AFB, FL	1.386	0.307	Feb 2014	0.508	Feb 2015	-	Feb 2016	-		-	-	2.201	2.201
Technical and Engineering Acquisition Support (TEAS)	Various	Jacobs Technology : Eglin AFB, FL	15.196	1.178	Dec 2013	1.048	Dec 2014	-	Dec 2015	-		-	-	17.422	17.422
Program Management Administration (PMA)	Various	Various : Eglin AFB, FL	8.234	1.011	Oct 2013	0.972	Oct 2014	0.195	Oct 2015	-		0.195	0.474	10.886	10.886
Subtotal			24.816	2.496		2.528		0.195		-		0.195	0.474	30.509	30.509

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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
None.

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	856.957	109.580	68.738	32.624	-	32.624	85.089	1,152.988	1,152.988

Remarks
EMD contract is budgeted to the contract ceiling price.

The EMD Target Value includes AF funding only. The target value for the contract, including Navy funding, is \$450.827M.

UTTR: Utah Test and Training Range
WSMR: White Sands Missile Range

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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>

FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

F-15 Integration Developmental/Operational Testing																												
Milestone C																												
Government Confidence Testing																												
Operational Testing																												
F-15E Required Assets Available																												
SDB II Redesign for F-35B/C																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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	2014	4	2017
Milestone C	3	2015	3	2015
Government Confidence Testing	3	2015	1	2016
Operational Testing	2	2016	3	2017
F-15E Required Assets Available	4	2017	4	2017
SDB II Redesign for F-35B/C	1	2017	4	2020

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0604421F / <i>Counterspace Systems</i>
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	22.655	23.424	24.208	-	24.208	30.468	33.757	15.527	11.589	Continuing	Continuing
65A001: <i>Counter Satellite Communications System</i>	-	15.412	16.022	14.659	-	14.659	28.881	32.141	13.883	9.915	-	130.913
65A005: <i>Offensive Counterspace (OCS) C2</i>	-	7.243	7.402	7.761	-	7.761	-	-	-	-	-	22.406
65A013: <i>BOUNTY HUNTER</i>	-	-	-	1.788	-	1.788	1.587	1.616	1.644	1.674	Continuing	Continuing

Note

In FY 2016, Project 65A013 Bounty Hunter is a new start effort.

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.

In FY 2016, Project 65A013 Bounty Hunter is a new start effort. Bounty Hunter 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).

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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
---	---

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	22.655	23.746	24.087	-	24.087
Current President's Budget	22.655	23.424	24.208	-	24.208
Total Adjustments	-	-0.322	0.121	-	0.121
• Congressional General Reductions	-	-0.322			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	0.121	-	0.121

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
65A001: <i>Counter Satellite Communications System</i>	-	15.412	16.022	14.659	-	14.659	28.881	32.141	13.883	9.915	-	130.913
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, 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 counterspace 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 2014	FY 2015	FY 2016
Title: Counter Communications System (CCS) Pre-planned Product Improvement (P3I) Program	15.412	16.022	14.659
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 2014 Accomplishments: Increment 2 contract awarded September 2013. Completed successful Initial Baseline Review in March 2014 and Preliminary Design Review in June 2014.			
FY 2015 Plans: Continue 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). Planned delivery of trainer and system along with Development Support Facility.			
Accomplishments/Planned Programs Subtotals	15.412	16.022	14.659

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF:BA03:Line Item #836810: <i>Counterspace Systems</i>	8.041	59.434	43.065	-	43.065	27.207	22.847	-	-	-	160.594

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	8.869	Nov 2014	9.755	Nov 2015	8.165	Nov 2015	-		8.165	Continuing	Continuing	-
Block 10 P3I Development (2)	Various	Various : El Segundo, CA	-	0.850	May 2014	0.705	May 2015	0.710	May 2016	-		0.710	Continuing	Continuing	TBD
Block 10 P3I Development (3)	RO	Aerospace Corp : El Segundo, CA	-	-		-		-		-		-	Continuing	Continuing	11.144
Logistics	Various	AT&T : El Segundo, CA	-	0.153	Jan 2014	0.490	Nov 2014	0.160	Nov 2015	-		0.160	Continuing	Continuing	TBD
Subtotal			-	9.872		10.950		9.035		-		9.035	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	1.957	Nov 2013	1.857	Nov 2014	1.953	Nov 2015	-		1.953	Continuing	Continuing	TBD
Miscellaneous Support Services	Various	Various : ,	-	0.057	May 2013	0.118	May 2015	0.123	May 2016	-		0.123	Continuing	Continuing	TBD
Subtotal			-	2.014		1.975		2.076		-		2.076	-	-	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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			-	-		-		-		-		-	-	-	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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>

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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 10.1 System Delivery: #3		■																										
USAF 10.2 PDR			■																									
USAF 10.1 System Delivery: #4				■																								
USAF 10.1 System Delivery: #5			■																									
USAF 10.2 CDR				■																								
USAF 10.1 System Delivery: #6				■																								
Air National Guard (ANG) 10.2 ATP							■																					
USAF 10.2 SVT											■																	
USAF 10.2 SVR											■																	
USAF 10.2 DT/OT											■																	
ANG 10.2 System Delivery: #1															■													
USAF 10.2 System Delivery: #1															■													
USAF 10.2 Trainer Delivery															■													
ANG 10.2 System Delivery: #2															■													
ANG 10.2 Trainer Delivery															■													
USAF 10.2 System Deliveries: #2-#6															■													
ANG 10.2 System Delivery: #3																			■									
ANG 10.2 System Delivery: #4																											■	

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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 10.1 System Delivery: #3	2	2014	2	2014
USAF 10.2 PDR	3	2014	3	2014
USAF 10.1 System Delivery: #4	4	2014	4	2014
USAF 10.1 System Delivery: #5	4	2014	4	2014
USAF 10.2 CDR	1	2015	1	2015
USAF 10.1 System Delivery: #6	1	2015	1	2015
Air National Guard (ANG) 10.2 ATP	3	2015	3	2015
USAF 10.2 SVT	1	2016	1	2016
USAF 10.2 SVR	3	2016	3	2016
USAF 10.2 DT/OT	4	2016	4	2016
ANG 10.2 System Delivery: #1	1	2017	1	2017
USAF 10.2 System Delivery: #1	1	2017	1	2017
USAF 10.2 Trainer Delivery	1	2017	1	2017
ANG 10.2 System Delivery: #2	2	2017	2	2017
ANG 10.2 Trainer Delivery	4	2017	4	2017
USAF 10.2 System Deliveries: #2-#6	4	2017	1	2018
ANG 10.2 System Delivery: #3	2	2018	2	2018
ANG 10.2 System Delivery: #4	2	2019	2	2019

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
65A005: <i>Offensive Counterspace (OCS) C2</i>	-	7.243	7.402	7.761	-	7.761	-	-	-	-	-	22.406
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This effort supports the development of command and control and mission planning capabilities in support of the fielding and employment of Counterspace Systems. It provides for the integration and development of collaborative tools to link deployable counterspace systems with Joint Warfighting C2 systems and to enable integrated planning and execution of the counterspace mission. Developed 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 the development of 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. The activity to modify and prepare JETSS technology/capability for transition in the JMS program is planned to occur during Spiral 5.

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

	FY 2014	FY 2015	FY 2016
Title: Joint Execution and Tasking System for Space (JETSS)	7.243	7.402	7.761
Description: Develop a Counterspace mission planning and command and control capability to support counterspace systems space control warfighter activities.			
FY 2014 Accomplishments: Continued JETSS development with Spiral 4, which includes Command and Control Internet Service Provider (C2ISP) capability and future system planning.			
FY 2015 Plans: Deliver JETSS development of Spiral 4 and begin development of Spiral 5, which includes an evaluation of the future integration into Joint Space Operations Center (JSPOC) Missions System (JMS) Service Oriented Architecture (SOA) and future system planning.			
FY 2016 Plans: Complete development and prepare to deliver JETSS development of Spiral 5 capability in FY 2017, which includes integration into Joint Space Operations Center (JSPOC) Mission System (JMS) Service Oriented Architecture (SOA) and future system planning.			
Accomplishments/Planned Programs Subtotals	7.243	7.402	7.761

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force	Date: February 2015
---	----------------------------

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>
--	---	---

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• None: N/A	-	-	-	-	-	-	-	-	-	-	-

Remarks

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	5.546	Dec 2013	5.566	Dec 2014	5.971	Dec 2015	-		5.971	Continuing	Continuing	TBD
Counterspace Architecture Development	C/CPFF	Northrup Grumman Mission Systems : Redondo Beach, CA	-	0.780	Dec 2013	0.781	Dec 2014	0.782	Dec 2015	-		0.782	Continuing	Continuing	TBD
Subtotal			-	6.326		6.347		6.753		-		6.753	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Various : ,	-	0.076	Jul 2014	0.082	Jul 2015	0.088	Jul 2016	-		0.088	Continuing	Continuing	TBD
Subtotal			-	0.076		0.082		0.088		-		0.088	-	-	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Management and Professional Support Services (PMA)	Various	Various : ,	-	0.841	Dec 2013	0.973	Dec 2014	0.920	Dec 2015	-		0.920	Continuing	Continuing	TBD
Subtotal			-	0.841		0.973		0.920		-		0.920	-	-	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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									■																			
JMS SOA Integration Study					■																							
C2 Spiral #5 Development					■				■																			
C2 Spiral #5 Test													■															
C2 Spiral #5 Delivery													■															

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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	2014	3	2015
C2 Spiral #4 Test	3	2015	4	2015
C2 Spiral #4 Delivery	4	2015	4	2015
JMS SOA Integration Study	2	2015	4	2015
C2 Spiral #5 Development	3	2015	2	2017
C2 Spiral #5 Test	2	2017	3	2017
C2 Spiral #5 Delivery	3	2017	3	2017

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
65A013: <i>BOUNTY HUNTER</i>	-	-	-	1.788	-	1.788	1.587	1.616	1.644	1.674	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2016, Project 65A013 Bounty Hunter is a new start effort.

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.

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

	FY 2014	FY 2015	FY 2016
Title: Bounty Hunter	-	-	1.788
Description: New capabilities for Bounty Hunter Joint Urgent Operational Need to maintain operational capability.			
FY 2016 Plans: Plan and execute delivery of upgrades based on verified warfighter needs.			
Accomplishments/Planned Programs Subtotals	-	-	1.788

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

N/A

Remarks

D. Acquisition Strategy

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

E. Performance Metrics

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

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	-		-		1.788	Dec 2015	-		1.788	Continuing	Continuing	-
Subtotal			-	-		-		1.788		-		1.788	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	-	-	1.788	-	1.788	-	-	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Bounty Hunter Development	1	2016	4	2020

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	1,610.224	304.380	9.462	32.374	-	32.374	50.598	130.815	151.320	154.027	-	2,443.200
65A006: <i>Space Based Space Surveillance</i>	970.522	4.040	-	31.490	-	31.490	50.598	130.815	151.320	154.027	-	1,492.812
65A009: <i>Space Fence</i>	567.548	279.303	-	-	-	-	-	-	-	-	-	846.851
65A012: <i>Net-centric Sensors and Data Sources</i>	63.858	10.559	7.092	-	-	-	-	-	-	-	-	81.509
65A026: <i>C-Band Radar</i>	8.296	10.478	2.370	0.884	-	0.884	-	-	-	-	-	22.028

MDAP/MAIS Code: 328

Note

In FY2015, PE 0604425F Space Situation Awareness Systems, Project 65A009 Space Fence efforts were transferred to PE 0604426F Space Fence, Project 65A009 for acquisition transparency of ACAT I programs.

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, 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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	314.625	9.462	13.201	-	13.201
Current President's Budget	304.380	9.462	32.374	-	32.374
Total Adjustments	-10.245	-	19.173	-	19.173
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-10.245	-			
• Other Adjustments	-	-	19.173	-	19.173

Change Summary Explanation

FY2014 reduction of -\$10.245M for SBIR

FY2016 increase to accelerate Space Based Surveillance System Follow-On launch date

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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>			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
65A006: <i>Space Based Space Surveillance</i>	970.522	4.040	-	31.490	-	31.490	50.598	130.815	151.320	154.027	-	1,492.812
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 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. 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 2014	FY 2015	FY 2016
Title: SBSS Follow-On Design & Development	4.040	-	31.490
Description: Performs space based SSA analysis, research, and development for the SBSS system.			
FY 2014 Accomplishments: Lawrence Livermore National Laboratory (LLNL) began studying the potential for using the Space-based Telescope for Actionable Refinement of Ephemeris (STARE) effort to observe deep space objects. Initial SBSS Follow-On concept analysis and solution refinement continued at multiple locations.			
FY 2015 Plans: N/A			
FY 2016 Plans: Transition technology from the ORS-5 mission to begin development of payload hardware.			
Accomplishments/Planned Programs Subtotals	4.040	-	31.490

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

N/A

Remarks

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	--	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-		-		-		-		-	-	549.291	-
Block 10 Technical risk reduction, mission planning & mission data processing	SS/CPFF	MIT Lincoln Laboratory : Lexington, MA	29.271	-		-		-		-		-	-	29.271	-
Block 10 Launch vehicle integration	MIPR	Space and Missile Systems Center Det. : Kirtland AFB, NM	85.644	-		-		-		-		-	-	85.644	-
Block 10 contractor ops & Interim Contract Support	SS/CPAF	Boeing : Huntington Beach, CA	152.223	-		-		-		-		-	-	152.223	-
SBSS Follow-on Design & Development	Various	Various : Various,	8.430	2.464		-		24.790	Dec 2015	-		24.790	486.760	522.444	-
SSA risk reduction and technology transfer	Various	Various : Various,	33.247	-		-		-		-		-	-	33.247	-
STARE Study and Design work	MIPR	Lawrence Livermore National Laboratory : Livermore, CA	0.000	1.576	Jul 2014	-		-		-		-	-	1.576	-
Subtotal			858.106	4.040		-		24.790		-		24.790	486.760	1,373.696	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-		-		3.100	Nov 2015	-		3.100	-	47.659	-
Engineering and Technical Services	C/FFP	AT&T Government Solutions, Inc : Los Angeles, CA	22.296	-		-		2.000	Nov 2015	-		2.000	-	24.296	-
Other Support Activities	Various	Various : Los Angeles, CA	30.867	-		-		-		-		-	-	30.867	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	--	--

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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			97.722	-		-		5.100		-		5.100	-	102.822	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Activities (other PMA)	Various	Various : Los Angeles, CA	9.728	-		-		1.300	Nov 2015	-		1.300	-	11.028	-
SMC Financial Services	C/FFP	Tecolote Research, Inc : Los Angeles, CA	4.966	-		-		0.300	Nov 2015	-		0.300	-	5.266	-
Subtotal			14.694	-		-		1.600		-		1.600	-	16.294	-

			Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			970.522	4.040	-	31.490	-	31.490	486.760	1,492.812	-

Remarks

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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	2014	1	2016
Acq Strategy, RFP Dev and Source Selection	1	2016	2	2017
MDD	2	2016	2	2016
AoA Sufficiency	4	2016	4	2016
Milestone A	1	2017	1	2017
Contract Award	3	2017	3	2017
Tech Dev / Engineering and Manufacturing Development / Production	3	2017	4	2020
Preliminary Design Review (PDR)	1	2018	1	2018
CDD	3	2018	3	2018
Milestone B	4	2018	4	2018
Critical Design Review (CDR)	4	2018	4	2018
CPD	1	2020	1	2020
Milestone C	1	2020	1	2020
Launch	4	2020	4	2020

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A009 / <i>Space Fence</i>
--	--	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
65A009: <i>Space Fence</i>	567.548	279.303	-	-	-	-	-	-	-	-	-	846.851
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY2015, PE 0604425F Space Situation Awareness Systems, Project 65A009 Space Fence efforts were transferred to PE 0604426F Space Fence, Project 65A009 for acquisition transparency of ACAT I programs.

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 up to 100,000+ objects, while working in concert with other network sensors.

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

	FY 2014	FY 2015	FY 2016
Title: Space Fence	279.303	-	-
Description: Develops S-band SSA radar system to provide detection and tracking capability of objects in LEO.			
FY 2014 Accomplishments: The Engineering, Manufacturing and Development / Production and Deployment contract award was made on 2 Jun 14 to Lockheed Martin Mission Systems and Training to conduct EMD, Production and Deployment activities in support of integrated system design, culminating in a Critical Design Review (CDR) and development of the Space Fence Operations Center (SOC) and Site 1 Radar hardware and software. The purchase of long lead items were ordered and manufacturing initiated.			
Accomplishments/Planned Programs Subtotals	279.303	-	-

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

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• RDTE: PE 0604426F: <i>Space Fence</i>	-	200.082	243.909	-	243.909	196.042	68.503	5.316	-	-	-
• OPAF: BA03: 836830: <i>Space Fence</i>	-	-	-	-	-	-	-	46.337	50.591	Continuing	Continuing

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A009 / <i>Space Fence</i>

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
------------------	----------------	----------------	-------------------------------	------------------------------	--------------------------------	----------------	----------------	----------------	----------------	-----------------------------------	-------------------

Remarks

D. Acquisition Strategy

A single Engineering, Manufacturing and Development / Production and Deployment contract was awarded on 2 Jun 14 to Lockheed Martin Mission Systems and Training. The contract will take Lockheed through Critical Design Review, 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 at the first radar site located in the Kwajalein Atoll and the Space Operations Center (SOC) at a CONUS location. Increment 2 will include completion of the second radar at a location which is to be determined pending negotiations with the proposed host nation.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A009 / <i>Space Fence</i>
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Design and development #1	C/FFP	Lockheed Martin : Moorestown, NJ	30.000	-		-		-		-		-	-	30.000	30.000
Design and development #2	C/FFP	Northrop Grumman : Linthicum Heights, MD	16.023	-		-		-		-		-	-	16.023	15.922
Design and development #3	C/FFP	Raytheon : Sudbury, MA	30.000	-		-		-		-		-	-	30.000	30.000
System design and prototyping #1	C/FFP	Lockheed Martin : Moorestown, NJ	111.689	-		-		-		-		-	-	111.689	111.734
System design and prototyping #2	C/FFP	Raytheon : Sudbury, MA	111.582	-		-		-		-		-	-	111.582	111.615
System development	C/FPIF	Lockheed Martin : Moorestown, NJ	180.000	265.388	Jun 2014	-		-		-		-	-	445.388	1,255.000
Risk Reduction Study #2	C/FFP	Raytheon : Sudbury, MA	4.950	-		-		-		-		-	-	4.950	-
Risk Reduction Study #1	C/FFP	Lockheed Martin : Moorestown, NJ	4.947	-		-		-		-		-	-	4.947	-
Subtotal			489.191	265.388		-		-		-		-	-	754.579	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Various (Independent Program Assessment, site survey, travel, software, SATAF)	Various	Various : Various,	1.165	0.625	Oct 2013	-		-		-		-	-	1.790	-
Design Oversight and Management #1	SS/FP	Carnegie Mellon University : Pittsburgh, PA	0.235	0.330	Nov 2013	-		-		-		-	-	0.565	-
Subtotal			1.400	0.955		-		-		-		-	-	2.355	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A009 / <i>Space Fence</i>
--	--	---

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	0.946	0.989	Jan 2014	-		-		-		-	-	1.935	-
Test - Joint Interoperability Test Command	MIPR	Joint Interoperability Test Command : Fort Huachuca, AZ	0.023	0.023	Jan 2014	-		-		-		-	-	0.046	-
Subtotal			0.969	1.012		-		-		-		-	-	1.981	-

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 (Infrastructure) (PMA)	Various	Various : Various,	16.084	1.338	Oct 2013	-		-		-		-	-	17.422	-
Program Office Support, Technical Studies and Analysis, Systems Engineering and Integration Management (PMA)	Various	Various : Various,	6.245	0.682	Oct 2013	-		-		-		-	-	6.927	-
Development Review and Management (#1) (PMA)	C/CPFF	Odyssey Systems : Wakefield, MA	9.347	1.152	Dec 2013	-		-		-		-	-	10.499	-
Development Review and Management (#2) (PMA)	C/CPFF	Jacobs Technology : Tullehoma, TN	9.993	1.955	Dec 2013	-		-		-		-	-	11.948	-
Design Oversight and Management #2	SS/FP	MITRE Corp : Bedford, MA	18.894	4.341	Nov 2013	-		-		-		-	-	23.235	-
Design Oversight and Management #3	SS/FP	MIT Lincoln Laboratory : Lexington, MA	15.425	2.480	Nov 2013	-		-		-		-	-	17.905	-
Subtotal			75.988	11.948		-		-		-		-	-	87.936	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A009 / <i>Space Fence</i>

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Milestone B Increment 1			■																									
Increment 1 EMD			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Contract Award Increment 1			■																									
Critical Design Review (CDR) Increment 1							■																					
Development Test and Evaluation															■	■	■	■	■	■								
Initial Operational Test and Evaluation																							■	■				
Initial Operational Capability (IOC) Increment 1																							■	■				
Increment 1 Interim Contractor Support Option 1																									■	■	■	■
Increment 1 Interim Contractor Support Option 2																												■

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604425F / <i>Space Situation Awareness Systems</i>	Project (Number/Name) 65A009 / <i>Space Fence</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Milestone B Increment 1	3	2014	3	2014
Increment 1 EMD	3	2014	2	2019
Contract Award Increment 1	3	2014	3	2014
Critical Design Review (CDR) Increment 1	2	2015	2	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	4	2020

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
65A012: <i>Net-centric Sensors and Data Sources</i>	63.858	10.559	7.092	-	-	-	-	-	-	-	-	81.509
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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, 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 2014	FY 2015	FY 2016
Title: Sensor & Data Integration & Exposure	10.559	7.092	-
Description: Providing Data Exposure and Data Source Integration Net-Centrically for consumption and use by the JSpOC and other users			
FY 2014 Accomplishments: Delivered STSS data and began exposure of classified data source (Concept J) data to JSpOC. Continued maturation of the common data model. Continued effort to expose classified data source (Concept C) to JSpOC.			
FY 2015 Plans: Completing exposure of three classified data sources (Concept C, Concept J, and Concept G). Completing GEODSS Net-Centric delivery.			
FY 2016 Plans: N/A			
Accomplishments/Planned Programs Subtotals	10.559	7.092	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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>

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF: BA03: 836790: <i>Space Mods Space</i>	2.448	4.577	-	-	-	-	-	-	-	-	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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	--	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-		-		-		-		-	-	11.569	11.569
Net-Centric Capability Development and Data Exposure	Variou	Variou : Variou,	21.637	6.711	Jan 2014	5.407	Jan 2015	-		-		-	-	33.755	36.317
Systems Engineering and Integration	C/CPFF	Lockheed Martin Integrated Systems : Endicott, NY	15.300	-		-		-		-		-	-	15.300	15.300
Subtotal			48.506	6.711		5.407		-		-		-	-	60.624	63.186

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	1.213	0.140	Jan 2014	-	Jan 2015	-		-		-	-	1.353	1.713
Subtotal			1.213	0.140		-		-		-		-	-	1.353	1.713

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Engineering Support (FFRDC)	SS/CPFF	MITRE Corp. : Bedford, MA	3.913	0.621	Oct 2013	0.089	Oct 2014	-		-		-	-	4.623	4.782

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Common Data Model v3			■																									
GEODSS Site 1 Developmental Test			■																									
Concept C							■																					
Common Data Model (Integration with JMS)							■																					
Concept J Database Exposure Adapters							■																					
Concept G											■																	
GEODSS Site 1 Operational Test																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
Common Data Model v3	3	2014	4	2014
GEOSS Site 1 Developmental Test	3	2014	3	2014
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
GEOSS Site 1 Operational Test	4	2015	4	2015

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

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>
--	--	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
65A026: <i>C-Band Radar</i>	8.296	10.478	2.370	0.884	-	0.884	-	-	-	-	-	22.028
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 2014	FY 2015	FY 2016
Title: C-Band Radar	10.478	2.370	0.884
Description: Relocates a C-Band Radar to HEH NCS in Australia and upgrades it to perform a Space Situational Awareness (SSA) mission.			
FY 2014 Accomplishments: Successful design review; software and hardware upgrades progressed; radar disassembled and shipped to Australia; reassembly 90% completed.			
FY 2015 Plans: Completed radar assembly and system upgrades; begin development testing and evaluation.			
FY 2016 Plans: Begin Developmental Test, Operational Test, and Initial Operating Capability planned.			
Accomplishments/Planned Programs Subtotals	10.478	2.370	0.884

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

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• OPAF: PE 35940F: Line Item # 861900: <i>C-Band Radar Spares and Repairs</i>	-	-	4.868	-	4.868	4.861	-	-	-	9.800	9.800

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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>

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
------------------	----------------	----------------	-------------------------------	------------------------------	--------------------------------	----------------	----------------	----------------	----------------	-----------------------------------	-------------------

Remarks

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 as reflected on the attached schedule.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	--	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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,	7.444	9.046	Dec 2013	0.759	Dec 2014	0.111	Dec 2015	-		0.111	-	17.360	15.665
Subtotal			7.444	9.046		0.759		0.111		-		0.111	-	17.360	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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	0.000	0.381	May 2014	0.286	Oct 2014	0.368	Oct 2015	-		0.368	-	1.035	0.613
Subtotal			0.000	0.381		0.286		0.368		-		0.368	-	1.035	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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Oversight (PMA)	Various	SMC/SY : Los Angeles, CA	0.852	1.051	Oct 2013	1.325	Oct 2014	0.405	Oct 2015	-		0.405	-	3.633	2.889
Subtotal			0.852	1.051		1.325		0.405		-		0.405	-	3.633	2.889

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force								Date: February 2015					
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>					
	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	8.296	10.478		2.370		0.884		-		0.884	-	22.028	19.167

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Design Review (Jan 2014)																												
Complete Radar Renovation/Relocation																												
Complete Design/Development																												
Test																												
IOC/Operations (Sep 2016)																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
Design Review (Jan 2014)	2	2014	2	2014
Complete Radar Renovation/Relocation	1	2014	4	2015
Complete Design/Development	1	2014	4	2015
Test	1	2016	3	2016
IOC/Operations (Sep 2016)	4	2016	4	2016

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	0.000	-	200.082	243.909	-	243.909	196.042	68.503	5.316	-	-	713.852
65A009: <i>Space Fence</i>	0.000	-	200.082	243.909	-	243.909	196.042	68.503	5.316	-	-	713.852
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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 up 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.

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 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>
Previous President's Budget	-	214.131	291.530	-	291.530
Current President's Budget	-	200.082	243.909	-	243.909
Total Adjustments	-	-14.049	-47.621	-	-47.621
• Congressional General Reductions	-	-0.049			
• Congressional Directed Reductions	-	-14.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-47.621	-	-47.621

Change Summary Explanation

FY15: -\$14.0M Congressional reduction due to program delay. The Department delayed contract award by one year from May 2013 to May 2014 due to strategic affordability trades.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0604426F / <i>Space Fence</i>
---	--

FY15: *-\$0.049M Congressional General Reduction (FFRDC)*

FY16: The FY2016 funding request was reduced by \$[46.0] million to account for the availability of prior execution balances

FY16: *-1.621M inflation adjustment*

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

	FY 2014	FY 2015	FY 2016
Title: Space Fence Description: Develops S-band SSA radar system to provide detection and tracking capability of objects in Low Earth Orbit. FY 2014 Accomplishments: FY14 Funds were executed in PE 0604425F Space Situational Awareness Systems. FY 2015 Plans: Continuing EMD, Production and Deployment activities. This includes 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. SOC facility preparation has also begun. FY 2016 Plans: The Space Fence program will continue system manufacture, software builds, in-plant integration and test, and training, technical orders, and technical manuals development. This includes the majority of radar facility and operations building construction as well as power plant annex construction and commissioning. Radar final production and test will also occur.	-	200.082	243.909
Accomplishments/Planned Programs Subtotals	-	200.082	243.909

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF: BA03: Line Item # 836830: <i>Space Fence</i>	-	-	-	-	-	-	-	46.337	50.591	Continuing	Continuing
• RDTE: BA05: PE 0604425F: <i>Space Situation Awareness Systems</i>	294.624	-	-	-	-	-	-	-	-	-	-

Remarks

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force Date: February 2015

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>
---	--

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 at the first radar site located in the Kwajalein Atoll and the Space Fence Operations Center (SOC) at a CONUS location. Increment 2 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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Contract	C/FPIF	Lockheed Martin : Moorestown, NJ	0.000	-		177.630	Apr 2015	219.882	Dec 2015	-		219.882	238.058	635.570	914.699
Subtotal			0.000	-		177.630		219.882		-		219.882	238.058	635.570	914.699

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Various (Independent Program Assessment, site survey, travel, software, SATAF)	Various	Various : Various,	0.000	-		3.535	Oct 2014	1.067	Oct 2015	-		1.067	1.529	6.131	-
Design Oversight and Management (Software Engineering Institute)	SS/FP	Carnegie Mellon : Pittsburgh, PA	0.000	-		0.478	Nov 2014	-		-		-	-	0.478	-
10/63Design Oversight and Management (MITRE)	SS/FP	MITRE Corp : Bedford, MA	0.000	-		5.448	Oct 2014	5.763	Oct 2015	-		5.763	7.391	18.602	-
Design Oversight and Management (MIT/LL)	SS/FP	MIT Lincoln Laboratory : Lexington, MA	0.000	-		2.628	Nov 2014	2.345	Nov 2015	-		2.345	4.473	9.446	-
Subtotal			0.000	-		12.089		9.175		-		9.175	13.393	34.657	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-		1.976	Jan 2015	0.494	Jan 2016	-		0.494	4.009	6.479	-
Test - Joint Interoperability Test Command	MIPR	Joint Interoperability Test Command : Fort Huachuca, AZ	0.000	-		0.023	Jan 2015	0.185	Jan 2016	-		0.185	0.370	0.578	-
Subtotal			0.000	-		1.999		0.679		-		0.679	4.379	7.057	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	--	---

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 (Infrastructure) (PMA)	Various	Various : Various,	0.000	-		1.030	Oct 2014	2.915	Oct 2015	-		2.915	2.261	6.206	-
Program Office Support, Technical Studies and Analysis, Systems Engineering and Integration Management (PMA)	Various	Various : Various,	0.000	-		3.416	Oct 2014	6.928	Oct 2015	-		6.928	2.907	13.251	-
Development Review and Management (Odyssey) (PMA)	C/CPIF	Odyssey Systems : Wakefield, MA	0.000	-		1.732	Dec 2014	1.908	Dec 2015	-		1.908	4.195	7.835	-
Development Review and Management (Jacobs) (PMA)	C/CPFF	Jacobs Technology : Tullehoma, TN	0.000	-		2.186	Dec 2014	2.422	Dec 2015	-		2.422	4.668	9.276	-
Subtotal			0.000	-		8.364		14.173		-		14.173	14.031	36.568	-
Project Cost Totals			0.000	-		200.082		243.909		-		243.909	269.861	713.852	-

Remarks
 Prior to FY15 all funds were executed and reported in PE 0604225F (Space Situational Awareness Systems)

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force **Date:** February 2015

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>
--	--	---

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Milestone B Increment 1			■																									
Increment 1 EMD			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Contract Award Increment 1			■																									
Critical Design Review (CDR) Increment 1							■																					
Development Test and Evaluation															■	■	■	■	■	■								
Initial Operational Test and Evaluation																							■	■				
Initial Operational Capability (IOC) Increment 1																							■	■				
Increment 1 Interim Contractor Support Option 1																									■	■	■	■
Increment 1 Interim Contractor Support Option 2																												■

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force **Date:** February 2015

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>
--	--	---

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Milestone B Increment 1	3	2014	3	2014
Increment 1 EMD	3	2014	2	2019
Contract Award Increment 1	3	2014	3	2014
Critical Design Review (CDR) Increment 1	2	2015	2	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	4	2020

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	4.422	30.687	8.358	-	8.358	7.779	7.139	7.274	7.404	Continuing	Continuing
655192: <i>Network & Sys -of-Sys Dev</i>	-	4.422	30.687	8.358	-	8.358	7.779	7.139	7.274	7.404	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, 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).

The joint AEA SoS includes the Navy EA-6B and EA-18G core components; the Air Force Miniature Air Launched Decoy (MALD) and its stand-in jammer variant, MALD-J; the EC-130H Compass Call Baseline 0 (formerly Block 35) configuration; Active Electronically Scanned Array (AESA) radar equipped aircraft; potentially an unmanned recoverable stand-in jamming platform; potentially a manned low/mid frequency, high power component capable of location and reactive jamming suppression of enemy integrated air defense system (IADS) radars outside the ranges of the associated Surface-to-Air Missiles (SAMs) and non-IADS targets. Recent events have led to an increased focus on developing advanced electronic attack capabilities for use in irregular warfare against non-IADS targets such as communication networks, remote controlled improvised explosive devices and man portable air defenses. In addition, there is an increased focus on examining non-traditional electronic attack alternatives to counter both IADS and non-IADS components such as communication networks, computers, command and control links, 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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	4.575	30.687	8.413	-	8.413
Current President's Budget	4.422	30.687	8.358	-	8.358
Total Adjustments	-0.153	-	-0.055	-	-0.055
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.153	-			
• Other Adjustments	-	-	-0.055	-	-0.055

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
<p>Title: System Engineering Studies & Technology Transition (AEA SoS)</p> <p>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.</p> <p>FY 2014 Accomplishments: Conducted cost and operational effectiveness assessments of contributions of emerging AEA components such as non-kinetic counter electronics capabilities to both IADS and non-IADS scenarios for major and irregular warfare, refined AF electronic support system mitigation alternatives, updated AF EW Roadmap as directed by HQ AF, updated AF EW Capability Investment Strategy with studies in support of AF Core Function Master Plans.</p> <p>FY 2015 Plans: Conduct cost and operational effectiveness assessments of contributions of emerging AEA components such as non-kinetic counter electronics capabilities to both IADS and non-IADS scenarios for major and irregular warfare, define and recommend implementation strategies to mitigate 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 AF Core Function Master Plans.</p> <p>FY 2016 Base Plans:</p>	2.172	2.750	4.698	-	4.698

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Conduct cost and operational effectiveness assessments of contributions of emerging AEA components such as non-kinetic counter electronics capabilities to both IADS and non-IADS scenarios for major and irregular warfare, define and recommend implementation strategies to mitigate 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 AF Core Function Master Plans. FY 2016 OCO Plans: N/A					
Title: Capability Planning (AEA SoS) 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 2014 Accomplishments: Conducted AEA SoS simulations to assess effectiveness of newly emerging and/or proposed upgraded systems (MALD-J, 4th Gen fighter upgrades, advanced Electronic Support Measures risk mitigation approaches, non-kinetic counter electronics capabilities, etc.) operating together in stressing IADS and Irregular Warfare/non-IADS environments. FY 2015 Plans: Conduct various analysis of alternatives related to electronic attack as well as conduct 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. FY 2016 Base Plans: Conduct various analysis of alternatives related to electronic attack as well as conduct 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. FY 2016 OCO Plans: N/A	2.250	27.937	3.660	-	3.660
Accomplishments/Planned Programs Subtotals	4.422	30.687	8.358	-	8.358

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015
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>	
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.		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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
--	--	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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,	-	2.172	Dec 2013	2.750	Dec 2014	4.698	Dec 2015	-		4.698	Continuing	Continuing	-
AF EW Capability/ Development Planning	MIPR	Various : Various,	-	1.890	Dec 2013	27.087	Dec 2014	3.285	Dec 2015	-		3.285	Continuing	Continuing	-
Subtotal			-	4.062		29.837		7.983		-		7.983	-	-	-

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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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,	-	0.360	Dec 2013	0.850	Dec 2014	0.375	Dec 2015	-		0.375	Continuing	Continuing	-
Subtotal			-	0.360		0.850		0.375		-		0.375	-	-	-

Remarks
Element includes miscellaneous support to projects. Costs include travel and unique security expenses.

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

DoD Planning Scenarios Suppressor updates																												
Continuing to Support EW Assessments																												
AEA SoS Suppressor Improvements																												
AF EW Investment Strategy																												
AESA/RWR analysis/test																												
Non Kinetic Counter Electronics Analysis																												
NKCE Technology Demonstration																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
DoD Planning Scenarios Suppressor updates	4	2014	4	2020
Continuing to Support EW Assessments	4	2014	4	2020
AEA SoS Suppressor Improvements	4	2014	4	2020
AF EW Investment Strategy	4	2014	4	2020
AESA/RWR analysis/test	1	2014	4	2015
Non Kinetic Counter Electronics Analysis	1	2014	4	2016
NKCE Technology Demonstration	3	2014	2	2015

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force											Date: February 2015	
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>							
COST (\$ in Millions)	Prior Years (+)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	9,455.620	322.399	308.788	292.235	-	292.235	198.779	479.879	608.849	619.742	Continuing	Continuing
653616: <i>SBIRS High Element EMD</i>	9,337.141	264.575	230.180	203.540	-	203.540	109.975	96.379	-	-	-	10,241.790
657009: <i>Space Modernization Initiative</i>	78.648	57.824	78.608	88.695	-	88.695	88.804	88.464	90.132	91.744	Continuing	Continuing
657106: <i>EVOLVED SBIRS</i>	0.000	-	-	-	-	-	-	295.036	518.717	527.998	Continuing	Continuing
MDAP/MAIS Code: 210												

(+) The sum of all Prior Years is \$39.831 million less than the represented total due to several projects ending

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 FY16 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 improve 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 HEO-1 and HEO-2 payloads are on-orbit and certified for Integrated Tactical Warning/Attack Assessment (ITW/AA) missile warning operations and technical intelligence operations. The GEO-1 and GEO-2 satellites have completed AFSPC and USSTRATCOM operational acceptance. GEO-1 received ITW/AA certification in August 2013. The GEO-2 satellite received ITW/AA certification in December 2013. These payloads provide a rich data set for exploitation. 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

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015
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>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.</p> <p>2. SMI: Future SBIRS Overhead Persistent Infrared (OPIR) satellites will be procured using the Department of Defense (DOD) Efficient Space Procurement (ESP) concept. ESP is an approach which seeks stable production and efficient sub-contractor product management through the block buy of two space vehicles at one time (please see SBIRS P-40 Exhibit). A portion of the savings realized from ESP block buys are programmed for investment into OPIR Space Modernization Initiative (SMI); the current OPIR SMI project was established in this manner in the FY12 President's Budget. 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 GEO satellites, reduce production timelines, and reduce recurring production costs. 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. SMI activities are balanced and phased to enable an expanded tradespace and improve the competitive environment.</p> <p>3. Evolved SBIRS Follow-on: The SBIRS Follow-On 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; 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 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>		

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	322.399	319.501	274.826	-	274.826
Current President's Budget	322.399	308.788	292.235	-	292.235
Total Adjustments	-	-10.713	17.409	-	17.409
• Congressional General Reductions	-	-0.713			
• Congressional Directed Reductions	-	-10.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	17.409	-	17.409

Change Summary Explanation

FY15:

Congressional Mark: -\$10.0M SMI WFOV Testbed.

FY16:

Other Adjustments: +\$4.751M Air Force adjustment for Combined Task Force at the Interim Test Center, +\$14.6M HEO-1/2 residual capability, less -\$1.942M inflation.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
653616: <i>SBIRS High Element EMD</i>	9,337.141	264.575	230.180	203.540	-	203.540	109.975	96.379	-	-	-	10,241.790
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 improve 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 HEO-1 and HEO-2 payloads are on-orbit and certified for Integrated Tactical Warning/Attack Assessment (ITW/AA) missile warning operations and technical intelligence operations. The GEO-1 and GEO-2 satellites have completed AFSPC and USSTRATCOM operational acceptance. GEO-1 received ITW/AA certification in August 2013. The GEO-2 satellite received ITW/AA certification in December 2013. These payloads provide a rich data set for exploitation. 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 2014	FY 2015	FY 2016
Title: SBIRS EMD	264.575	230.180	203.540
Description: Continued EMD contracts for Space and Ground segment development, concept studies/activities for obsolescence issues.			
FY 2014 Accomplishments: Completed the first three (of four) Block 10 system deliveries. Completed development and delivery of the Block 10 Standard Space Trainer to support 460 OG training. Completed development and delivery of the Block 10 Launch and Anomaly Resolution Center to support SBIRS GEO-3 system test. Completed operational acceptance of the GEO-2 scanner, allowing the Technical			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p>Intelligence community certified scanner data for operational use and exploitation. Completed development of Ground mission processing risk reduction build, which includes starrer processing for non-ITW/AA users. Completed GEO-2 operational user evaluation and certification. Continued Ground System Development (Block 10 and Block 20), System Engineering 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. Continued Program Office and related support activities, technical analysis and independent verification and validation of Contractor. Continued enterprise SE&I.</p> <p>FY 2015 Plans: Continue Ground System Development (Block 10) and certify the staring sensor for Technical Intellegence. 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. 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, 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. Continue Program Office and related support activities, technical analysis and independent verification and validation of contractor developmental efforts. Continue enterprise SE&I.</p> <p>FY 2016 Plans: Complete ground system development and consolidation (Block 10). Complete Block 10 Operational Acceptance and ITW/ AA certification (including GEO-1/2 Starrers). 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 enhance burnout surveillance and improved impact point prediction. Continue Program Office and related support activities, technical analysis and independent verification and validation of 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.</p>				
Accomplishments/Planned Programs Subtotals		264.575	230.180	203.540

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

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 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF: BA03: Line Item # 836720: <i>Space Based Ir Sensor Pgm Space</i>	28.608	26.100	90.190	-	90.190	7.603	7.734	7.872	8.012	-	-
• MPAF: BA05: Line Item # <i>MSSBIR: SBIR High (Space)</i>	524.587	444.568	452.676	-	452.676	412.794	991.938	111.700	102.979	118.274	7,494.947

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-		-		-		-		-	-	159.600	159.600
SBIRS EMD	Various	Prime: Lockheed Martin Sunnyvale, CA; Sub: Northrop Grumman, Azusa, CA ; ,	8,358.489	233.645	Oct 2013	199.335	Oct 2014	157.914	Oct 2015	-		157.914	163.173	9,112.556	9,112.514
Enterprise Systems Engineering and Integration (SE&I)	C/CPAF	The Analytical Sciences Corporation : Andover, MA	42.681	6.206	Dec 2013	5.194	Dec 2014	5.811	Dec 2015	-		5.811	8.683	68.575	68.575
SBIRS Pre-SDD Contract Adjustment	Various	Various : ,	4.780	-		-		-		-		-	-	4.780	4.780
Technology	Various	Various : ,	11.600	-		-		-		-		-	-	11.600	11.600
Phenomenology	Various	Various : ,	17.350	-		-		-		-		-	-	17.350	17.350
Sensor Technology	Various	Sandia National Lab : Albuquerque, NM	10.000	-		-		-		-		-	-	10.000	10.000
HEO Command & Control (C2) Ground Expansion	Various	Lockheed Martin : Sunnyvale, CA	39.700	-	May 2014	-		-		-		-	-	39.700	39.700
HEO 1/2 Residual Capability	Various	Various : ,	0.000	-		-		14.600	Jun 2016	-		14.600	-	14.600	14.600
Subtotal			8,644.200	239.851		204.529		178.325		-		178.325	171.856	9,438.761	9,438.719

Remarks
Award dates represent date of first award of the funds for that fiscal year.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 : Torrance, CA	8.000	-		-		-		-		-	-	8.000	8.000
Various Program Support	Various	Various : ,	11.538	-		-		-		-		-	-	11.538	11.538
Subtotal			19.538	-		-		-		-		-	-	19.538	19.538

Remarks
Award dates represent date of first award of the fiscal year.

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Support (FFRDC)	RO	Aerospace Corp. : El Segundo, CA	429.002	13.702	Oct 2013	12.427	Oct 2014	13.953	Oct 2015	-		13.953	18.987	488.071	488.071
SMC Admin Support (PMA)	C/FP	Quantech Services, Inc. : Lexington, MA	10.027	1.388	Dec 2013	0.412	Dec 2014	-		-		-	-	11.827	11.827
SMC Technical Support (PMA)	C/FP	Scitor Corp. : El Segundo, CA	72.350	2.902	Dec 2013	1.860	Dec 2014	-		-		-	-	77.112	77.112
SMC Financial Support (PMA)	C/FP	Tecolote, Inc. : Goleta, CA	17.378	0.687	Dec 2013	0.499	Dec 2014	-		-		-	-	18.564	18.564
SMC SAFS Support (PMA)	TBD	TBD : ,	0.000	-		2.633	Apr 2015	4.915	Oct 2016	-		4.915	7.761	15.309	15.309
Various Management Support Services (PMA)	Various	Various : Various,	144.646	6.045	Oct 2013	7.820	Oct 2014	6.347	Oct 2015	-		6.347	10.150	175.008	175.008
Subtotal			673.403	24.724		25.651		25.215		-		25.215	36.898	785.891	785.891

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
GEO-2 Early Orbit Testing (EOT)/Tuning/ Certification	■																											
Back-up Mission Control Station (MCSB) Fit Up	■	■	■	■																								
Block 10 Integration & Test at MCS	■	■	■	■	■	■	■	■																				
Block 10 Integration & Test at MCSB									■	■	■	■																
MCS Launch and Anomaly Resolution Center (LARC) ready for GEO-3 launch and early on- orbit System Test			■																									
B10.3 Completed and ITW/AA Certified											■																	
B20 Completed and ITW/AA Certified																											■	

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
GEO-2 Early Orbit Testing (EOT)/Tuning/Certification	1	2014	1	2014
Back-up Mission Control Station (MCSB) Fit Up	1	2014	4	2014
Block 10 Integration & Test at MCS	1	2014	1	2016
Block 10 Integration & Test at MCSB	4	2014	2	2016
MCS Launch and Anomaly Resolution Center (LARC) ready for GEO-3 launch and early on-orbit System Test	3	2014	3	2014
B10.3 Completed and ITW/AA Certified	3	2016	3	2016
B20 Completed and ITW/AA Certified	3	2018	3	2018

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
657009: <i>Space Modernization Initiative</i>	78.648	57.824	78.608	88.695	-	88.695	88.804	88.464	90.132	91.744	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Future SBIRS Overhead Persistent Infrared (OPIR) satellites will be procured using the Department of Defense (DOD) Efficient Space Procurement (ESP) concept. ESP is an approach which seeks stable production and efficient sub-contractor product management through the block buy of two space vehicles at one time (please see SBIRS P-40 Exhibit). A portion of the savings realized from ESP block buys are programmed for investment into OPIR Space Modernization Initiative (SMI); the current OPIR SMI project was established in this manner in the FY12 President's Budget. 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 GEO satellites, reduce production timelines, and reduce recurring production costs. 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. SMI activities are balanced and phased to enable an expanded tradespace and improve the competitive environment.

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

	FY 2014	FY 2015	FY 2016
Title: Evolved SBIRS	3.250	10.645	12.053
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.			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016
<p><i>FY 2014 Accomplishments:</i> Initiated SBIRS PoR design trade studies with the incumbent SBIRS Prime contractor and Payload Subcontractor to 1) identify obsolescence issues and corresponding hardware/software design modifications to mitigate future production risks; 2) identify payload and spacecraft modifications to improve affordability of the current satellite; and 3) identify design modifications required to simplify payload hardware, software, and functionality to enable evolution of the PoR SBIRS satellites.</p> <p><i>FY 2015 Plans:</i> Complete SBIRS design trade studies with the incumbent SBIRS Prime contractor and Payload Subcontractor. Identify and initiate 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. Advance key technologies for spacecraft and ground system components to include line-of-sight computer; focal planes; signal processing; algorithm development; lossless data compression techniques; and space-environmental qualification of new detectors, microprocessors, and memory devices.</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.</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 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><i>FY 2014 Accomplishments:</i></p>	20.133	21.205	21.607

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016
<p>Continued to collect CHIRP data through payload decommissioning on 31 Dec 2013. Continued analysis of CHIRP Wide Field of View staring data to enhance detection algorithms for PoR and future staring systems. Continued to provide enhanced ground segment capabilities for command and control, data collection, mission processing, and data dissemination to enable greater data exploitation opportunities. Initiated system design and continued development of an open architecture ground system for the WFOV Testbed flight demo to support evolution of the SBIRS PoR ground system. The ground system for WFOV Testbed will provide a pathfinder for risk reduction for Common Ground Architecture command and control and Virtual Mission Management operations for potential application to evolve the current SBIRS PoR ground architecture after Block 20 certification. Initiated development of ground entry point antenna and communication/data processing hardware for WFOV Testbed.</p> <p>FY 2015 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 PoR and other OPIR data. Collaborate with Intelligence Community (IC) and Missile Defense Agency (MDA) to enhance Joint OPIR Ground (JOG) initiatives. Initiate development of an open architecture ground command and control and Virtual Mission Management operations for expanded data exploitation of the SBIRS HEO sensors.</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 an early FY17 WFOV Testbed launch. Continue development of an open architecture ground command and control and Virtual Mission Management operations for expanded data exploitation of the SBIRS HEO sensors.</p>			
<p>Title: Hosted Payloads</p> <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 starrer. A second payload to demonstrate strategic mission capabilities may be developed pending the outcome and recommendations of the AoA. WFOV payloads are a part of all evolved and new architecture alternatives.</p> <p>FY 2014 Accomplishments:</p>	22.252	22.300	11.046

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p>Completed WFOV Payload Preliminary Design Review (PDR) studies with six IR payload contractors. Successfully completed space radiation environment testing of new 4Kx4K Indium-Antimonide (InSb) Sensor Chip for use in the WFOV Payload. Evaluated proposals for Critical Design Review (CDR) design effort and build for new WFOV payload. Awarded a new contract for development and build of the WFOV payload on 20 June 2014. Collaborated with classified program office on strategic on-board processing testbench to demonstrate ability to meet processing throughput for Strategic Missile Warning on-board exceedence generation requirements. Initiated procurement of low-risk, long-lead components. Initiated payload calibration and test planning to include evaluation of existing test facilities and equipment. Identified and funded long lead procurement for payload test facilities.</p> <p>FY 2015 Plans: Continue development of the WFOV Payload and processing algorithms. Complete payload CDR, continue procurement of long-lead parts and materials, and initiate payload integration. Continue WFOV payload calibration and test planning.</p> <p>FY 2016 Plans: Continue development of the WFOV payload and deliver payload to the calibration and test facility. Complete payload calibration and deliver payload to WFOV Testbed spacecraft contractor for satellite integration and test. Support end-to-end system checkout with payload, spacecraft, and ground system in support of an early FY17 WFOV Testbed launch.</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 2014 Accomplishments: Continued development of WFOV Testbed spacecraft for the WFOV staring payload. Successfully completed Satellite CDR and ordered long-lead procurement items. Completed structural dynamics testing on Developmental Test Vehicle. Studied launch and launch rideshare opportunities.</p> <p>FY 2015 Plans:</p>		3.491	18.055	40.119

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016
Continue development of WFOV Testbed spacecraft, payload, and ground algorithms. Integrate and test spacecraft subsystems and components. Complete payload-to-spacecraft interface control specification and spacecraft-to-ground interface control specification. Plan for, and initiate, contract for launch rideshare. FY 2016 Plans: Complete payload-to-spacecraft integration. Initiate launch vehicle integration for early FY17 launch. Support end-to-end system checkout with payload, spacecraft, and ground system in support of an early FY17 WFOV Testbed launch.			
Title: System Engineering and Integration Description: System of Systems engineering and integration (SE&I) activities to evolve to future architectures. FY 2016 Plans: Initiate SE&I support for OPIR Enterprise analysis and integration of potential mission capabilities with existing OPIR Architecture.	-	-	1.005
Title: Management Services Description: Conduct Systems Engineering and Program Management to include Program Office support such as Federally Funded Research and Development Center (FFRDC) analyses and System Engineering Technical Assistance (SETA). FY 2014 Accomplishments: Funded Program Office and Space and Missile Systems Center support for SMI projects. Initiated Joint DoD and Intelligence Community Analysis of Alternatives (AoA) for the SBIRS Follow-on Program to evaluate PoR and other architecture alternatives to ensure affordable, capable, and resilient system architecture to meet future needs. FY 2015 Plans: Provide Program Office and Space and Missile Systems Center support for SMI projects. Complete the AoA and provide findings to Senior AF and OSD leadership to determine way ahead for the SBIRS Follow-on. FY 2016 Plans: Provide Program Office and Space and Missile Systems Center support for SMI projects.	8.698	6.403	2.865
Accomplishments/Planned Programs Subtotals	57.824	78.608	88.695

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• N/A: N/A	-	-	-	-	-	-	-	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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>

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
------------------	----------------	----------------	-------------------------------	------------------------------	--------------------------------	----------------	----------------	----------------	----------------	-----------------------------------	-------------------

Remarks

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, but, where practical, could be competed. 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. FFRDC and SETA contractors will also be used to conduct and support studies.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	C/CPFF	Lockheed Martin : Sunnyvale, CA	0.000	3.250	Mar 2014	10.645	Jan 2015	12.053	Dec 2015	-		12.053	Continuing	Continuing	71.626
Data Exploitation	Various	Northrop Grumman Boulder, CO; Others : ,	20.862	20.133	Oct 2013	21.205	Jan 2015	21.607	Oct 2015	-		21.607	Continuing	Continuing	215.153
Hosted Payloads	C/CPFF	L3 Communications : Wilmington, MA	22.324	22.252	Dec 2013	22.300	Dec 2014	11.046	Oct 2015	-		11.046	Continuing	Continuing	138.758
WFOV Testbeds	MIPR	Millenium Space Systems : Torrance, CA	32.200	3.491	Dec 2013	18.055	Dec 2014	40.119	Nov 2015	-		40.119	Continuing	Continuing	193.603
Systems Engineering and Integration	TBD	Not specified. : ,	0.000	-		-		1.005	Oct 2015	-		1.005	Continuing	Continuing	4.173
Subtotal			75.386	49.126		72.205		85.830		-		85.830	-	-	623.313

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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			-	-		-		-		-		-	-	-	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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 Studies	[REDACTED]																											
Data Exploitation	[REDACTED]																											
WFOV Starer Payload	[REDACTED]																											
WFOV Testbed					[REDACTED]																							
Second WFOV Starer Payload													[REDACTED]															

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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 Studies	1	2014	2	2018
Data Exploitation	1	2014	4	2020
WFOV Starer Payload	2	2014	1	2016
WFOV Testbed	3	2014	4	2020
Second WFOV Starer Payload	2	2016	1	2020

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
657106: <i>EVOLVED SBIRS</i>	-	-	-	-	-	-	-	295.036	518.717	527.998	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The SBIRS Follow-On 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; 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 2014	FY 2015	FY 2016
Title: Evolved SBIRS	-	-	-
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 for GEO and possibly HEO. The specific system requirements and program definition are pending outcome of the on-going SBIRS Follow-on AoA. Once Evolved SBIRS is defined, the outyear requirements will include PMA requirements.			
FY 2014 Accomplishments: N/A, no funding in FY14.			
FY 2015 Plans: N/A, no funding in FY15.			
FY 2016 Plans: N/A, no funding in FY16.			
Accomplishments/Planned Programs Subtotals	-	-	-

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• N/A: N/A	-	-	-	-	-	-	-	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
------------------	----------------	----------------	-------------------------------	------------------------------	--------------------------------	----------------	----------------	----------------	----------------	-----------------------------------	-------------------

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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. ,	0.000	-		-		-		-		-	Continuing	Continuing	-
Subtotal			0.000	-		-		-		-		-	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 and Administration	TBD	TBD : TBD,	0.000	-		-		-		-		-	Continuing	Continuing	-
Subtotal			0.000	-		-		-		-		-	-	-	-

			Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	-		-		-		-		-	-	-	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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>

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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 GEO Development/Production																												
SBIRS Ground Block 30 Development																												
Evolved SBIRS HEO Development/Production																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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 GEO Development/Production	2	2018	4	2020
SBIRS Ground Block 30 Development	2	2018	4	2020
Evolved SBIRS HEO Development/Production	2	2019	4	2020

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	13.661	29.112	40.154	-	40.154	20.412	6.614	6.075	6.183	Continuing	Continuing
653133: <i>Bombs & Fuzes</i>	-	0.720	9.001	20.719	-	20.719	11.075	1.074	1.095	1.114	Continuing	Continuing
653134: <i>BLU-109 and BLU-113 Upgrade</i>	-	8.877	14.325	13.936	-	13.936	4.540	0.651	-	-	Continuing	Continuing
655361: <i>Stores-Aircraft Interface</i>	-	4.064	5.786	5.499	-	5.499	4.797	4.889	4.980	5.069	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 advancement demonstrations, 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.

The FY2016 funding request was reduced for under execution by \$1.641 million to account for the availability of prior execution balances.

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	13.661	31.112	37.460	-	37.460
Current President's Budget	13.661	29.112	40.154	-	40.154
Total Adjustments	-	-2.000	2.694	-	2.694
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-2.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	2.694	-	2.694

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force Date: February 2015

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>
---	--

Change Summary Explanation

FY 2016, Other Adjustments:

+\$4.600M, enhance development of the the Advanced 5000lb Penetrator (A5K)

-\$1.641M, reduced to account for the availability of prior execution balances

-\$0.265M, inflation adjustment

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

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>
--	--	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
653133: <i>Bombs & Fuzes</i>	-	0.720	9.001	20.719	-	20.719	11.075	1.074	1.095	1.114	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 PGU-28A/B (F-22) and 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) and Container Design Retrieval System (CDRS): 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. The tri-service CDRS is a database intended to preclude proliferation and duplication of munitions containers. It also supports organic container design, acquisition transportation, prototyping and testing capabilities, as well as the Joint Ordnance Commander's Working Group (JOCG) for Packaging, Handling, and Loading.

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

	FY 2014	FY 2015	FY 2016
Title: Munitions Materiel Handling Equipment (MMHE)/Container Design Retrieval System (CDRS)	0.466	0.738	0.748

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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)

Description: MMHE and CDRS. Armament Standardization/Control/Munitions Materiel Handling Equipment (MMHE) is a continuing project to develop and improve the standardization and commonality of munitions handling and armament equipment to preclude duplication. Efforts are primarily the study, design, and development of MMHE and armament control systems; however, support may be provided to other functional areas as requested. Procurement will be performed and funded by the applicable weapons system project. The tri-service Container Design Retrieval System (CDRS) is a database intended to preclude proliferation and duplication of munitions containers. It also supports organic container design, acquisition transportation, prototyping, Packaging, Handling, Storage & Transportation (PHS&T) support and testing capabilities, as well as the Joint Ordnance Commander's Working Group (JOCG) for Packaging, Handling, and Loading.

FY 2014 Accomplishments:

Provided container design expertise and technical support to AF munitions/weapons containers developers. Maintained the tri-service CDRS database search ability to preclude proliferation and duplication of munitions containers. Completed six MMHE support equipment projects to include engineering, drafting, proof load, technical data, and safety authorizations. Fabricated six prototypes for test and evaluation purposes. Complete four 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 container development. Continued support to the multi service F-35/JSF programs with equipment to test and evaluate various Alternate Mission Equipment to include pylons, racks and adapters. Continued support and sustainment of all previously existing items developed by the MMHE program office. Continue to provide direct customer support through limited customer support visits.

FY 2015 Plans:

Provide expert DoD wide customer support with container design and technical support for munitions/weapons containers developers. Complete 10 MMHE support equipment projects to include engineering, drafting, proof load, technical data, and safety authorizations. Fabricate 7 prototypes for test and evaluation purposes. Complete 7 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 container development. Continue support to the F-35 program with equipment to aid safe munitions loading and handling of various pylons and adapters. Continue support and sustainment of all previously existing items developed by the MMHE program office.

FY 2016 Plans:

Provide expert DoD wide customer support with container design and technical support for munitions/weapons containers developers. Complete 10 MMHE support equipment projects to include engineering, drafting, proof load, technical data, and safety authorizations. Fabricate 10 prototypes for test and evaluation purposes. Complete 10 first article equipment fabrications for drafting verification and delivery to Air Force units for additional test and evaluation. Provide support to all system program

FY 2014	FY 2015	FY 2016

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
offices with new weapons and container development. Continue support to the F-35 program with equipment to aid safe munitions loading and handling of various pylons and adapters. Continue support and sustainment of all previously existing items developed by the MMHE program office.				
<p>Title: Medium Caliber Ammunition</p> <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 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: Complete 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>		-	0.100	0.100
<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 2014 Accomplishments: Delivered the FY 15/16 AF IM Strategic Plan; supported DoD and Joint Service IM planning; provided IM planning expertise to individual AF programs.</p> <p>FY 2015 Plans: Initiate 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 2016 Plans:</p>		0.254	0.400	0.350

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

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 2014	FY 2015	FY 2016
Deliver the FY17/18 AF IM Strategic Plan; support DoD and Joint Service IM planning; provide IM planning expertise to individual AF programs.			
<p>Title: Improved Lethality (IL)</p> <p>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).</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: Expand 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. Begin manufacturing development of a direct attack employed, interim, 500lb warhead for improved APAM target lethality which meets DoD policy.</p> <p>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. Complete manufacturing development and begin test of a direct attack employed, interim, 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. Begin a second phase to address other aspects of a next generation area attack weapon.</p>	-	7.763	19.521
Accomplishments/Planned Programs Subtotals	0.720	9.001	20.719

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE: BA04: PE 0604337F: <i>Requirements Analysis and Maturation</i>	11.884	-	-	-	-	-	-	-	-	-	-

Remarks
The Improved Lethality (IL) effort continues and expands upon developmental planning work accomplished in the Requirements Analysis and Maturation PE (0604337F).

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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>

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) and Container Design Retrieval System (CDRS) 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 Improved Lethality 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.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
IM	TBD	Air Force Research Lab RWM : Eglin AFB, FL	-	0.150	Jan 2014	0.170	Apr 2015	0.120	Apr 2016	-		0.120	Continuing	Continuing	TBD
MMHE/CDRS -- Prototypes	PO	Prototype Fabrication Shop : Eglin AFB, FL	-	0.100	Oct 2013	0.415	May 2015	0.300	May 2016	-		0.300	Continuing	Continuing	TBD
IL Phase II - Concept Development	C/TBD	Not specified. : ,	-	-		-		17.885	Mar 2016	-		17.885	Continuing	Continuing	-
IL - NRE Contractor	C/TBD	Not specified. : ,	-	-		5.354	Jan 2016	-		-		-	Continuing	Continuing	-
IL - Recurring Contractor	C/TBD	Not specified. : ,	-	-		0.160	Jan 2016	-		-		-	Continuing	Continuing	-
IL - Mission Planning	PO	Not specified. : ,	-	-		-		0.748	Mar 2016	-		0.748	Continuing	Continuing	-
Subtotal			-	0.250		6.099		19.053		-		19.053	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
IM/APKWS	Various	AFLCMC EBSN & XZWG and AFRL RW : Eglin AFB, FL	-	0.029		-		-		-		-	Continuing	Continuing	TBD
APKWS contract support	C/CPAF	TEAS TAMS : Eglin AFB, FL	-	0.075	Jun 2014	-		-		-		-	Continuing	Continuing	TBD
Fuzes -- Program Office support	C/CPAF	AFLCMC EBDZ : Eglin AFB, FL	-	-		-		-		-		-	Continuing	Continuing	-
MMHE/CDRS contract support	C/FFP	TEAS : Eglin AFB, FL	-	0.224	Oct 2013	0.126	Oct 2014	0.300	Oct 2015	-		0.300	Continuing	Continuing	-
MMHE/CDRS -- Program Office support	PO	AFLCMC/EBD : Eglin AFB, FL	-	0.142	Oct 2013	0.197	Nov 2014	0.148	Nov 2015	-		0.148	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	Continuing	Continuing	TBD
IL - Logistics Support	Various	Not specified. : ,	-	-		0.213	Aug 2015	0.101	Aug 2016	-		0.101	Continuing	Continuing	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	--	---

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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			-	0.470		0.636		0.649		-		0.649	-	-	-

Remarks
TEAS/TAMS contractors provide support to the System Program Office (SPO) for technical (TEAS) and management/financial (TAMS) services

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Medium Caliber	TBD	Various : Various,	-	-		-		-		-		-	Continuing	Continuing	TBD
FW APKWS II	Various	Various : Various,	-	-		-		-		-		-	Continuing	Continuing	-
IL Modeling and Simulation	PO	Not specified. : ,	-	-		1.270	Apr 2015	-		-		-	Continuing	Continuing	-
IL - Test and Evaluation	PO	Not specified. : ,	-	-		0.175	Jan 2016	-		-		-	Continuing	Continuing	-
Subtotal			-	-		1.445		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
IL PMA	TBD	Not specified. : ,	-	-		0.591	Apr 2015	0.787	Nov 2015	-		0.787	Continuing	Continuing	-
IM PMA	Various	Not specified. : ,	-	-		0.230	Oct 2014	0.230	Oct 2015	-		0.230	Continuing	Continuing	-
Subtotal			-	-		0.821		1.017		-		1.017	-	-	-

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		-	0.720	9.001	20.719	-	-	20.719	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
1	2	3	4	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]																											
Container Design Retrieval System (CDRS): support tri-service data base	[REDACTED]																											
Medium Caliber Ammunition: Procure 25mm Frangible Armor Piercing (FAP) rounds for DT/OT of F-35 gun system	[REDACTED]																											
Submit AF FY15/16 Insensitive Munitions (IM) Strategic Plan	[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: Modeling and Simulation									[REDACTED]																			
IL: Contract Prep/Source Selection					[REDACTED]																							
IL: Contract Award									[REDACTED]																			
IL: Mold Design, Build, Test									[REDACTED]																			
IL: Phase II									[REDACTED]																			

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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	2014	4	2020
Container Design Retrieval System (CDRS): support tri-service data base	1	2014	4	2020
Medium Caliber Ammunition: Procure 25mm Frangible Armor Piercing (FAP) rounds for DT/OT of F-35 gun system	1	2014	4	2014
Submit AF FY15/16 Insensitive Munitions (IM) Strategic Plan	2	2014	2	2014
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: Modeling and Simulation	3	2015	3	2016
IL: Contract Prep/Source Selection	1	2015	1	2016
IL: Contract Award	1	2016	1	2016
IL: Mold Design, Build, Test	1	2016	1	2018
IL: Phase II	2	2016	1	2019

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
653134: <i>BLU-109 and BLU-113 Upgrade</i>	-	8.877	14.325	13.936	-	13.936	4.540	0.651	-	-	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)]: 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.

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

	FY 2014	FY 2015	FY 2016
Title: Advanced 2000 lb (A2K) Penetrator 2K and Advanced 5000 lb (A5K) Penetrator Programs	8.877	14.325	13.936
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.			
FY 2014 Accomplishments: Began risk reduction and demonstration/qualification testing of A2K design to include modified FMU-152 fuzing units (FZUs) and cables, modified JDAM hardbacks, and modified warhead cases employed on the threshold platforms (B-2A & F-15E).			
FY 2015 Plans: Continue risk reduction and demonstration/qualification testing of A2K design to include modified FMU-152 FZUs and cables, modified JDAM hardbacks, and modified warhead cases employed on the threshold platforms (B-2A & F-15E). Begin manufacturing and technical data package study. Begin A5K design analysis and modeling and simulation.			
FY 2016 Plans: Complete manufacturing and technical data package study. As well as, 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). Continue A5K risk reduction.			
Accomplishments/Planned Programs Subtotals	8.877	14.325	13.936

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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>

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE:BA04:PE 0604618F: <i>Joint Direct Attack Munition</i>	2.500	2.469	-	-	-	-	-	-	-	-	-

Remarks

N/A

D. Acquisition Strategy

The A2K/A5K project will provide a BLU-109/BLU-113 modification package to enable a project demonstration.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force												Date: February 2015			
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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,	-	3.966	Jun 2014	8.891	Jan 2015	6.267	Dec 2015	-		6.267	Continuing	Continuing	-
Subtotal			-	3.966		8.891		6.267		-		6.267	-	-	-
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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	-	-		-		0.150	Mar 2016	-		0.150	Continuing	Continuing	-
Subtotal			-	-		-		0.150		-		0.150	-	-	-
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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,	-	4.321	Sep 2014	4.844	Jan 2015	6.896	Dec 2015	-		6.896	Continuing	Continuing	-
Subtotal			-	4.321		4.844		6.896		-		6.896	-	-	-
Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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,	-	0.590	Oct 2014	0.590	Jun 2014	0.623	Oct 2015	-		0.623	Continuing	Continuing	-
Subtotal			-	0.590		0.590		0.623		-		0.623	-	-	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force								Date: February 2015			
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>			
	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals	-	8.877	14.325	13.936	-	13.936	-	-	-		

Remarks

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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	3	2014	4	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)	2	2016	2	2017
- A2K Contract Award	1	2017	1	2017
- Build Assets	1	2017	4	2017
- OT Flight Test	3	2017	4	2017
- LRIP	1	2018	2	2019
A5K: Risk Reduction -- Modeling and Simulation	3	2015	4	2016

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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>			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
655361: <i>Stores-Aircraft Interface</i>	-	4.064	5.786	5.499	-	5.499	4.797	4.889	4.980	5.069	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. Universal Armament Interface (UAI) is an Air Force program to develop, enhance, and implement standardized interfaces in current and future aircraft (manned or unmanned), 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 EPAF (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), 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 2014	FY 2015	FY 2016
Title: UAI Development	4.064	5.786	5.499
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 2014 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, and integration support. Also, continued integration and updates to test tools, including maintenance and procurement of certification tools. These tools are shared among aircraft and weapons programs to reduce time and cost for UAI integration efforts. Drafted a multinational Memorandum of Understanding to broaden the use of UAI to nine coalition partners.			
FY 2015 Plans: Continue 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. Procure certification tools with miniature and micro munitions interface capability to meet F-35, SDB II and other future user			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016
system integration lab test certification needs. Start negotiation for multinational Memorandum of Understanding to broaden the use by coalition partners.			
<i>FY 2016 Plans:</i> Continue development and configuration management of UAI standards in response to new users including LRS-B, JASSM-ER, CWDS, F/A-18 and Army & Navy UAVs. Support working group management, technical meetings and workshops, risk reduction studies, common mission planning, and integration support. Also, continue integration and updates to test tools, including maintenance and procurement of certification tools. These tools are shared among aircraft and weapons programs to reduce time and cost for UAI integration efforts. Continued negotiation for multinational Memorandum of Understanding to broaden the use by coalition partners.			
Accomplishments/Planned Programs Subtotals	4.064	5.786	5.499

C. Other Program Funding Summary (\$ in Millions)										
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete Total Cost
• None: N/A	-	-	-	-	-	-	-	-	-	-

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 a new 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 Five Year Defense Plan. A new acquisition strategy is under development to continue UAI effort to after Aug 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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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/CPFI	Boeing Northrop Grumman Lockheed Martin Raytheon : Various,	-	2.781	Mar 2014	3.211	Nov 2014	2.399	Nov 2015	-		2.399	Continuing	Continuing	TBD
UAI Common Component	SS/CPFI	Northrop Grumman : Bethpage, NY	-	0.983	May 2013	1.475	Nov 2014	1.500	Nov 2015	-		1.500	Continuing	Continuing	TBD
Certification Tool	SS/CPFI	Boeing Northrop Grumman Lockheed Martin Raytheon : Various,	-	0.150	Jan 2014	0.600	Nov 2014	0.800	Nov 2015	-		0.800	Continuing	Continuing	TBD
Subtotal			-	3.914		5.286		4.699		-		4.699	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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/Program Support	Various	Various : Various,	-	0.150		0.500		0.800		-		0.800	Continuing	Continuing	TBD

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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	2014	4	2020
Certification Tools (CTs) Dev / Update, (UAI funded)	1	2014	4	2020
UAI (Msn PIng) Common Component, (UAI funded)	1	2014	4	2020
F-15E Suite 6, (Field as UAI)	1	2014	1	2014
F-15E Suite 8 (Program funded)	1	2014	4	2017
F-16 M6+ (Blk 40/50), (Program funded)	1	2014	4	2015
JDAM Block 10, (Program funded)	1	2014	4	2016
JASSM-ER, ((Program funded)	1	2014	3	2018
SDB 1/BRU-61, (Field as UAI)	1	2014	1	2014
SDB II, (Program funded)	1	2014	4	2017
F-35 Blk 4, (Program funded)	1	2016	4	2020

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	2.564	2.543	2.506	-	2.506	2.691	2.724	2.738	2.786	Continuing	Continuing
653166: <i>Joint Smart Munitions Test and Evaluation</i>	-	2.564	2.543	2.506	-	2.506	2.691	2.724	2.738	2.786	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.

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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	2.564	2.543	2.617	-	2.617
Current President's Budget	2.564	2.543	2.506	-	2.506
Total Adjustments	-	-	-0.111	-	-0.111
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-0.111	-	-0.111

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
<p>Title: Model Development and Vulnerability Analysis</p> <p>Description: Develop, validate, and accredit improved models for target vulnerability and weapons effectiveness in support of Combatant Commands' (CoCOMs) requirements.</p> <p>FY 2014 Accomplishments: Developed, validated, and accredited improved computer models to determine target vulnerability and weapons effectiveness in support of warfighter requirements.</p> <p>FY 2015 Plans: Develop, validate, and accredit improved computer models to determine target vulnerability and weapons effectiveness in support of warfighter requirements.</p> <p>FY 2016 Plans: Develop, validate, and accredit improved computer models to determine target vulnerability and weapons effectiveness in support of warfighter requirements.</p>	0.150	0.380	0.100
<p>Title: System Exploitation</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>	0.450	0.840	0.544

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016
<p><i>FY 2014 Accomplishments:</i> Exploited high value threat systems and other targets of warfighter interest using multi-spectral collection technologies, national technical means, and developmental seeker/sensor technologies.</p> <p><i>FY 2015 Plans:</i> Exploit high value threat systems (typically 4 per year). Provide signature data from multiple threat systems in various environments using advanced and developmental seeker/sensor technologies</p> <p><i>FY 2016 Plans:</i> Exploit high value threat systems (typically 4 per year). Provide signature data from multiple threat systems in various environments using advanced and developmental seeker/sensor technologies</p>				
<p><i>Title:</i> Bi-Annual Sensor Week</p> <p><i>Description:</i> 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><i>FY 2014 Accomplishments:</i> Sensor Week (SW) provided 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><i>FY 2015 Plans:</i> Conduct planning sessions for FY16 Sensor Week (SW). SW provides 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><i>FY 2016 Plans:</i> Conduct Sensor Week (SW). SW provides 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>		0.950	0.020	0.950
<p><i>Title:</i> ISR Exploitation</p> <p><i>Description:</i> Plan and conduct captive carry flight tests and signature collection for seeker/sensor technology evaluations.</p> <p><i>FY 2014 Accomplishments:</i></p>		0.214	0.503	0.112

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016
Exploited the signatures of high priority targets for use in ISR direct combat support and filling capability gaps; conducted rapid reaction performance analysis & evaluations in support of COCOM/MAJCOM immediate/urgent warfighter needs; optimized current project methods to support ISR testing FY 2015 Plans: 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 FY 2016 Plans: 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.				
Title: Fleet Relevance Description: Obtain/maintain high value signature quality threat assets. Project Chicken Little manages this major thrust area by ensuring Chicken Little, DoD Major Test Range Facility Base (MTRFB), and other government threat capabilities remain current and representative for RDT&E. This funding ensures Project Chicken Little provides combat representative signatures. FY 2014 Accomplishments: 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. Combat representative signatures are critical when supporting the development of 5th generation fighter weapon systems, Techniques, Tactics and Procedures (TTPs), next generation ISR capabilities, and rapid reaction COCOM exploitation efforts. FY 2015 Plans: 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. FY 2016 Plans: 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.		0.800	0.800	0.800
Accomplishments/Planned Programs Subtotals		2.564	2.543	2.506

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
---	---

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• None: N/A	-	-	-	-	-	-	-	-	-	-	-

Remarks

E. Acquisition Strategy

Funds are executed organically in support of test and evaluation activities including studies, analyses, flight & ground tests, model building and simulation. 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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 ; ,	-	0.800	Nov 2013	0.800	Nov 2014	0.800	Nov 2015	-		0.800	Continuing	Continuing	-
Subtotal			-	0.800		0.800		0.800		-		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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	1.709	Nov 2013	1.688	Nov 2014	1.651	Nov 2015	-		1.651	Continuing	Continuing	TBD
Subtotal			-	1.709		1.688		1.651		-		1.651	-	-	-

Remarks
46th Test Wing is the Program Office which conducts inhouse testing.

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2013	0.055	Nov 2014	0.055	Nov 2015	-		0.055	Continuing	Continuing	TBD
Subtotal			-	0.055		0.055		0.055		-		0.055	-	-	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	2.564	2.543	2.506	-	2.506	-	-	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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]																											
------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Sensor Week

[REDACTED]																											
------------	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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	2014	4	2020
Sensor Week	3	2016	3	2016

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0604617F / <i>Agile Combat Support</i>
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	16.747	42.840	57.678	-	57.678	49.955	17.137	17.336	17.646	Continuing	Continuing
652895: <i>CE Readiness</i>	-	13.968	41.403	56.212	-	56.212	48.388	15.540	15.709	15.991	Continuing	Continuing
654910: <i>Aeromedical Readiness</i>	-	2.779	1.437	1.466	-	1.466	1.567	1.597	1.627	1.655	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. Consequently, this program provides capabilities to field, base, protect, support, and sustain air, space, and cyberspace forces with an intentional focus on efficiency and effectiveness. Current projects in this program provide Civil Engineering Readiness (BPAC 652895) and Aeromedical Readiness (BPAC 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.

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	17.036	46.340	58.060	-	58.060
Current President's Budget	16.747	42.840	57.678	-	57.678
Total Adjustments	-0.289	-3.500	-0.382	-	-0.382
• Congressional General Reductions	-	-	-	-	-
• Congressional Directed Reductions	-	-3.500	-	-	-
• Congressional Rescissions	-	-	-	-	-
• Congressional Adds	-	-	-	-	-
• Congressional Directed Transfers	-	-	-	-	-
• Reprogrammings	-	-	-	-	-
• SBIR/STTR Transfer	-0.289	-	-	-	-
• Other Adjustments	-	-	-0.382	-	-0.382

Change Summary Explanation

FY15 President's Budget reduced by \$3.5M due to Congressional directed reduction for airfield damage repair forward financing.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support				Project (Number/Name) 652895 / CE Readiness			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
652895: CE Readiness	-	13.968	41.403	56.212	-	56.212	48.388	15.540	15.709	15.991	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Civil Engineering (CE) Readiness project develops airfield assessment, repair, and unexploded ordnance identification, removal, disposal, and mitigation capabilities to enable rapid recovery and regeneration of airfield operations within established time limits. This project develops and transitions infrastructure design criteria, construction methods and materials, and evaluation tools for both main operating bases and forward operating locations. This project also provides efficient and effective Basic Expeditionary Airfield Resources (BEAR) capabilities to support forward deployed airfields in bare-base locations or augment existing airfield infrastructure in support of joint operations. All of these efforts enable air superiority.

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

	FY 2014	FY 2015	FY 2016
Title: Airfield Damage Repair	10.268	33.278	41.212
<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 2014 Accomplishments: Develop rapid airfield damage assessment capabilities; update Geospatial Expeditionary Planning Tool; develop damage plotting tools; automate tools for Minimum Airfield Operating Surface (MAOS) determination and repair quality; develop advanced procedures employing asphalt to repair large craters; improve job mix formula for calculation of locally procured materials; update TTPs as necessary; develop command and control (C2) training products.</p> <p>FY 2015 Plans: Continue to develop rapid assessment and repair of airfield damage, which includes automated identification, mitigation or removal of unexploded ordnance, and rapid setting material storage and transfer capability; develop expeditionary fuel and utility restoration capability; develop aircraft performance data for MAOS selection criteria; conduct detailed engineering development, prototyping, and prototype testing of new systems for expeditionary lighting, fuel storage, fuel distribution, and aircraft shelters.</p> <p>FY 2016 Plans: Continue development of rapid assessment, mitigation and repair of airfield damage. Rapid assessment includes automated identification, classification, and measurement of damage to airfield pavement and infrastructure. Further, it includes the development of IT solutions for minimum airfield operating surface (MAOS) selection, ADR command and control (C2), ADR</p>			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015		
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support	Project (Number/Name) 652895 / CE Readiness		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016
<p>training, and interfaces to other AF C2 systems. Mitigation includes rendering safe and/or removal of UXO through a family of Multiple UXO Removal Systems (MURS), such as Recovery of Airfields Denied By Ordnance (RADBO); high-speed ground robots; and Remotely Piloted Vehicles. Repair of airfield damage focuses on rapid setting material storage and transfer capability; development of recycled asphalt products and packaging for use in asphalt recycler; demonstrating ADR in a chemical contaminated environment; development of backfill/capping concrete; investigating the use of reclaimed and indigenous materials; investigating expeditionary ADR equipment; expanding robotics and automation in ADR; evaluation of lightweight matting and alternative FOD cover technologies; evaluation of foam technologies and other material solutions that offer soil/base stabilization; and development of expeditionary fuel and utility restoration technologies.</p>				
<p>Title: Basic Expeditionary Airfield Resources (BEAR) Energy Initiatives</p> <p>Description: This effort develops, tests, and evaluates BEAR technologies in support of air bases at austere locations and augmentation of bed-down at fixed installations. The BEAR initiative, a joint effort with the Army, focuses on efficiency and economy of resources. This program includes development of smart shelter energy management. The smart shelter project will develop an autonomous, in-shelter smart control system for expeditionary structures.</p> <p>FY 2014 Accomplishments: Complete development of an end-to-end system of BEAR energy reduction technologies by developing BEAR smart shelter system. The smart shelter energy project will reduce deployed base fuel consumption by 25%.</p>		3.700	-	-
<p>Title: Airfield Protection</p> <p>Description: This effort advances and transitions various solutions for protecting airfield infrastructure (not associated with airfield surfaces) from penetrating threats, whether ballistic or guided. 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). Airfield infrastructure includes buildings, hangars, aircraft and ground equipment, fuels distribution and storage, as well as all other assets on or near airfields. 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>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: Begin development of technology solutions developed under the HIPPO JCTD. Correct deficiencies identified in HIPPO. Define and develop fully integrated solution(s) for hardening and protection identified in HIPPO JCTD. Begin test and evaluation planning; conduct test and evaluation of new panel designs. Advance fuel distribution restoration and recovery equipment and</p>		-	8.125	15.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support	Project (Number/Name) 652895 / CE Readiness
--	--	---

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
<p>methods. Develop retrofit of sunshades for fighter aircraft. Advance expedient protection systems for small scale equipment and facilities.</p> <p>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, execute materials and structures blast and ballistic testing for layered hardening, finalize sheltering designs for Expeditionary Large Asset Protection and Expedient Small Asset Protection, develop test plans for final sheltering designs, finalize fuel distribution restoration and recovery products, develop training, TTPs,; develop final training mockup, hardening strategies for cruise missiles; and airbase protection technologies for full spectrum of emerging threats, including firefighting, explosive ordnance disposal, emergency services, and infrastructure protection.</p>			
Accomplishments/Planned Programs Subtotals	13.968	41.403	56.212

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF:BA04:Line Item #845100A: <i>Contingency Operations</i>	4.700	38.728	5.412	-	5.412	0.379	1.393	2.137	2.079	Continuing	Continuing

Remarks

D. Acquisition Strategy
The majority of efforts in this project employ a streamlined acquisition approach. Whenever practical and appropriate, commercial-off-the-shelf (COTS) and modified-COTS will be procured to address mission capability requirements. Existing contracts will be used, including contracts of other services or agencies; new contracts will be used as appropriate for the type and scope of work needed.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support	Project (Number/Name) 652895 / CE Readiness
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	3.693	Jan 2014	17.623	Dec 2014	26.962	Feb 2016	-		26.962	Continuing	Continuing	-
ADR 2	MIPR	USERDC : Vicksburg, MS	-	5.570	Dec 2013	8.700	Dec 2015	14.250	Feb 2016	-		14.250	Continuing	Continuing	-
ADR 3	C/CPFF	Applied Research Associates, Inc. : Albuquerque, NM	-	0.630	Jan 2014	-		-		-		-	Continuing	Continuing	-
ADR 4	C/CPFF	WINTEC, INC. : Shalimar, FL	-	0.300	Jan 2014	-		-		-		-	Continuing	Continuing	-
BEAR Smart Shelter Energy Management System	C/CPFF	AFCEC : Tyndall AFB, FL	-	3.500	Jan 2014	-		-		-		-	-	3.500	-
Airfield Protection	Various	AFCEC : Tyndall AFB, FL	-	-		15.000	Feb 2015	15.000	Feb 2016	-		15.000	Continuing	Continuing	-
Subtotal			-	13.693		41.323		56.212		-		56.212	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	0.275		0.080		-		-		-	Continuing	Continuing	-
Subtotal			-	0.275		0.080		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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			-	-		-		-		-		-	-	-	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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			-	-		-		-		-		-	-	-	-
Project Cost Totals			-	13.968		41.403		56.212		-		56.212	-	-	-

Remarks
NOTE: This is primarily a level of effort Program Element with multiple projects.

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
ADR Command and Control Simulator Production	3	2014	1	2016
ADR Robotic Appliques Operational Utility Evaluation (OUE)	3	2015	4	2016
ADR Material Transfer Concept Activities, and Test and Evaluation	1	2015	4	2016
RADAS / Minimum Airfield Surface OUE and Assessment	3	2014	4	2015
RADAS Production and Deployment	4	2015	3	2019
RADBO Vehicle Operational Utility Assessment	2	2015	4	2015
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	2	2017
AP Guided Threats Protection Design and Development	1	2018	4	2019
AP Fuel Repair Design and Development	2	2015	1	2018
BEAR Energy Initiatives Smart Shelter Energy Management System Concept Activities, Design, Development, Test and Evaluation	2	2014	1	2018

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
654910: <i>Aeromedical Readiness</i>	-	2.779	1.437	1.466	-	1.466	1.567	1.597	1.627	1.655	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 2014	FY 2015	FY 2016
<p>Title: Deployable Oxygen Generation System - Small (DOGS-S)</p> <p>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.</p> <p>FY 2014 Accomplishments: Continued Developmental Test & Evaluation.</p> <p>FY 2015 Plans: Complete Development and Operational Test & Evaluation. Submit and obtain Food & Drug Administration clearance. Complete EMD phase for entry into Milestone C.</p>	0.258	0.065	-
<p>Title: Field Intravenous Fluid Reconstitution (FIVR)</p> <p>Description: This effort designs, develops and tests the FIVR system, which produces intravenous fluids for treating critical casualties in EMEDS hospitals and mobile aeromedical staging facilities.</p> <p>FY 2014 Accomplishments: Concept Activities</p> <p>FY 2015 Plans: Market research for FIVR commercial off-the-shelf devices.</p>	0.800	0.050	-
<p>Title: Non-Invasive Warming and Cooling Device (NIWCD)</p> <p>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.</p>	-	1.322	1.466

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support	Project (Number/Name) 654910 / Aeromedical Readiness

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
<p>FY 2015 Plans: Complete Pre-Milestone B documentation and briefings, release Request for Proposal, conduct source selection, and award contract.</p> <p>FY 2016 Plans: Enter into EMD and conduct Preliminary Design Review and Critical Design Review.</p> <p>Title: Aeromedical Systems Planning, Studies, and Analysis (ASPSA)</p> <p>Description: This effort is for foundational studies, requirements analysis, and product demonstrations to satisfy aeromedical operational needs. Define acquisition strategies and baselines for potential system solutions.</p> <p>FY 2014 Accomplishments: Reports received and all activities are completed.</p>	1.721	-	-
Accomplishments/Planned Programs Subtotals	2.779	1.437	1.466

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• NA: NA	-	-	-	-	-	-	-	-	-	-	-

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support	Project (Number/Name) 654910 / Aeromedical Readiness
--	--	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	0.151		-		-		-		-	Continuing	Continuing	TBD
Field Intravenous Fluid Reconstitution (FIVR)	TBD	TBD : TBD,	-	0.800	Jan 2015	-		-		-		-	Continuing	Continuing	-
Aeromedical Systems Planning, Studies, and Analysis (ASPSA)	Various	AFLCMC : Dayton, OH	-	1.088	Jan 2014	-		-		-		-	Continuing	Continuing	-
Non-Invasive Warming and Cooling Device (NIWCD)	C/TBD	TBD : TBD,	-	-		1.022	Nov 2015	1.164	Nov 2016	-		1.164	Continuing	Continuing	-
Subtotal			-	2.039		1.022		1.164		-		1.164	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	0.036	Aug 2014	0.020	Aug 2015	0.060	Aug 2016	-		0.060	Continuing	Continuing	-
Subtotal			-	0.036		0.020		0.060		-		0.060	-	-	-

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	0.704	Dec 2013	0.395	Dec 2014	0.242	Dec 2015	-		0.242	Continuing	Continuing	TBD

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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 FIVR Concept Activities																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Engineering and Manufacturing Development (EMD) Phase for the Deployable Oxygen Generation System (DOGS) - Small	1	2014	3	2015
Production and Fielding Phase for the DOGS - Small System	4	2015	4	2018
EMD Phase for the Non-Invasive Warming & Cooling Device (NIWCD)	4	2015	2	2018
Production and Fielding Phase for NIWCD	2	2018	2	2019
Conduct FIVR Concept Activities	3	2014	3	2015

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	7.069	14.854	8.187	-	8.187	8.747	8.430	8.608	8.763	Continuing	Continuing
65412A: <i>Life Support Systems</i>	-	7.069	14.854	8.187	-	8.187	8.747	8.430	8.608	8.763	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY16 project 65412A Life Support Systems New Start projects for Personal Radio Communications (PRC) and Aircrew Safety Improvements.

A. Mission Description and Budget Item Justification

This program is a human-centered program 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.

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	7.273	8.854	8.242	-	8.242
Current President's Budget	7.069	14.854	8.187	-	8.187
Total Adjustments	-0.204	6.000	-0.055	-	-0.055
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	6.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.204	-			
• Other Adjustments	-	-	-0.055	-	-0.055

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
---	---

Congressional Add Details (\$ in Millions, and Includes General Reductions)	FY 2014	FY 2015
Project: 65412A: <i>Life Support Systems</i>		
Congressional Add: <i>Ejection Seat Safety/Sustainability Improvement Program for Qualification of B-2 Seat Mod</i>	-	6.000
Congressional Add Subtotals for Project: 65412A	-	6.000
Congressional Add Totals for all Projects	-	6.000

Change Summary Explanation

FY15 includes a \$6M Congressional add for Ejection Seat Safety/Sustainability Improvement Program for Qualification of the B-2 Seat Mod.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
---	---------	---------	---------

Title: Aircrew Flight Equipment (AFE)	0.997	1.650	1.025
<p>Description: Air Force Life Cycle Management Center's Aircrew Performance Branch is the single USAF focal point for Aircrew Flight Equipment (AFE) studies, analysis, and Safe-to-Fly (STF) testing and certification. In general, unplanned STF projects are an urgent response to real-time capability gaps identified by the warfighter which may be satisfied quickly by purchasing and qualifying commercial-off-the-shelf (COTS) products and/or performing minor development efforts. The Cold Weather Aviation System (CWAS) and Aircrew Body Armor (ABA) are currently the active STF programs within Life Support Systems (LSS). Both of these efforts were originally planned as development efforts, but identification of COTS solutions allowed them to become STF efforts.</p> <p>Cold Weather Aviation System (CWAS) is an Arctic weather aircrew ensemble program that includes garments, boots, and gloves. The ensemble employs a multi-layer approach protecting aircrews to -49 degrees Fahrenheit.</p> <p>The Air Force has no approved aircrew body armor. The Integrated Aircrew Body Armor (IABA) project plans to purchase existing government or commercial body armor and integrate with aircrew survival gear, restraint & recovery harness, and a life preserver unit. The selected body armor must meet Director of Operational Test and Evaluation (DOT&E) live fire requirements, provide adequate soft/hard body armor coverage to the torso, demonstrate good overall use and maneuverability, and pass appropriate STF tests.</p> <p>FY 2014 Accomplishments: Drafted CWAS program strategy and test plan. Purchased CWAS test articles to include golves and ensembles.</p> <p>Continued ABA STF testing at various locations.</p> <p>FY 2015 Plans:</p>			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016
Complete purchase of all test assets and begin integration testing of the CWAS.				
Finalize STF testing of ABA and deliver the signed STF recommendation.				
FY 2016 Plans: Perform STF testing and certification of COTS and / or minor developmental products.				
Title: Integrated Aircrew Ensemble (IAE)		6.072	6.884	3.447
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 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 2014 Accomplishments: Continued Development Verification Testing (DVT) of the IAE system.				
FY 2015 Plans: Begin operational testing of the IAE.				
FY 2016 Plans: Finalize operational testing of the IAE and begin Low Rate Initial Production (LRIP).				
Title: Aircrew Safety Improvements & Analysis		-	-	0.945
Description: Investigate and implement techniques, tactics, procedures and improvements for aircrew safety.				
FY 2016 Plans: Investigate aircrew safety issues, provide recommendations / analysis and implement improvements.				
Title: Personal Radio Communications		-	-	1.750
Description: The Personal Radio Communications (PRC) system is a handheld survival radio for aircrew members. Currently, USAF aircrew use the PRC-90 survival radio, which was derived from the Vietnam War era. The current device is bulky and not conducive to today's wartime environment due to obsolescence and the frequency no longer being monitored. Newer, more advanced technology is needed to improve aircrew survivability and communications.				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604706F I Life Support Systems
--	--

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
FY 2016 Plans: Award developmental contract to begin non-recurring engineering and preliminary testing of current technologies.			
Title: Aircrew Laser Eye Protection (ALEP) Block III Description: Aircrew Laser Eye Protection Block (ALEP) III is an upgrade to day-variant helmet visors to protect aircrews from laser threats. Laser shielding technology was recently developed and fielded as spectacles in ALEP Block II. Application of the laser shielding technology is viable for day-use whereas a night variant requires further development.	-	0.320	1.020
FY 2015 Plans: Prepare a Business Case Analysis (BCA) and an Analysis of Alternatives (AoA). Establish cost, schedule, and performance scope of project.			
FY 2016 Plans: Award development contract and begin Engineering Manufacturing & Development phase.			
Accomplishments/Planned Programs Subtotals	7.069	8.854	8.187

	FY 2014	FY 2015
Congressional Add: Ejection Seat Safety/Sustainability Improvement Program for Qualification of B-2 Seat Mod FY 2015 Plans: One of the FY 2014 congressional reports specifically provided funds for "Ejection seat safety/sustainability B-2 seat mod" using the phrases "only for" or "only to", or the item appears in one of the project level tables.	-	6.000
Congressional Adds Subtotals	-	6.000

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

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• OPAF:BA04: Line Item # 842990: <i>Items Less Than \$5 Million</i>	4.973	7.035	7.121	-	7.121	7.234	7.380	7.529	-	Continuing	Continuing

Remarks

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity

3600: *Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)*

R-1 Program Element (Number/Name)

PE 0604706F / *Life Support Systems*

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, Manufacturing and 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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604706F / Life Support Systems	Project (Number/Name) 65412A / Life Support Systems
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 : ,	-	0.997		0.825		0.975		-		0.975	Continuing	Continuing	TBD
Aircrew Safety Improvements & Analysis	Various	Multiple : TBD,	-	-		-		0.945	Mar 2016	-		0.945	Continuing	Continuing	-
Integrated Aircrew Ensemble (IAE)	C/FPIF	Tiax : Lexington, MA	-	4.042	Apr 2014	5.664	Apr 2015	1.334	Apr 2016	-		1.334	Continuing	Continuing	TBD
Aircrew Laser Eye Protection (ALEP) Block III	C/FPIF	TBD : TBD,	-	-		0.120	Jul 2015	1.020	Jul 2016	-		1.020	Continuing	Continuing	-
Personal Radio Communications (PRC)	C/FPIF	TBD : TBD,	-	-		-		1.000	Jun 2016	-		1.000	Continuing	Continuing	-
Advanced Concept Ejection Seat (ACES)	SS/FPIF	TBD : ,	-	-		5.000	Nov 2015	-		-		-	Continuing	Continuing	-
Subtotal			-	5.039		11.609		5.274		-		5.274	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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, ABA, etc.)	Various	Various : Various,	-	0.950	Jul 2014	1.500	Jul 2015	1.045	Jul 2016	-		1.045	Continuing	Continuing	-
Subtotal			-	0.950		1.500		1.045		-		1.045	-	-	-

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Aircrew Laser Eye Protection (ALEP) Block III [Business Case Analysis and Analysis of Alternatives]	4	2015	1	2016
ALEP Block III [Engineering Manufacturing and Development]	2	2016	1	2019
Integrated Aircrew Ensemble (IAE) [Engineering and Manufacturing Development]	1	2014	2	2015
IAE [Developmental Test & Evaluation]	3	2014	3	2015
IAE [Milestone C]	3	2015	3	2015
IAE [Low Rate Initial Production]	3	2015	2	2016
IAE [Initial Operational Test & Evaluation]	3	2015	4	2015
IAE [Full Rate Production]	3	2016	4	2018
Personal Radio Communication (PRC) Engineering and Manufacturing Development	3	2016	1	2019
PRC Milestone C	1	2019	1	2019
Advanced Concept Ejection Seat (ACES) Qualification Testing	1	2016	3	2017

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 <i>Combat Training Ranges</i>
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	19.649	10.129	15.795	-	15.795	34.338	27.337	43.962	44.750	Continuing	Continuing
652286: <i>Combat Training Range Equipment</i>	-	19.649	10.129	15.795	-	15.795	34.338	27.337	43.962	44.750	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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, communication jammers, instrumentation equipment/systems, and evolutionary upgrades to facilitate standardization and integration across all platforms to include coalition and 5th Generation aircraft. The Encrypted Combat Training System (CTS), a collaborative development between USAF and USN, provides air combat training systems for the services at operational locations worldwide. Increments include: hardware and software upgrades; encrypted software communications architecture compliant data link to facilitate interoperability in a security environment and training with 5th Generation aircraft; internal pod replacement subsystems; integration of new aircraft Operational Flight Programs. The CTR program also includes the development of advanced threat emitters. The Joint Threat Emitter (JTE) continues the development of a comprehensive suite of threat signals for aircrew tactics and electronic combat training for simulated penetrations of hostile airspace. This program complements existing range threat simulators by emulating signals that simulate current and future air defense and threat radars. JTE awarded a follow-on production contract to improve the current baseline by removing obsolescence and proprietary software to enable full organic sustainment. The follow-on production contract includes the development of a non-proprietary software baseline and the procurement of that source code in addition to JTE systems, Mobile Command and Control Units (MC2U), Fixed Command and Control Units (FC2U), and additional spares. Consistent with an evolutionary acquisition strategy and documented ACC training requirements, development will continue with next generation threat systems. Future developments will continue to add additional capability to the warfighter's training ranges. The Advanced Radar Threat System (ARTS) program, formerly named JTE Increment 2, 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 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, but the most stringent requirements placed on ARTS design come from 5th generation aircraft capabilities. The ARTS-Variant 1 (ARTS-V1) is focused on strategic, long-range, re-locatable radar threat systems while ARTS-Variant 2 (ARTS-V2) is focused on tactical, mobile, short/medium-range radar threat systems. Since a similar ARTS-V1 capability is being developed through the Central Test and Evaluation Investment Program, ARTSV2 development is being accelerated. It was originally to start development after ARTS-V1 was in procurement. This program also funds development of replacement components for Legacy Range Threat Systems (due to obsolescence) to extend the system's service life. 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, the Common Electronic Attack Receiver (CEAR) and the Unmanned Modular Threat Emitter (UMTE) system. Additionally, 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

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

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.

The FY16 funding request was reduced by \$3.911 million to account for the availability of prior execution balances.

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	25.300	10.129	19.811	-	19.811
Current President's Budget	19.649	10.129	15.795	-	15.795
Total Adjustments	-5.651	-	-4.016	-	-4.016
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-4.815	-			
• SBIR/STTR Transfer	-0.836	-			
• Other Adjustments	-	-	-4.016	-	-4.016

Change Summary Explanation

The 2016 funding request was reduced by \$3.911 million to account for the availability of prior execution balances.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Title: P5 Combat Training System (CTS) 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, and upgrades for range applications. Additionally, funding supports efforts to facilitate interoperability in a secure (encrypted, single-level security) environment to enable training with 5th Generation aircraft. FY 2014 Accomplishments: P5 CTS funding supported range instrumentation system improvements to include the development, integration and testing of software/hardware upgrades, aircraft/pod integration, and upgrades for range applications. FY 2015 Plans:	8.660	8.183	7.539

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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)		FY 2014	FY 2015	FY 2016
<p>P5 CTS funding will support Air Combat Training Systems capabilities and include the development, integration and testing of software/hardware upgrades, aircraft/pod integration, and upgrades for range applications. Additionally, funding will support efforts to facilitate interoperability in a secure (encrypted, single-level security) environment to enable training with 5th Generation aircraft.</p> <p>FY 2016 Plans: P5 CTS funding will support Air Combat Training Systems (ACTS) capabilities and include the development, integration and testing of future software/hardware upgrades, aircraft/pod integration, and upgrades for range applications. Additionally, funding will support efforts to facilitate interoperability in a secure (encrypted, single-level security) environment to enable training with 5th Generation aircraft.</p>				
<p>Title: Encrypted Combat Training System (CTS)</p> <p>Description: Collaborative development between USAF and USN to provide interoperability with 5th generation aircraft in a secure (multi-level security) environment. Encrypted CTS will provide air combat training systems for the services at operational locations worldwide. Increments include: hardware and software upgrades; an encrypted software communications architecture compliant data link to facilitate interoperability in a security environment and training with 5th generation aircraft.</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: N/A</p> <p>FY 2016 Plans: Encryption funding will be utilized to begin development of an Encrypted CTS (multiple levels of security), including development of internal pod replacement subsystems and integration and testing of 5th Generation aircraft.</p>		-	-	1.264
<p>Title: Joint Threat Emitter (JTE)</p> <p>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).</p> <p>FY 2014 Accomplishments:</p>		0.250	0.150	-

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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)		FY 2014	FY 2015	FY 2016
<p>Funding supported the development of a new software baseline to eliminate proprietary issues and to create an organic software sustainment capability.</p> <p>FY 2015 Plans: Development and testing continues on a new software baseline to eliminate proprietary issues and to create an organic software sustainment capability. Additionally, studies continue to identify system capability modifications to simulate new threat signals.</p> <p>FY 2016 Plans: N/A</p>				
<p>Title: Legacy Range Threat Systems</p> <p>Description: The Legacy Systems program develops, integrates, tests, and builds a common component replacement for obsolete electronic attack receivers on radar threat simulators such as the Joint Threat Emitter and Unmanned Modular Threat Emitter (UMTE) instead of developing and sustaining unique replacements for those systems. Common Electronic Attack Receiver (CEAR) 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 2014 Accomplishments: CEAR funding supported continued engineering and manufacturing activities for development, integration, testing, and test articles. Development and testing continued on the JTE and UMTE production test articles.</p> <p>FY 2015 Plans: CEAR funding supports continued engineering and manufacturing activities for development, integration, testing, and production test articles.</p> <p>FY 2016 Plans: N/A</p>		4.241	0.350	-
<p>Title: Advanced Radar Threat System (ARTS) Development</p> <p>Description: The Advanced Radar Threat System (ARTS) program 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 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, but the most stringent requirements placed on ARTS design come from fifth generation aircraft capabilities. The ARTS-Variant 1 (ARTS-V1) is focused on strategic, long-range, re-locatable radar threat systems while ARTS-Variant 2 (ARTS-V2) is focused on tactical, mobile, short/medium-range radar threat systems.</p>		6.498	1.446	6.992

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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)	FY 2014	FY 2015	FY 2016
<p>Additionally, ongoing analyses, studies, and risk reduction efforts will focus on integrating ARTS and other systems into a Live Virtual Constructive architecture.</p> <p>FY 2014 Accomplishments: ARTS funding supported risk reduction and pre-solicitation activities for the development, integration, and testing of ARTS-V2. Risk reduction efforts included 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. A draft request for proposal (RFP) and associated documentation was developed for release. Additionally, funding supported ongoing analyses and studies focused on integrating ARTS and other systems into a Live Virtual Constructive architecture.</p> <p>FY 2015 Plans: ARTS funding supports risk reduction, pre-solicitation, and source selection activities for the development, integration, and testing of ARTS-V2. Risk reduction efforts include 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. An RFP and associated documentation will be developed for release followed by a source selection. Additionally, funding supports ongoing analyses and studies focused on integrating ARTS and other systems into a Live Virtual Constructive architecture.</p> <p>FY 2016 Plans: ARTS funding supports risk reduction, pre-solicitation, and source selection through 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>			
Accomplishments/Planned Programs Subtotals	19.649	10.129	15.795

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF: BA03: Line Item # 834190: <i>Combat Training Ranges</i>	15.939	56.580	33.606	-	33.606	36.025	43.812	17.112	17.416	Continuing	Continuing
• OPAF: BA05: Line Item # 861900: <i>Spares and Repair Parts</i>	3.102	0.900	0.102	-	0.102	1.595	1.180	0.685	0.697	Continuing	Continuing
• APAF: BA07: Line Item # 000075: <i>Other Production Charges</i>	0.300	-	-	-	-	-	-	25.000	25.000	Continuing	Continuing
• APAF: BA06: Line Item # 000999: <i>Initial Spares/Repair Parts</i>	-	1.489	2.074	-	2.074	2.148	0.081	-	-	Continuing	Continuing

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
---	---

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
------------------	----------------	----------------	-------------------------------	------------------------------	--------------------------------	----------------	----------------	----------------	----------------	-----------------------------------	-------------------

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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,	-	5.396	Apr 2014	0.471	May 2015	-		-		-	Continuing	Continuing	-
Advanced Radar Threat System (ARTS) Development	TBD	Not specified. : HILL AFB, UT	-	-		-		5.958	Sep 2016	-		5.958	Continuing	Continuing	-
JTE Increment I Development	Various	Not specified. : Hill AFB, UT	-	0.250	Apr 2014	-		-		-		-	Continuing	Continuing	-
Legacy System Improvements	MIPR	NAWCWD : China Lake, CA	-	4.000	Mar 2015	-		-		-		-	Continuing	Continuing	-
Encrypted CTS	C/FFP	TBD : TBD,	-	-		-		1.264	Apr 2016	-		1.264	Continuing	Continuing	-
JSF Encrypted Pass-Through Development (P5CTS)	TBD	Various : Various,	-	-		2.039	Sep 2015	2.277	Jul 2016	-		2.277	Continuing	Continuing	-
Weapon Simulation Input/Interface (P5CTS)	Various	Various : Various,	-	-		1.900	Sep 2015	-		-		-	Continuing	Continuing	-
Block Upgrades (P5CTS)	C/TBD	Not specified. : ,	-	6.768	Sep 2014	1.794	Jul 2015	3.354	Jul 2016	-		3.354	Continuing	Continuing	-
Subtotal				-		16.414		6.204		12.853		12.853	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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)	MIPR	Various : Various,	-	0.667	Jul 2014	0.820	Jul 2015	0.350	Jul 2016	-		0.350	Continuing	Continuing	-
AFLCMC/EBYC, Eglin AFB - Direct Msn Spt	Various	TBD : TBD,	-	0.029	Dec 2014	0.879	Dec 2015	0.029	Oct 2015	-		0.029	Continuing	Continuing	-
Subtotal				-		0.696		1.699		0.379		0.379	-	-	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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>

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
P5CTS Development																												
--Block Upgrades (Block 5)																												
--JSF Encryption Pass-Through																												
Encrypted Combat Training System (CTS)																												
JTE Follow-On																												
-- JTE S/W Development																												
ARTS V2																												
-- Advanced Threat Simulator Risk Reduction																												
-- Advanced Threat Simulator RFP Prep																												
--Advanced Radar Threat System (ARTS) Development Contract																												
--Advanced Radar Threat System (ARTS) PDR																												
--Advanced Radar Threat System (ARTS) CDR																												
-- Advanced Radar Threat System (ARTS) Production Contract Award																												
--Advanced Radar Threat System (ARTS) DT-E and OT-E																												
Legacy RTS CEAR Development																												
-- CEAR Development																												
-- CEAR Integration Test																												
-- CEAR Test Articles																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
--Block Upgrades (Block 5)	4	2015	2	2018
--JSF Encryption Pass-Through	1	2016	3	2017
Encrypted Combat Training System (CTS)	2	2016	2	2020
JTE Follow-On	1	2014	4	2020
-- JTE S/W Development	1	2014	3	2016
ARTS V2	1	2014	4	2020
-- Advanced Threat Simulator Risk Reduction	1	2014	1	2016
-- Advanced Threat Simulator RFP Prep	1	2014	4	2015
--Advanced Radar Threat System (ARTS) Development Contract	3	2016	2	2020
--Advanced Radar Threat System (ARTS) PDR	4	2017	4	2017
--Advanced Radar Threat System (ARTS) CDR	2	2018	2	2018
-- Advanced Radar Threat System (ARTS) Production Contract Award	3	2020	3	2020
--Advanced Radar Threat System (ARTS) DT-E and OT-E	1	2018	3	2020
Legacy RTS CEAR Development	1	2014	3	2016
-- CEAR Development	1	2014	2	2015
-- CEAR Integration Test	3	2014	1	2015
-- CEAR Test Articles	3	2015	3	2016

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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
---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	19,917.936	616.560	567.889	589.441	-	589.441	323.446	114.595	5.291	5.365	1,454.687	23,595.210
653831: <i>Joint Strike Fighter</i>	19,903.769	600.360	535.296	517.980	-	517.980	323.446	114.595	5.291	5.365	1,454.687	23,460.789
653832: <i>JSF DEPLOYABILITY AND SUITABILITY ENHANCEMENT</i>	14.167	16.200	32.593	71.461	-	71.461	-	-	-	-	-	134.421

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 United States Navy, Air Force, Marine Corps and allies. The three variants are the F-35A Conventional Takeoff and Landing (CTOL); F-35B Short Takeoff and Vertical Landing (STOVL); and the F-35C Aircraft Carrier suitable Variant (CV). The CTOL will be a stealthy multi-role, primary air-to-ground aircraft for the Air Force to replace the F-16 and A-10 and complement the F-22. The STOVL variant will be a multi-role strike fighter aircraft to replace the AV-8B and F/A-18A/C/D 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 CV will provide the DoN a multi-role, stealthy strike fighter aircraft to complement the F/A-18E/F.

The United Kingdom, other International Partner nations, 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 SDD budget funds a total quantity of 20 RDT&E test articles to include 6 ground test articles and 14 flight test articles for Navy and Air Force use.

- FY07: 1 CTOL flight test article
- FY08: 1 STOVL flight test article; 1 STOVL ground test article
- FY09: 1 STOVL flight test article; 2 CTOL ground test articles
- FY10: 6 flight test articles: 3 CTOL, 2 STOVL, 1 CV; 3 ground test articles: 1 STOVL, 2 CV
- FY11: 4 flight test articles: 1 CTOL, 1 STOVL, 2 CV
- FY13: 1 CV flight test article

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 (EMD) tasks aimed at meeting validated requirements prior to full-rate production.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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
---	--

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	628.454	563.037	547.253	-	547.253
Current President's Budget	616.560	567.889	589.441	-	589.441
Total Adjustments	-11.894	4.852	42.188	-	42.188
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-11.894	-			
• Other Adjustments	-	4.852	42.188	-	42.188

Change Summary Explanation

FY2015 increase: +\$4.976M was transferred from BA04 to BA05. -\$0.124M was transferred to higher AF priorities.

FY2016 increase: +\$42.188M was for Deployability & Suitability (D&S).

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
653831: <i>Joint Strike Fighter</i>	19,903.769	600.360	535.296	517.980	-	517.980	323.446	114.595	5.291	5.365	1,454.687	23,460.789
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Total cost including USN, USMC, International partner contributions and USAF funding are: FY14 \$1,414.340M, FY15 \$1,522.627M, and FY16 \$1,508.688M. R-2 data reflects variant unique funding only.

R-2A table shown above reflects service 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

F-35 FoD includes:

- USAF: PE 0207142F BPAC 675346
- USN: FY13 PE 0604800N BPAC 2261
- USN: FY14 PE 0604800N BPAC 3353
- USN: FY15 PE 0604810N BPAC 2936
- USMC: FY13 PE 0604800M BPAC 2262
- USMC: FY14 PE 0604800M BPAC 3351
- USMC: FY15 PE 0604810M BPAC 2935

A. Mission Description and Budget Item Justification

The F-35 JSF Program will develop and field an affordable, highly common family of next generation strike aircraft for the United States Navy, Air Force, Marine Corps and allies. The three variants are the F-35A Conventional Takeoff and Landing (CTOL); F-35B Short Takeoff and Vertical Landing (STOVL); and the F-35C Aircraft Carrier suitable Variant (CV). The CTOL will be a stealthy multi-role, primary air-to-ground aircraft for the Air Force to replace the F-16 and A-10 and complement the

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force	Date: February 2015
---	----------------------------

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
--	--	---

F-22. The STOVL variant will be a multi-role strike fighter aircraft to replace the AV-8B and F/A-18A/C/D 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 CV will provide the DoN a multi-role, stealthy strike fighter aircraft to complement the F/A-18E/F.

The United Kingdom, other International Partner nations, and Foreign Military Sales customers are also participants in the JSF program. The program shown here reflects USN, USMC, USAF, and International Partner funding.

The top-line Program element reflects the unique variant for each Service. 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 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 and USAF use.

- FY07: 1 CTOL flight test article
- FY08: 1 STOVL flight test article; 1 STOVL ground test article
- FY09: 1 STOVL flight test article; 2 CTOL ground test articles
- FY10: 6 flight test articles: 3 CTOL, 2 STOVL, 1 CV; 3 ground test articles: 1 STOVL, 2 CV
- FY11: 4 flight test articles: 1 CTOL, 1 STOVL, 2 CV
- FY13: 1 CV flight test article

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 (EMD) tasks aimed at meeting validated requirements prior to full-rate production.

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

	FY 2014	FY 2015	FY 2016
<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 2014 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 2015 Plans:</p>	825.925	777.318	799.105

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p>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. 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. Activity aligned to IMS in accordance with variant IOC.</p>				
<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> <p>FY 2014 Accomplishments: Continued SDD execution of the F135 Propulsion System with Pratt & Whitney that included engine testing, autonomic logistics, integration and performing technology maturation efforts.</p> <p>FY 2015 Plans: 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>FY 2016 Plans: Continue SDD execution of the F135 Propulsion System with Pratt & Whitney that includes engine testing, autonomic logistics, integration and performing technology maturation efforts.</p>		148.826	195.378	177.048
<p>Title: Systems Engineering (SE) (F-35 JSF)</p> <p>Description: SDD Systems Engineering (SE) including systems operations requirements analysis, program integration, requirements integration, and interoperability support.</p> <p>FY 2014 Accomplishments: Continued SDD Systems Engineering that included systems operations requirements analysis, program integration, requirements integration, and interoperability support.</p> <p>FY 2015 Plans: Continue SDD Systems Engineering that includes systems operations requirements analysis, program integration, requirements integration, and interoperability support.</p> <p>FY 2016 Plans:</p>		22.212	24.310	25.021

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016
Continue SDD Systems Engineering that includes systems operations requirements analysis, program integration, requirements integration, and interoperability support.			
<p>Title: Development Test & Evaluation (DT&E) (F-35 JSF)</p> <p>Description: Government DT&E/Operational Testing (OT) in support of first flight of test aircraft. Elements of DT&E include preparation for flight testing and weapons integration testing.</p> <p>FY 2014 Accomplishments: Continued government DT&E/OT in support of test aircraft. Continue flight sciences testing of CTOL, STOVL, and CV variants to expand the air vehicle envelope to support mission systems testing to include initial Block 2B. Elements of DT&E include preparation for flight testing, weapons integration testing, and component capabilities testing.</p> <p>FY 2015 Plans: Continue government DT&E/OT. Continue flight sciences testing of CTOL, STOVL, and CV variants to expand the air vehicle envelope to support mission systems testing. Elements of DT&E include flight testing, weapons integration testing, and component capabilities testing.</p> <p>FY 2016 Plans: Continue government DT&E/OT. Continue flight sciences testing of CTOL, STOVL, and CV variants to expand the air vehicle envelope to support mission systems testing. Elements of DT&E include flight testing, weapons integration testing, and component capabilities testing.</p>	308.406	384.711	399.122
<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 2014 Accomplishments: Continued SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities.</p> <p>FY 2015 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.</p> <p>FY 2016 Plans:</p>	108.971	140.910	108.392

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016
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.			
Accomplishments/Planned Programs Subtotals	1,414.340	1,522.627	1,508.688
Other Service Funding Adjustment	813.980	987.331	990.708
Air Force Subtotals	600.360	535.296	517.980

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• RTTEN: BA05: PE 604800N: JSF SDD (CV)	409.421	485.263	467.759	-	467.759	443.185	45.436	0.574	0.615	-	19,832.613
• RTTEN: BA05: PE 604800M: JSF SDD (STOVL)	394.248	487.068	505.949	-	505.949	398.976	87.145	8.014	8.473	-	3,692.657
• APAF: BA01: Line Item # ATA000: JSF CTOL, PE 207142F, BP10	2,889.602	3,691.046	5,260.212	-	5,260.212	5,356.041	6,109.330	6,023.688	5,526.504	-	50,007.077
• APN: BA01: Line Item # 0147: JSF (CV), PE 204146N	1,028.415	848.552	897.542	-	897.542	848.056	1,217.562	1,496.303	1,606.088	32,734.961	51,085.532
• APN: BA01: Line Item # 0147C: JSF Advance Procurement (CV), PE 204146N	79.016	29.400	48.630	-	48.630	91.908	111.898	126.003	204.132	3,733.206	5,719.322
• APAF: BA01:ATA000: JSF CTOL Advance Procurement, PE 207142F, BP10 AP	339.533	291.880	460.260	-	460.260	528.560	522.180	497.720	506.000	19,787.624	24,451.221
• APN: BA01: Line Item #0152: JSF (STOVL), PE 204146M	1,172.248	1,184.410	1,483.414	-	1,483.414	2,049.754	2,713.087	2,796.129	2,810.155	26,147.806	43,146.851
• APN: BA01: 0152C: JSF Advance Procurement (STOVL), PE 204146M	103.195	143.885	203.060	-	203.060	226.148	136.872	139.562	142.353	2,900.408	4,834.934
• International 2: International Production	1,954.600	2,975.641	4,175.668	-	4,175.668	6,006.257	7,809.829	7,962.298	7,166.485	Continuing	Continuing
• OPN: USMC: F-35 B Milcon	-	71.704	21.960	-	21.960	219.100	64.660	121.990	119.800	642.400	1,966.114
• OPN: BA03: 4267: JSF Logistics Information Systems (ALIS), PE 204261N	3.389	-	-	-	-	-	-	-	-	-	19.105

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
--	--	---

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPN: BA 03; 4268: JSF Aviation Support Equipment ALIS Ship Alts	-	5.516	3.893	-	3.893	2.136	3.909	3.774	3.854	Continuing	Continuing
• OPN:BP 902010 BA 03: ALIS Spares and Repair Parts	1.010	1.576	2.946	-	2.946	1.948	1.940	1.957	1.995	Continuing	Continuing
• APAF: BA06: Line Item # F03500: JSF Initial Spares, PE 0207142F, BP16	91.414	236.418	238.673	-	238.673	245.991	326.971	368.702	372.588	-	-
• APN: BA06: 0605: Initial Spares (CV), PE 204146N	25.809	28.200	59.914	-	59.914	58.795	42.726	35.247	38.394	-	-
• APN: BA06: 0605: Initial Spares (STOVL), PE 204146M	88.304	64.194	111.569	-	111.569	76.703	29.756	100.362	136.763	-	-
• MILCON: BA01: PE 207142F: JSF Military Construction	56.000	66.700	132.850	-	132.850	124.000	-	-	-	1,328.000	2,238.050
• USN MILCON: BA01: USN JSF Military Construction	-	60.200	72.460	-	72.460	11.800	-	-	-	-	144.460
• MILCON: BA01: PE 207597F: JSF Military Construction	-	-	65.400	-	65.400	34.000	18.900	21.000	-	-	139.300
• RDT&E: BA07: PE 027142F: JSF Follow-on Development (FoD), BPAC 675346	3.000	24.477	110.428	-	110.428	243.520	311.476	334.116	340.093	Continuing	Continuing
• RDT&E: BA07: PE 0207142F: Dual Capable Aircraft (DCA), BPAC 676011	-	15.615	4.967	-	4.967	25.795	27.770	37.681	49.575	Continuing	Continuing
• International: International SDD	10.311	15.000	17.000	-	17.000	22.000	27.450	-	-	Continuing	Continuing
• International 3: International FoD	0.610	21.086	79.318	-	79.318	128.965	157.602	169.315	171.636	Continuing	Continuing
• OPAF: BA01: 821800: Joint Strike Fighter, PE 0207142F	1.431	4.463	3.858	-	3.858	2.333	2.374	2.415	-	Continuing	Continuing
• APN: BA05: BP0593: Modifications (CV), PE 204146N	29.950	20.502	68.527	-	68.527	47.294	50.707	17.214	17.484	Continuing	Continuing
• RDTE: BA05: PE 0604800F: JSF Deployability and Suitability Enhancements, BPAC 653832	16.200	32.593	71.461	-	71.461	-	-	-	-	-	134.421

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
--	--	---

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RD TEN: BA05: PE 604800M: <i>F-35B Sustainment/ Capability Enhancements (STOVL), BPAC 3350</i>	14.332	11.980	31.952	-	31.952	-	-	-	-	-	58.264
• RD TEN: BA05: PE 604800N, BPAC 3352: <i>F-35C Sustainment/ Capability Enhancements (CV)</i>	14.419	16.997	36.977	-	36.977	-	-	-	-	-	68.393
• RD TEN: BA05: PE 604810M: <i>F-35B Follow-on Development (STOVL), BPAC 2935</i>	-	10.399	59.265	-	59.265	120.028	157.257	168.502	171.946	Continuing	Continuing
• RD TEN: BA05 PE0604800N: <i>CVF-35 Follow-on-Development (CV) RDTE FoD CDD C261</i>	1.500	-	-	-	-	-	-	-	-	-	1.500
• APN: BA05: BP0592: <i>Modifications (STOVL), PE 204146M</i>	111.158	215.819	256.106	-	256.106	170.624	175.250	16.752	17.641	Continuing	Continuing
• RD TEN: BA05: PE 0604810N: <i>F-35C Follow-on Development (CV), BPAC 2936</i>	-	10.622	47.579	-	47.579	103.564	134.250	145.580	148.975	Continuing	Continuing
• APAF: BA05: F03500: <i>JSF Modifications, PE 20742F, BP11</i>	126.777	187.646	70.167	-	70.167	310.237	294.229	260.071	259.791	Continuing	Continuing
• RD TEN: BA05 PE0604800M: <i>CVF-35 Follow-on-Development (STOVL) RDTE FoD CDD C260</i>	1.500	-	-	-	-	-	-	-	-	-	-

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 and other International countries are participants in the SDD phase of JSF.

Note: The USAF/USN/USMC PROCUREMENT line include Aircraft Procurement and Advanced Procurement only. Initial Spares and Repair Parts for all Services are reflected in separate lines. International Partner Funding includes funds provided under the Italy and Netherlands Bilateral agreements.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</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 \$4,229,896.											

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	31,070.274	825.130	Dec 2013	673.983	Dec 2014	799.105	Dec 2015	-		799.105	1,065.949	34,434.441	27,535.632
Lockheed Martin - IDIQ D0022	SS/Various	Lockheed Martin : Ft. Worth, TX	27.025	0.120	Dec 2014	-		-		-		-	-	27.145	85.000
Lockheed Martin - IDIQ 0005	SS/Various	Lockheed Martin : Ft. Worth, TX	2.230	0.675	Dec 2013	1.200		-		-		-	-	4.105	-
Lockheed Martin - IDIQ D0009	SS/Various	Lockheed Martin : Ft. Worth, TX	16.759	-		-		-		-		-	-	16.759	68.500
Lockheed Martin - BOA	SS/Various	Lockheed Martin : Ft. Worth, TX	3.511	-		102.000		-		-		-	-	105.511	30.000
Lockheed Martin - LRIP 0003	SS/CPFF	Lockheed Martin : Ft. Worth, TX	0.000	-	Dec 2014	0.135		-		-		-	-	0.135	0.135
Pratt & Whitney - SDD	SS/CPAF	Pratt & Whitney : Hartford, CT	7,518.892	148.826	Dec 2013	195.378	Dec 2014	177.048	Dec 2015	-		177.048	55.381	8,095.525	6,810.646
Pratt & Whitney - Close Out Contract C0132	SS/CPFF	Pratt & Whitney : Hartford, CT	1.364	-		-		-		-		-	-	1.364	1.364
Pratt & Whitney - CDP Close Out Contract C0050	SS/CPAF	Pratt & Whitney : Hartford, CT	2.211	-		-		-		-		-	-	2.211	2.211
Pratt & Whitney - BOA	SS/CPFF	Pratt & Whitney : Hartford, CT	35.983	-		-		-		-		-	-	35.983	35.983
Pratt & Whitney - IDIQ	SS/Various	Pratt & Whitney : Hartford, CT	10.925	-		-		-		-		-	-	10.925	10.925
General Electric - SDD	SS/Various	FET : Cincinnati, OH	2,160.573	-		-		-		-		-	-	2,160.573	2,415.492
General Electric - IDIQ D0009	SS/Various	FET : Cincinnati, OH	0.264	-		-		-		-		-	-	0.264	0.264
General Electric - IDIQ D0074	SS/Various	FET : Cincinnati, OH	4.175	-		-		-		-		-	-	4.175	4.175
General Electric - F136 Transition	SS/CPFF	FET : Cincinnati, OH	100.400	-		-		-		-		-	-	100.400	100.400
General Electric - BOA	SS/Various	FET : Cincinnati, OH	5.548	-		-		-		-		-	-	5.548	5.548

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 - Phase IIIb	SS/CPAF	FET : Cincinnati, OH	382.753	-		-		-		-		-	-	382.753	382.750
Systems Engineering	Various	Various : Various,	380.697	18.473	Nov 2013	22.367	Nov 2014	22.646	Nov 2015	-		22.646	14.366	458.549	-
Subtotal			41,723.584	993.224		995.063		998.799		-		998.799	1,135.696	45,846.366	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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,	112.290	9.690	Nov 2013	7.712	Nov 2014	6.244	Nov 2015	-		6.244	6.752	142.688	-
AFLCMC/AFRL	Various	AFLCMC/AFRL : Various,	61.065	1.834	Nov 2013	1.927	Nov 2014	3.565	Nov 2015	-		3.565	1.228	69.619	-
Bolling AFB	Various	Bolling AFB : Washington, DC	6.775	-		-		-		-		-	-	6.775	-
DMEA	Various	DMEA : Wright Patterson, AFB, OH	5.630	-		-		-		-		-	-	5.630	-
ESC	Various	ESC : Various,	7.103	-		-		-		-		-	-	7.103	-
AFTOC/Fuel	Various	Various : Various,	155.502	16.158	Nov 2013	37.073	Dec 2014	20.115	Nov 2015	-		20.115	-	228.848	-
NADEP Jacksonville	Various	NADEP : Jacksonville, FL	9.525	-	Nov 2013	-		-		-		-	-	9.525	-
Miscellaneous	Various	Various : Various,	85.874	13.432	Nov 2013	28.843	Nov 2014	22.315	Nov 2015	-		22.315	19.245	169.709	-
NAWC China Lake	Various	NAWC WD : China Lake, CA	115.896	24.450	Nov 2013	17.306	Nov 2014	18.659	Nov 2015	-		18.659	11.536	187.847	-
NAWC TSD	Various	NAWC TSD : Orlando, FL	11.609	-		-		-		-		-	-	11.609	-
NAWC Patuxent River	Various	NAWC AD : Patuxent River, MD	344.363	24.711	Nov 2013	35.420	Nov 2013	27.994	Nov 2015	-		27.994	18.104	450.592	-
NSWC	Various	Various : Various,	3.813	-		-		-		-		-	-	3.813	-
SPAWAR	Various	Various : Various,	8.434	-		-		-		-		-	-	8.434	-
SBIR Technology Insertion Congressional Add	Various	Various : Various,	24.187	-		-		-		-		-	-	24.187	-
DFAS	Various	Various : Various,	0.000	-		-		-		-		-	-	-	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
--	--	---

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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			952.066	90.275		128.281		98.892		-		98.892	56.865	1,326.379	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	497.459	94.849	Nov 2013	128.007	Nov 2014	172.360	Nov 2015	-		172.360	-	892.675	-
NAWC China Lake	Various	NAWC WD : China Lake, CA	35.213	2.735	Nov 2013	2.383	Nov 2014	2.383	Nov 2015	-		2.383	2.383	45.097	-
Edwards AFB	Various	Edwards AFB : Edwards AFB, CA	484.744	64.769	Nov 2013	69.390	Nov 2014	73.535	Nov 2015	-		73.535	13.101	705.539	-
Other (including Classified PIDs)	Various	Various : Various,	112.744	57.117	Nov 2013	65.161	Nov 2014	55.204	Dec 2015	-		55.204	4.134	294.360	-
JITC	Various	JITC : Various,	0.000	-		-		-		-		-	-	-	-
WEPS/Eglin	Various	WEPS : Eglin AFB, FL	27.829	-		-		-		-		-	-	27.829	-
OT - AFOTEC/AFFTC	Various	OT AFOTEC/ AFFTC : Various,	129.427	28.601	Nov 2013	65.060	Nov 2014	35.600	Nov 2015	-		35.600	173.208	431.896	-
OT - JITC/OPTEV	Various	OT JITC/OPTEV : Various,	8.363	7.988	Nov 2013	20.709	Nov 2014	24.414	Nov 2015	-		24.414	15.565	77.039	-
Subtotal			1,295.779	256.059		350.710		363.496		-		363.496	208.391	2,474.435	-

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	10.938	1.021	Dec 2013	-	Dec 2014	-		-		-	-	11.959	18.731
Security - Mantech	C/FP	Mantech : Arlington, VA	65.899	9.000	Dec 2013	-	Dec 2014	-		-		-	-	74.899	94.474
Autolog - SEIT - DRC	C/CPFF	DRC : Arlington, VA	2.573	-		-		-		-		-	-	2.573	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
--	--	---

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Chief Engineer - First Principles	C/CPFF	First Principles : Arlington, VA	6.840	1.919	Dec 2013	2.000	Dec 2014	-		-		-	-	10.759	11.852
AFLCMC Civilian Pay	Various	AFLCMC : Wright Patterson AFB, OH	36.354	26.697	Oct 2013	27.994	Oct 2014	28.120	Oct 2015	-		28.120	17.418	136.583	-
OPS - Wyle	C/CPAF	Not specified. : ,	126.371	1.109		-		-		-		-	-	127.480	-
Operations - SAFTAS	C/CPAF	SAFTAS : Arlington, VA	142.970	-	Dec 2013	-		-		-		-	-	142.970	192.329
OPS- CGI BOSS	C/CPAF	TBD : Arlington, VA	202.077	14.009	Dec 2013	-		-		-		-	-	216.086	-
OPS-Jacobs BOSS	Various	TBD : Arlington, VA	0.000	6.208	Oct 2013	-		-		-		-	-	6.208	-
OPS- Allutiq/E3	C/CPAF	TBD : Arlington, VA	0.700	0.717	Nov 2013	0.727	Nov 2014	0.536	Nov 2015	-		0.536	1.705	4.385	-
OPS - Cost/FM/EV	Various	TBD : Arlington, VA	0.000	2.000	Nov 2013	-	Nov 2014	3.457	Nov 2015	-		3.457	7.193	12.650	-
Andrews AFB	Various	TBD : Camp Springs, MD	0.000	0.135	Nov 2013	1.494	Nov 2014	0.135	Nov 2015	-		0.135	0.270	2.034	-
GE F136 Congressional Studies	Various	Various : Various,	0.800	-		-		-		-		-	-	0.800	-
Facilities BOSS	C/CPAF	Varioous : Various,	11.079	6.514	Nov 2013	8.775		7.476	Nov 2015	-		7.476	16.818	50.662	-
CIO ODCs	C/CPAF	Various : Various,	2.767	4.126	Nov 2013	5.775		5.907	Nov 2015	-		5.907	6.779	25.354	-
Travel	C/CPAF	Various : Various,	17.501	1.327	Nov 2013	1.808	Nov 2014	1.870	Nov 2015	-		1.870	3.552	26.058	-
Subtotal			626.869	74.782		48.573		47.501		-		47.501	53.735	851.460	-

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Subtotals	44,598.298	1,414.340	1,522.627	1,508.688	-	1,508.688	1,454.687	50,498.640	-
Other Service Funding Adjustment	24,694.529	813.980	987.331	990.708	-	990.708	-	27,486.548	2,635.387
Project Cost Totals	19,903.769	600.360	535.296	517.980	-	517.980	1,454.687	50,498.640	-

Remarks
 NOTE 1: Prior Years reflect \$19,903.759M USAF/\$17,980.360M USN/\$1,802.784M USMC /\$4,911.395 International/Total \$44,598.298
 FY 2014 reflects \$600.360 USAF/\$409.421M USN/\$394.248M USMC/\$10.311M International/Total \$1,414.340M
 FY 2015 reflects \$535.296M USAF/\$485.263M USN/\$487.068M USMC/\$15.000M International/Total \$1,522.627M

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force	Date: February 2015
--	----------------------------

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
--	--	---

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
--	-------------	---------	---------	--------------	-------------	---------------	------------------	------------	--------------------------

FY 2016 reflects \$517.980M USAF/\$467.759 USN/\$505.949M USMC/\$17.000M International/Total \$1,508.688M

NOTE 2: R-2A/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

F-35 FoD includes:

- USAF: PE 0207142F BPAC 675346
- USN: FY13 PE 0604800N BPAC 2261
- USN: FY14 PE 0604800N BPAC 3353
- USN: FY15 PE 0604810N BPAC 2936
- USMC: FY13 PE 0604800M BPAC 2262
- USMC: FY14 PE 0604800M BPAC 3351
- USMC: FY15 PE 0604810M BPAC 2935

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
--	--	---

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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: STOVL Initial Operational Capability								■																				
Acquisition Milestones: CTOL Initial Operational Capability												■																
Acquisition Milestones: CV Initial Operational Capability																				■								
Test & Evaluation: Block 2B DT&E/Cert								■																				
Test & Evaluation: Block 3I DT&E/Cert								■																				
Test & Evaluation: Block 3F DT&E/Cert																■												
Test & Evaluation: Initial Operational Test and Evaluation (IOT&E)																												
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY14								■																				
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY15								■																				
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																												■

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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: STOVL Initial Operational Capability	4	2015	4	2015
Acquisition Milestones: CTOL Initial Operational Capability	4	2016	4	2016
Acquisition Milestones: CV Initial Operational Capability	4	2018	4	2018
Test & Evaluation: Block 2B DT&E/Cert	1	2015	3	2015
Test & Evaluation: Block 3I DT&E/Cert	2	2015	2	2016
Test & Evaluation: Block 3F DT&E/Cert	2	2017	1	2018
Test & Evaluation: Initial Operational Test and Evaluation (IOT&E)	3	2016	1	2019
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY14	4	2014	4	2014
Defense Acquisition Reviews: System Development Reviews: Interim Program Review (IPR) FY15	4	2015	4	2015
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
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	1	2016	2	2018

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604800F / F-35 - EMD	Project (Number/Name) 653831 / Joint Strike Fighter
--	--	---

Events	Start		End	
	Quarter	Year	Quarter	Year
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 10 Full Funding / Production / Delivery	2	2016	2	2019
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 11 Full Funding / Production / Delivery	2	2017	4	2020
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 12 Full Funding / Production / Delivery	2	2018	4	2020
Production Lots (Full Funding / Production / Delivery: U.S. Aircraft): LRIP 13 Full Funding / Production / Delivery	2	2019	4	2020

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
653832: JSF DEPLOYABILITY AND SUITABILITY ENHANCEMENT	14.167	16.200	32.593	71.461	-	71.461	-	-	-	-	-	134.421
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Total cost including United States Navy (USN), United States Marine Corps (USMC), and United States Air Force (USAF) funding is: FY14 \$44.951M, FY15 \$61.570M, and FY16 \$140.390M

R-2A table shown above reflect service funding only.

R-2A (section B)/R-3 displays total combined program (i.e. not Service-specific), including International partners.

In FY16, Project number 653832 JSF Deployability and Suitability Enhancement is expected to complete.

D&S Includes:

USAF PE 64800F 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 war-fighter 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. The annual funding contribution between the USN and USMC is approximately equal.

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.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p>Title: Sustainment and Capability Enhancements (F-35 JSF)</p> <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 2014 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. Funding incorporates provisions for future EW Sensor Capability.</p> <p>FY 2015 Plans: Conduct systems engineering, technology maturation, integration and test planning for Deployability and Suitability enhancements. Funding incorporates provisions for future EW Sensor Capability.</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>		30.477	42.236	121.797
<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 2014 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 2015 Plans: Continue 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>		11.846	14.745	14.417

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016
Continue SDD support efforts for airframe, air vehicle systems, mission systems, weapons integration, mission support, and autonomic logistics development activities.			
Title: Development Test and Evaluation	2.628	4.589	4.176
Description: Verification and testing for deployability and suitability enhancements.			
FY 2014 Accomplishments: Initiated verification of test articles, evaluation strategy and metrics in preparation for testing of deployability and suitability enhancements.			
FY 2015 Plans: Complete verification of test articles, evaluation strategy and metrics in preparation for testing of deployability and suitability enhancements.			
FY 2016 Plans: Complete verification of test articles, evaluation strategy and metrics in preparation for testing of deployability and suitability enhancements.			
Accomplishments/Planned Programs Subtotals	44.951	61.570	140.390
Other Service Funding Adjustment	28.751	28.977	68.929
Air Force Subtotals	16.200	32.593	71.461

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• RD TEN: BA05: PE 0604800N: JSF SDD (CV)	409.421	485.263	467.759	-	467.759	443.185	45.436	0.574	0.615	-	-
• RD TEN: BA05: PE 0604800M: JSF SDD (STOVL)	394.248	487.068	505.949	-	505.949	398.976	87.145	8.014	8.473	-	-
• APAF: BA01: ATA000: JSF CTOL, PE 0207142F, BP10	2,889.602	3,691.046	5,260.212	-	5,260.212	5,356.041	6,109.330	6,023.688	5,526.504	-	-
• APAF: BA01: Line Item # ATA000: JSF CTOL Advance Procurement, PE 0207142F, BP10 AP	339.533	291.880	460.260	-	460.260	528.560	522.180	497.720	506.000	19,787.624	24,451.221

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• APN: BA01: BP0147: JSF (CV), PE 204146N	1,028.415	848.552	897.542	-	897.542	848.056	1,217.562	1,496.303	1,606.088	32,734.961	51,085.532
• APN: BA01: BP0147C: JSF Advance Procurement (CV), PE 204146N	79.016	29.400	48.630	-	48.630	91.908	111.898	126.003	204.132	3,733.206	5,719.322
• APN: BA01: BP0152: JSF (STOVL), PE 204146M	1,172.248	1,184.410	1,483.414	-	1,483.414	2,049.754	2,713.087	2,796.129	2,810.155	26,147.806	43,146.851
• APN: BA01: BP0152C: JSF Advance Procurement (STOVL), PE 204146M	103.195	143.885	203.060	-	203.060	226.148	136.872	139.562	142.353	2,900.408	4,834.934
• International 2: JSF International Production	1,954.600	2,975.641	4,175.668	-	4,175.668	6,006.257	7,809.829	7,962.298	7,166.485	Continuing	Continuing
• OPN: USMC: F-35B Milcon	-	71.704	21.960	-	21.960	219.100	64.660	121.990	119.800	642.400	1,966.114
• OPN: BA03: BP4267: JSF Logistics Information Systems (ALIS), PE 204261N	3.389	-	-	-	-	-	-	-	-	-	19.105
• OPN: BA03 BP 902010: ALIS Spares and Repair Parts	1.010	1.576	2.946	-	2.946	1.948	1.940	1.957	1.995	Continuing	Continuing
• OPN: BA03 BP4268: Aviation Support Equipment ALIS Ship Alts	-	5.516	3.893	-	3.893	2.136	3.909	3.774	3.854	Continuing	Continuing
• APAF: BA06: ATA000: JSF Initial Spares	91.414	236.418	238.673	-	238.673	245.991	326.971	368.702	372.588	-	-
• APN: BA06:BP0605: Initial Spares (CV), PE 204146N	25.809	28.200	59.914	-	59.914	58.795	42.726	35.247	38.394	-	-
• RDTE: BA05: PE 0604800F: JSF SDD, BPAC 653831	600.360	535.296	517.980	-	517.980	323.446	114.595	5.291	5.365	-	-
• APN: BA06: BP0605: Initial Spares (STOVL), PE 204146M	88.304	64.194	111.569	-	111.569	76.703	29.756	100.362	136.763	-	-
• RDTE: BA05: PE 604810M: F-35B Follow-on Development (STOVL), BPAC 2935	-	10.399	59.265	-	59.265	120.028	157.257	168.502	171.946	Continuing	Continuing

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

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)

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTEB: BA05 PE:604800N: <i>F-35 RDTE FoD CDD (CV)</i>	1.500	-	-	-	-	-	-	-	-	-	-
• APN: BA05: BP0592: <i>Modifications (STOVL), PE 204146M</i>	111.158	215.819	256.106	-	256.106	170.624	175.250	16.752	17.641	Continuing	Continuing
• MILCON: BA01: PE 207142F: <i>JSF Military Construction</i>	56.000	66.700	132.850	-	132.850	124.000	-	-	-	1,328.000	2,238.050
• USN MILCON: BA01: <i>USN JSF MILCON</i>	-	60.200	72.460	-	72.460	11.800	-	-	-	-	144.460
• MILCON: BA01: PE 207597F: <i>JSF Military Construction</i>	-	-	65.400	-	65.400	34.000	18.900	21.000	-	-	139.300
• APAF: BA05: F03500: <i>JSF Modifications, PE 20742F, BP11</i>	126.777	187.646	70.167	-	70.167	310.237	294.229	260.071	259.791	Continuing	Continuing
• RDTE: BA07: PE 207142F: <i>JSF Follow-on Development (FoD), BPAC 675346</i>	3.000	24.477	110.428	-	110.428	243.520	311.476	334.116	340.093	Continuing	Continuing
• International: <i>International SDD</i>	10.311	15.000	17.000	-	17.000	22.000	27.450	-	-	Continuing	Continuing
• International 3: <i>International FoD</i>	0.610	21.086	79.318	-	79.318	128.965	157.602	169.315	171.636	Continuing	Continuing
• OPAF: BA01: 821800: <i>Joint Strike Fighter, PE 0207152F</i>	1.431	4.463	3.858	-	3.858	2.333	2.374	2.415	-	Continuing	Continuing
• RDTE:BA05: PE 604800M: <i>F-35B Sustainment/ Capability Enhancements (STOVL), BPAC 3350</i>	14.332	11.980	31.952	-	31.952	-	-	-	-	-	-
• RDTE: BA05: PE 604800N: <i>F-35C Sustainment/Capability Enhancements (CV), BPAC 3352</i>	14.419	16.997	36.977	-	36.977	-	-	-	-	-	68.393
• RDTE:BA05: PE 604810N: <i>F-35C Follow-on Development (CV, BPAC 2936)</i>	-	10.622	47.579	-	47.579	103.564	134.250	145.580	148.975	Continuing	Continuing
• RDTE:BA05 PE 0604800M: <i>CVF-35 Follow-on-Development (STOVL) RDTE FoD CDD C260</i>	1.500	-	-	-	-	-	-	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016	FY 2016	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	Cost To	
			Base	OCO	Total					Complete	Total Cost
• RDTE: BA07:PE 207142F: <i>Dual Capable Aircraft (DCA), BPAC 676011</i>	-	15.615	4.967	-	4.967	25.795	27.770	37.681	49.575	-	-
• APN: BA05: BP0593: <i>Modifications (CV), PE 204146N</i>	29.950	20.502	68.527	-	68.527	47.294	50.707	17.214	17.484	Continuing	Continuing

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 and other International countries are participants in the SDD phase of JSF.

Note: The USAF/USN/USMC PROCUREMENT line include Aircraft Procurement and Advanced Procurement only. Initial Spares and Repair Parts for all Services are reflected in separate lines. International Partner Funding 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 \$4,229,896.

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.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force												Date: February 2015				
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)								
3600 / 5				PE 0604800F / F-35 - EMD				653832 / JSF DEPLOYABILITY AND SUITABILITY ENHANCEMENT								
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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	
Prime LM Deployability & Suitability Enhancements	SS/CPAF	LM : Ft Worth, TX	0.000	30.837	Mar 2014	42.236	Mar 2015	121.797	Mar 2016	-		121.797	-	194.870	194.870	
Subtotal			0.000	30.837		42.236		121.797		-		121.797	-	194.870	194.870	
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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	
Development Support	TBD	Various : Various,	14.167	10.846	Mar 2014	13.745	Mar 2015	13.417	Mar 2016	-		13.417	-	52.175	-	
Subtotal			14.167	10.846		13.745		13.417		-		13.417	-	52.175	-	
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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	
Developmental Test & Evaluation	WR	Various : Various,	0.000	2.268	Jun 2014	4.589	Jun 2015	4.176	Jun 2016	-		4.176	-	11.033	-	
Subtotal			0.000	2.268		4.589		4.176		-		4.176	-	11.033	-	
Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total				
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Program Support	Various	Various : Various,	0.000	1.000	Dec 2013	1.000	Dec 2014	1.000	Dec 2015	-		1.000	-	3.000	-	
Subtotal			0.000	1.000		1.000		1.000		-		1.000	-	3.000	-	
Cost Category Subtotals			14.167	44.951		61.570		140.390		-		140.390	-	261.078	-	
Other Service Funding Adjustment			0.000	28.751		28.977		68.929		-		68.929	-	126.657	-	

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force							Date: February 2015				
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				
	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals	14.167	16.200	32.593	71.461	-	71.461	-	134.421	-		

Remarks
 NOTE: Prior Years reflect \$14.167 USAF/Total \$14.167
 FY 2014 reflects \$16.200M USAF/\$14.419M USN/\$14.332M USMC/\$0.000M International/Total \$44.951M
 FY 2015 reflects \$32.593M USAF/\$16.997M USN/\$11.980M USMC/\$0.000M International/Total \$61.570M
 FY 2016 reflects \$71.461M USAF/\$36.977M USN/\$31.952M USMC/\$0.000M International/Total \$140.390M
 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

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
ALIS Security Architecture Contract Award	3	2016	3	2016
Deployment and Suitability Enhancement Efforts	3	2014	4	2016

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0604851F / <i>Intercontinental Ballistic Missile - EMD</i>
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	118.504	-	-	-	-	-	-	-	-	-	118.504
655037: <i>Support Equipment</i>	-	82.988	-	-	-	-	-	-	-	-	-	82.988
655081: <i>ICBM Crypto</i>	-	35.516	-	-	-	-	-	-	-	-	-	35.516

Note

In FY 2015, Project 655037, Support Equipment, efforts were transferred to PE 0101213F, Minuteman Squadrons, Project 672985, MM Support Equip, and Project 672984, MM III Baseline Support in order to consolidate ICBM investment activities under a common PE.

In FY 2015, Project 655081, ICBM Crypto, efforts were transferred to PE 0101213F, Minuteman Squadrons, Project 672986, MM Crypto Mods in order to consolidate ICBM investment activities under a common PE.

A. Mission Description and Budget Item Justification

Intercontinental Ballistic Missile (ICBM) Engineering and Manufacturing Development (EMD) efforts will ensure the extension of the operational life of the Minuteman III ICBM weapon system through 2030.

The Support Equipment program designs, develops, and tests replacement of obsolete/non-serviceable weapon system support and flight test equipment. The efforts include design, development, and testing of support equipment such as Reentry Field Support Equipment (RFSE), Code System Media (CSM), Payload Transporter Replacement (PTR), Higher Authority Command/Rapid Message Processing Element (HAC/RMPE) Message Generator, Strategic Targeting Application Computer System (STACS), and Transporter Erector Replacement Program (TERP). In FY15, efforts listed above in PE 0604851F, Intercontinental Ballistic Missile - EMD, Project 655037, Support Equipment were included in PE 0101213F, Minuteman Squadrons, Project 672985, MM Support Equip.

Efforts also include the design, development, and testing of replacement flight test equipment necessary to conduct Operational Test Launches (OTLs) and ICBM Fuze Modernization flight tests such as the Instrumentation Wafer Replacement Program (IWRP). OTLs are required by USSTRATCOM and the Department of Energy to determine continuing reliability and effectiveness of the ICBM weapon system. Beginning in FY 2016, IWRP efforts previously included in PE 0604851F, Intercontinental Ballistic Missile - EMD, Project 655037, Support Equipment were combined with the Flight Destruct System and Launch Support System and included in PE 0101213F, Minuteman Squadrons, Project 672984, MM III Baseline Support as the Flight Test Telemetry and Termination System (FT3).

Intercontinental Ballistic Missile (ICBM) Cryptography Upgrade Increment II (ICU II) executes USSTRATCOM, Air Force Global Strike Command (AFGSC), and Nuclear Weapon Safety Center (NWSC) requirements by implementing the KS-60 capabilities of remote key/code change and irreversible transformation as mandated in the approved Capabilities Development Document (CDD) dated 4 January 2005 and addresses Nuclear Weapon System Safety Group Operational Safety Review (NWSSG OSR) requirements 98-2, 00-1 and 02-2. It also incorporates continuous signal lockout capabilities to prevent the widespread loss of status monitoring. These features will greatly increase security during code changes by reducing the frequency of open sites 75 days annually and will reduce associated resource costs for 450 launch

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 0604851F / <i>Intercontinental Ballistic Missile - EMD</i>
---	---

facilities (LF) and 45 launch control centers (LCC). In FY 2015, ICU II effort previously included in PE 0604851, Intercontinental Ballistic Missile - EMD, Project 655081, ICBM Crypto were included in PE 0101213F, Minuteman Squadrons, Project 672986, MM Crypto Mods.

This program is 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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	112.760	-	0.001	-	0.001
Current President's Budget	118.504	-	-	-	-
Total Adjustments	5.744	-	-0.001	-	-0.001
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	5.744	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-0.001	-	-0.001

Change Summary Explanation

FY 2014 reflects an increase of \$5.744M for Payload Transporter Replacement.

FY 2016 reflects a decrease of \$0.001M to correct an administrative error.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604851F / <i>Intercontinental Ballistic Missile - EMD</i>	Project (Number/Name) 655037 / <i>Support Equipment</i>
--	---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
655037: <i>Support Equipment</i>	-	82.988	-	-	-	-	-	-	-	-	-	82.988
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2015, Project 655037, Support Equipment, efforts were transferred to PE 0101213F, Minuteman Squadrons, Project 672985, MM Support Equip, and Project 672984, MM III Baseline Support in order to consolidate ICBM investment activities under a common PE.

A. Mission Description and Budget Item Justification

The Support Equipment program designs, develops, and tests replacement of obsolete/non-serviceable weapon system support and flight test equipment. The efforts include design, development, and testing of support equipment such as Reentry Field Support Equipment (RFSE), Code System Media (CSM), Payload Transporter Replacement (PTR), Higher Authority Command/Rapid Message Processing Element (HAC/RMPE) Message Generator, Strategic Targeting Application Computer System (STACS), and Transporter Erector Replacement Program (TERP). In FY15, efforts listed above in PE 0604851F, Intercontinental Ballistic Missile - EMD, Project 655037, Support Equipment were included in PE 0101213F, Minuteman Squadrons, Project 672985, MM Support Equip.

Efforts also include the design, development, and testing of replacement flight test equipment necessary to conduct Operational Test Launches (OTLs) and ICBM Fuze Modernization flight tests such as the Instrumentation Wafer Replacement Program (IWRP) and the Signal Conditioner Monitor (SCM) replacement program. OTLs are required by USSTRATCOM and the Department of Energy to determine continuing reliability and effectiveness of the ICBM weapon system. In FY 2015, IWRP and SCM efforts previously included in PE 0604851F, Intercontinental Ballistic Missile - EMD, Project 655037, Support Equipment were combined into one program and included in PE 0101213F, Minuteman Squadrons, Project 672984, MM III Baseline Support as the Instrumentation Wafer Replacement Program.

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

	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Reentry Field Support Equipment (RFSE)	33.421	-	-	-	-
Description: Design and develop the RFSE to replace the current reentry system test set. RFSE will increase the Mean Time Between Failure, eliminate unneeded Mk12 functions, and add new Mk21 functions. It will provide capability to meet Department of Energy mandated Limited Life Component warhead swaps and to test electrical continuity during buildup of Minuteman III reentry systems.					
FY 2014 Accomplishments:					
- Continued design, development, fabrication and testing of RFSE units.					
- Conducted Functional Configuration Audit (FCA) and Physical Configuration Audit (PCA).					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604851F / <i>Intercontinental Ballistic Missile - EMD</i>	Project (Number/Name) 655037 / <i>Support Equipment</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
<p>- Delivered first Engineering and Manufacturing Development unit.</p> <p>FY 2015 Plans: Reflected in PE 0101213F, Minuteman Squadrons, Project 672985, MM Support Equip.</p> <p>FY 2016 Base Plans: Reflected in PE 0101213F, Minuteman Squadrons, Project 672985, MM Support Equip.</p> <p>FY 2016 OCO Plans: N/A</p>					
<p>Title: Code System Media (CSM)</p> <p>Description: The CSM program supports the replacement of obsolete tape cartridges with more modern and available magnetic media. Segment #1, responsible for providing software to accept National Security Agency (NSA) codes, Operations Plan (OPLAN) changes and software updates on compact disk (CD), has been completed. Segment #2 will provide software and hardware necessary to import all other data on CD and produce Wing Codes Processing System products on CD. Segment #2 will also replace the Cartridge Transfer Unit (CTU) with the Data Transfer Unit (DTU). CSM effectively supports the replacement of aging media required to transport and handle mission essential codes and data throughout the ICBM weapon system. The shelf life of the current stock of DC300 tape cartridges and 9-track tapes expires in 2015. CSM delivers the capability to load codes/software on Minuteman III ICBMs through 2030 and is critical to code change activities.</p> <p>FY 2014 Accomplishments:</p> <ul style="list-style-type: none"> - Continued design, development, fabrication and testing of CSM software. - Conducted Segment #2 configuration audits. - Received deployment authorization for Segment #2. - Continued NSCCA activities and design, development, and testing of DTU. <p>FY 2015 Plans: Reflected in PE 0101213F, Minuteman Squadrons, Project 672985, MM Support Equip.</p> <p>FY 2016 Base Plans: Reflected in PE 0101213F, Minuteman Squadrons, Project 672985, MM Support Equip.</p> <p>FY 2016 OCO Plans:</p>	10.826	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604851F / <i>Intercontinental Ballistic Missile - EMD</i>	Project (Number/Name) 655037 / <i>Support Equipment</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
N/A					
<p>Title: Payload Transporter Replacement (PTR)</p> <p>Description: Designs and develops the capabilities necessary to replace the current Payload Transporter (PT) tractor and trailer, mitigating emerging threat technologies and methods. The PT emplaces, extracts, and transports the Minuteman III Reentry System (RS), Propulsion System Rocket Engine (PSRE), and Missile Guidance Set (MGS). The new PT design increases safety and security during transport activities and improves maintenance operations.</p> <p>FY 2014 Accomplishments:</p> <ul style="list-style-type: none"> - Continued design, development, fabrication and testing of PTR. - Conducted a successful Critical Design Review (CDR) for the tractor and trailer components. <p>FY 2015 Plans:</p> <p>Reflected in PE 0101213F, Minuteman Squadrons, Project 672985, MM Support Equip.</p> <p>FY 2016 Base Plans:</p> <p>Reflected in PE 0101213F, Minuteman Squadrons, Project 672985, MM Support Equip.</p> <p>FY 2016 OCO Plans:</p> <p>N/A</p>	16.813	-	-	-	-
<p>Title: Higher Authority Command/Rapid Message Processing Element (HAC/RMPE) Message Generator</p> <p>Description: Designs and develops the replacement for the Higher Authority Command/Rapid Message Processing Element (HAC/RMPE) Message Generator due to obsolescence and unavailability for repair. The Message Generator is required to test and maintain the HAC/RMPE capability to receive, process and handle command and emergency action messages for MM III command and control. This program will replace the test support equipment with a modern, sustainable common platform and standard interfaces.</p> <p>FY 2014 Accomplishments:</p> <ul style="list-style-type: none"> - Completed design, development, fabrication and testing of HAC/RMPE Message Generator. - Conducted a Test Readiness Review (TRR), Formal Qualification Test (FQT), and FCA/PCA. <p>FY 2015 Plans:</p>	1.000	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force				Date: February 2015	
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 0604851F / <i>Intercontinental Ballistic Missile - EMD</i>		Project (Number/Name) 655037 / <i>Support Equipment</i>	
B. Accomplishments/Planned Programs (\$ in Millions)					
Reflected in PE 0101213F, Minuteman Squadrons, Project 672985, MM Support Equip.					
FY 2016 Base Plans: Reflected in PE 0101213F, Minuteman Squadrons, Project 672985, MM Support Equip.					
FY 2016 OCO Plans: N/A					
Title: Strategic Targeting Applications Computer System (STACS)					
Description: Design and develop a replacement for the STACS hardware, software and tape cartridge media which are becoming obsolete and unsupported. STACS will provide new targeting computer equipment and software, and CD media for data import and export. STACS enables USSTRATCOM required OPLAN changes and updates to ICBM missile wings for execution.					
FY 2014 Accomplishments: - Continued design and development activities. - Conducted a successful CDR.					
FY 2015 Plans: Reflected in PE 0101213F, Minuteman Squadrons, Project 672985, MM Support Equip.					
FY 2016 Base Plans: Reflected in PE 0101213F, Minuteman Squadrons, Project 672985, MM Support Equip.					
FY 2016 OCO Plans: N/A					
Title: Transporter Erector Replacement Program (TERP)					
Description: Design and develop the capabilities necessary to replace the current transporter erector (TE). The TE is used to emplace, extract and transport MM III boosters to and from the launch facilities. TERP will update existing drawings, specifications and technical orders to eliminate parts obsolescence and address intended usage through 2030 and will qualify the new system prior to production.					
FY 2014 Accomplishments: - Continued design, development, fabrication and testing of replacement TE.					
	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
	4.300	-	-	-	-
	14.081	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force				Date: February 2015		
Appropriation/Budget Activity 3600 / 5		R-1 Program Element (Number/Name) PE 0604851F / <i>Intercontinental Ballistic Missile - EMD</i>		Project (Number/Name) 655037 / <i>Support Equipment</i>		
B. Accomplishments/Planned Programs (\$ in Millions)						
- Conducted successful CDR and began first article build.						
FY 2015 Plans: Reflected in PE 0101213F, Minuteman Squadrons, Project 672985, MM Support Equip.						
FY 2016 Base Plans: Reflected in PE 0101213F, Minuteman Squadrons, Project 672985, MM Support Equip.						
FY 2016 OCO Plans: N/A						
Title: Instrumentation Wafer Replacement Program (IWRP)						
Description: Design and develop a replacement for the Mod 7 Instrumentation Wafer and associated signal conditioner monitor. The instrumentation wafer transmits missile performance telemetry and position data and receives command destruct messages during missile flight tests and evaluations. The Signal Conditioner Monitor (SCM), Missile Discrete Monitor and associated cabling capture Reentry System performance data during OTLs IWRP is needed to mitigate the risk of postponing MM III test launches due to parts obsolescence, asset depletion, 30th Space Wing Range Safety requirement deficiencies, and multiple failures of the Mod 7 Instrumentation Wafer System.						
FY 2014 Accomplishments: - Began design, development, fabrication and test of the replacement wafer, determined specific Commercial Off-the-Shelf components and reviewed all Range Safety requirements. - Began design, development, fabrication and test of the SCM replacement components.						
FY 2015 Plans: Reflected in PE 0101213F, Minuteman Squadrons, Project 672984, MM III Baseline Support.						
FY 2016 Base Plans: Reflected in PE 0101213F, Minuteman Squadrons, Project 672985, MM Support Equip.						
FY 2016 OCO Plans: N/A						
Accomplishments/Planned Programs Subtotals						
		2.547	-	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604851F / <i>Intercontinental Ballistic Missile - EMD</i>	Project (Number/Name) 655037 / <i>Support Equipment</i>

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

Line Item	FY 2014	FY 2015	FY 2016	FY 2016	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	Cost To	
			Base	OCO	Total					Complete	Total Cost
• RDTE: BA07: 0101213F: <i>Minuteman Squadrons</i>	-	52.985	32.484	-	32.484	25.324	26.656	15.172	-	-	152.893
• MPAF: BA05: Line Item # 00099L: <i>Missile Replacement Equipment - Ballistic</i>	-	65.568	72.583	-	72.583	54.744	57.770	42.213	31.590	Continuing	Continuing
• MPAF: BA03: Line Item # M30MLG: <i>Minuteman Modification</i>	-	-	7.689	-	7.689	41.674	3.247	-	-	-	-

Remarks

Project 655037, Support Equipment, is related to the majority of RDT&E and MPAF funding in Other Program Funding Summary. Small portion of funding pertains to the other programs that were included as part of the new bundling of efforts with the IWRP effort in the FY16 PB.

D. Acquisition Strategy

Support and test equipment replacement efforts are reviewed to determine the best method for execution including vendor qualification and procurement with no development required, develop and/or modification with organic depot capabilities or development with industry. Industry development efforts started before FY13 are predominately executed through the ICBM Prime Integration Contract (IPIC) using Cost Plus Incentive Fee (CPIF) contract addendums. Industry development efforts starting in FY13 will be executed through contracts available under the Future ICBM Acquisition and Sustainment Construct (FISAC) or competitive source selections. NSCCA and IV&V efforts are contracted separately under a Cost Plus Award Fee (CPAF) 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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604851F / <i>Intercontinental Ballistic Missile - EMD</i>	Project (Number/Name) 655037 / <i>Support Equipment</i>
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ICBM Prime Integration Contract	SS/CPHF	Northrop Grumman Mission Systems : Clearfield, UT	-	57.691	Apr 2014	-		-		-		-	Continuing	Continuing	-
TERP EMD	C/CPHF	DRS Environmental Systems, Inc. : Florence, KY	-	12.784	Dec 2013	-		-		-		-	Continuing	Continuing	-
Subtotal			-	70.475		-		-		-		-	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Nuclear Surety Cross-Check Analysis	SS/CPAF	Northrop Grumman IT : Mclean, VA	-	1.845	Feb 2014	-		-		-		-	Continuing	Continuing	-
Financial Management/ Cost Estimation	C/CPFF	Tecolote : Salt Lake City, UT	-	1.071	Mar 2015	-		-		-		-	Continuing	Continuing	-
Subtotal			-	2.916		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Independent Validation and Verification	SS/CPAF	Northrop Grumman IT : Mclean, VA	-	0.249	Dec 2013	-		-		-		-	Continuing	Continuing	-
Subtotal			-	0.249		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 - Contractor Support	Various	Various : ,	-	8.929	Jul 2014	-		-		-		-	Continuing	Continuing	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604851F / <i>Intercontinental Ballistic Missile - EMD</i>	Project (Number/Name) 655037 / <i>Support Equipment</i>

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020					
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
CSM Engineering and Manufacturing Development Phase	████████████████																													
CSM FCA (Nov 2013)	██																													
CSM Milestone C (May 2015)					██																									
CSM Production and Deployment Phase					████████████████																									
CSM IOC (Nov 2015)									██																					
CSM FOC (May 2016)									██																					
RFSE Engineering and Manufacturing Development Phase	████████████████																													
RFSE FCA (May 2014)			██																											
RFSE PCA (Aug 2014)				██																										
RFSE Milestone C (Jun 2015)					██																									
RFSE Production and Deployment Phase					████████████████																									
RFSE IOC (May 2016)									██																					
RFSE FOC (Feb 2017)													██																	
PTR Engineering and Manufacturing Development Phase	████████████████																													
PTR Tractor CDR (Feb 2014)	██																													
PTR Trailer CDR (Aug 2014)				██																										
PTR FCA (Feb 2016)									██																					
PTR Milestone C (May 2016)									██																					
PTR PCA (Jun 2016)									██																					
PTR Production and Deployment Phase									████████████████				████████████████																	
PTR IOC (Aug 2017)													██																	
PTR FOC (Sep 2020)																													██	

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604851F / <i>Intercontinental Ballistic Missile - EMD</i>	Project (Number/Name) 655037 / <i>Support Equipment</i>
--	---	---

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
HAC/RMPE FCA/PCA			■																									
STACS Engineering and Manufacturing Development Phase	■	■	■	■	■	■	■	■																				
STACS FCA/PCA (Aug 2014)				■																								
STACS FOC (Feb 2015)							■																					
TERP Engineering and Manufacturing Development Phase	■	■	■	■	■	■	■	■	■	■	■	■																
TERP CDR (Feb 2014)		■																										
TERP FCA (Mar 2015)							■																					
TERP Milestone C (May 2015)								■																				
TERP PCA (Jun 2015)								■																				
TERP Production and Deployment Phase									■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
TERP IOC (Feb 2016)											■																	
TERP FOC (Aug 2019)																											■	
IWRP PDR (Nov 2015)											■																	
IWRP Milestone B (Feb 2016)												■																
IWRP Engineering and Manufacturing Development Phase													■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
IWRP CDR (Feb 2017)															■													
IWRP Milestone C (Sep 2017)																■												
IWRP Production and Deployment Phase																	■	■	■	■	■	■	■	■	■	■	■	■
IWRP FCA (Mar 2018)																				■								
IWRP PCA (Aug 2018)																								■				
IWRP IOC (Sep 2019)																											■	

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604851F / <i>Intercontinental Ballistic Missile - EMD</i>	Project (Number/Name) 655037 / <i>Support Equipment</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
CSM Engineering and Manufacturing Development Phase	1	2014	4	2015
CSM FCA (Nov 2013)	1	2014	1	2014
CSM Milestone C (May 2015)	3	2015	3	2015
CSM Production and Deployment Phase	3	2015	3	2016
CSM IOC (Nov 2015)	1	2016	1	2016
CSM FOC (May 2016)	3	2016	3	2016
RFSE Engineering and Manufacturing Development Phase	1	2014	2	2016
RFSE FCA (May 2014)	3	2014	3	2014
RFSE PCA (Aug 2014)	4	2014	4	2014
RFSE Milestone C (Jun 2015)	3	2015	3	2015
RFSE Production and Deployment Phase	2	2015	2	2017
RFSE IOC (May 2016)	3	2016	3	2016
RFSE FOC (Feb 2017)	3	2017	3	2017
PTR Engineering and Manufacturing Development Phase	1	2014	4	2016
PTR Tractor CDR (Feb 2014)	2	2014	2	2014
PTR Trailer CDR (Aug 2014)	4	2014	4	2014
PTR FCA (Feb 2016)	2	2016	2	2016
PTR Milestone C (May 2016)	3	2016	3	2016
PTR PCA (Jun 2016)	3	2016	3	2016
PTR Production and Deployment Phase	3	2016	4	2020
PTR IOC (Aug 2017)	4	2017	4	2017
PTR FOC (Sep 2020)	4	2020	4	2020

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604851F / <i>Intercontinental Ballistic Missile - EMD</i>	Project (Number/Name) 655037 / <i>Support Equipment</i>
--	---	---

Events	Start		End	
	Quarter	Year	Quarter	Year
HAC/RMPE FCA/PCA	3	2014	3	2014
STACS Engineering and Manufacturing Development Phase	1	2014	2	2015
STACS FCA/PCA (Aug 2014)	4	2014	4	2014
STACS FOC (Feb 2015)	2	2015	2	2015
TERP Engineering and Manufacturing Development Phase	1	2014	4	2015
TERP CDR (Feb 2014)	2	2014	2	2014
TERP FCA (Mar 2015)	2	2015	2	2015
TERP Milestone C (May 2015)	3	2015	3	2015
TERP PCA (Jun 2015)	3	2015	3	2015
TERP Production and Deployment Phase	3	2015	4	2019
TERP IOC (Feb 2016)	2	2016	2	2016
TERP FOC (Aug 2019)	4	2019	4	2019
IWRP PDR (Nov 2015)	1	2016	1	2016
IWRP Milestone B (Feb 2016)	2	2016	2	2016
IWRP Engineering and Manufacturing Development Phase	2	2016	2	2019
IWRP CDR (Feb 2017)	2	2017	2	2017
IWRP Milestone C (Sep 2017)	4	2017	4	2017
IWRP Production and Deployment Phase	4	2017	4	2020
IWRP FCA (Mar 2018)	2	2018	2	2018
IWRP PCA (Aug 2018)	4	2018	4	2018
IWRP IOC (Sep 2019)	4	2019	4	2019

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604851F / <i>Intercontinental Ballistic Missile - EMD</i>	Project (Number/Name) 655081 / <i>ICBM Crypto</i>
--	---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
655081: <i>ICBM Crypto</i>	-	35.516	-	-	-	-	-	-	-	-	-	35.516
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2015, Project 655081, ICBM Crypto, efforts were transferred to PE 0101213F, Minuteman Squadrons, Project 672986, MM Crypto Mods in order to consolidate ICBM investment activities under a common PE.

A. Mission Description and Budget Item Justification

Intercontinental Ballistic Missile (ICBM) Cryptography Upgrade Increment II (ICU II) executes USSTRATCOM, Air Force Global Strike Command (AFGSC), and Nuclear Weapon Safety Center (NWSC) requirements by implementing the KS-60 capabilities of remote key/code change and irreversible transformation as mandated in the approved Capabilities Development Document (CDD) dated 4 January 2005 and addresses Nuclear Weapon System Safety Group Operational Safety Review (NWSSG OSR) requirements 98-2, 00-1 and 02-2. It also incorporates continuous signal lockout capabilities to prevent the widespread loss of status monitoring. These features will greatly increase security during code changes by reducing the frequency of open sites 75 days annually and will reduce associated resource costs for 450 launch facilities (LFs) and 45 launch control centers (LCCs).

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

	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: ICBM Crypto Upgrade Increment II (ICU II)	35.516	-	-	-	-
Description: ICBM Cryptography Upgrade II completes design and development, implements KS-60 remote key/code change, irreversible transformation capabilities, and prevents continuous signal lockout.					
FY 2014 Accomplishments:					
- Continued A4 Drawer development and conducted the Critical Design Review (CDR) and Test Readiness Review (TRR).					
- Began qualification testing of the system and continued software development.					
- Conducted hardware and software Developmental Test and Evaluation and continued development of trainer modifications.					
- Completed NSCCA/PATE activities for nuclear surety and safety.					
FY 2015 Plans:					
Reflected in PE 0101213F, Minuteman Squadrons, Project 672986, MM Crypto Mods.					
FY 2016 Base Plans:					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604851F / <i>Intercontinental Ballistic Missile - EMD</i>	Project (Number/Name) 655081 / <i>ICBM Crypto</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Reflected in PE 0101213F, Minuteman Squadrons, Project 672986, MM Crypto Mods. FY 2016 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	35.516	-	-	-	-

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• RDTE: BA 07: PE 0101213F: <i>Minuteman Squadrons</i>	-	36.672	32.845	-	32.845	-	-	-	-	-	-
• MPAF: BA 03: Line Item # M30MLG: <i>Minuteman III Modifications</i>	-	-	-	-	-	53.820	7.516	20.192	17.701	-	-
• MPAF: BA 05: Line Item # M30MLG2: <i>Minuteman III Support Equipment</i>	-	-	-	-	-	1.849	5.774	0.189	-	-	-

Remarks
Project 6055081, ICBM Crypto, is related to the RDT&E and MPAF funding in Other Program Funding Summary.

D. Acquisition Strategy
The ICBM Cryptography Upgrade (ICU) II Program utilizes the ICBM Prime Integration Contract (IPIC), which was competitively awarded, for the design and development of the ICU II capability. The contract type of the ICU II Engineering and Manufacturing Development (EMD) Contract is Cost Plus Incentive Fee. Also, ICU II EMD uses a separate contract for Nuclear Surety Cross Check Analysis/Performance Analysis and Technical Evaluation (NSCCA/PATE) Independent Validation & Verification (IV&V). The contract type is Cost Plus Fixed Fee. This contract is driven by critical nuclear surety requirements to perform an independent assessment of all modifications to nuclear-certified software.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604851F / <i>Intercontinental Ballistic Missile - EMD</i>	Project (Number/Name) 655081 / <i>ICBM Crypto</i>
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
ICBM Prime Integration Contract	SS/CPPIF	Northrop Grumman : Clearfield, UT	-	32.085	Apr 2014	-		-		-		-	Continuing	Continuing	-
Subtotal			-	32.085		-		-		-		-	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering Support	MIPR	Navy Crane : Crane, IN	-	1.318	Dec 2013	-		-		-		-	Continuing	Continuing	-
Cost Estimation	C/CPFF	Tecolote : Salt Lake City, UT	-	0.200	Mar 2014	-		-		-		-	Continuing	Continuing	-
Subtotal			-	1.518		-		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
NSSCA/PATE	C/CPFF	Northrop Grumman : Clearfield, UT	-	1.080	Jun 2014	-		-		-		-	Continuing	Continuing	-
Hardness Test	Various	Various : ,	-	0.146	Aug 2014	-		-		-		-	Continuing	Continuing	-
Subtotal			-	1.226		-		-		-		-	-	-	-

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 - Government Costs	Various	ICBM Program Office : Hill AFB, UT	-	0.687	Jan 2014	-		-		-		-	Continuing	Continuing	-
Subtotal			-	0.687		-		-		-		-	-	-	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force							Date: February 2015				
Appropriation/Budget Activity 3600 / 5			R-1 Program Element (Number/Name) PE 0604851F / <i>Intercontinental Ballistic Missile - EMD</i>				Project (Number/Name) 655081 / <i>ICBM Crypto</i>				
	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract		
Project Cost Totals	-	35.516	-	-	-	-	-	-	-		

Remarks

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604851F / <i>Intercontinental Ballistic Missile - EMD</i>	Project (Number/Name) 655081 / <i>ICBM Crypto</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
ICU II Engineering and Manufacturing Development Phase	1	2014	4	2017
ICU II CDR - A4 Drawer (Apr 2014)	3	2014	3	2014
ICU II TRR - FPGA (Nov 2014)	1	2015	1	2015
ICU II Weapon System Test I - Software (May 2015)	3	2015	3	2015
ICU II TRR - ASIC (Feb 2016)	2	2016	2	2016
ICU II Weapon System Test II (May 2016)	3	2016	3	2016
ICU II Milestone C (Jun 2017)	3	2017	3	2017
ICU II Production and Deployment Phase	3	2017	2	2020
ICU II FCA/PCA (Aug 2017)	4	2017	4	2017
ICU II IOC (May 2018)	3	2018	3	2018
ICU II FOC (Jun 2020)	3	2020	3	2020

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	1,613.062	19.431	225.600	84.438	-	84.438	59.528	49.589	49.581	49.575	-	2,150.804
650004: <i>Evolved Expendable Launch Vehicle</i>	1,613.062	19.431	5.600	-	-	-	-	-	-	-	-	1,638.093
650006: <i>Next Generation Liquid Rocket Engine</i>	0.000	-	220.000	84.438	-	84.438	59.528	49.589	49.581	49.575	-	512.711

MDAP/MAIS Code: 176

Note

In FY 2015, Project 650006, Next Generation Liquid Rocket Engine, includes new start efforts for Evolved Expendable Launch Vehicle (EELV)

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 National Launch Forecast requirements through 2030.

The FY2015 National Defense appropriations Act and the FY15 DoD Appropriations Act added \$220M to begin a rocket propulsion system development program to mitigate reliance on the Russian RD-180 engine used on the Atlas V launch system. In FY2016, the Department of Defense will build off the FY15 efforts and fund a program to invest in the development of new or upgraded domestic launch systems via a shared investment approach with domestic launch providers. The end goal of these investment are two or more domestic, commercially-viable launch providers that also meet NSS requirement.

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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	24.938	-	-	-	-
Current President's Budget	19.431	225.600	84.438	-	84.438
Total Adjustments	-5.507	225.600	84.438	-	84.438
• Congressional General Reductions	-	-0.400			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	226.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.504	-			
• SBIR/STTR Transfer	-5.003	-			
• Other Adjustments	-	-	84.438	-	84.438

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 Liquid Rocket Engine*

Congressional Add: *Rocket Propulsion System Technical Maturation and Risk Reduction*

Congressional Add Subtotals for Project: 650006

Congressional Add Totals for all Projects

	FY 2014	FY 2015
	-	5.600
	-	5.600
	-	220.000
	-	220.000
	-	225.600

Change Summary Explanation

FY15: +\$6 million congressional add for commercial spaceports or launch and range complexes to develop the capacity to provide mid-to-low inclination orbits or polar-to-high inclination orbits in support of the national security space program; +\$220M Congressional add for rocket propulsion program development. -\$0.4M FFRDC reduction.

FY16: \$84.4M domestic launch system development.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

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
--	---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
650004: Evolved Expendable Launch Vehicle	1,613.062	19.431	5.600	-	-	-	-	-	-	-	-	1,638.093
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 funds research to develop new engine possibilities, propulsion development, completion of the secondary payload adaptor standard service, and special studies (to include but not limited to RD180 engine replacement, alternative manufacturing process, industrial base studies and other related support activities).

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

	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: EELV Pre-planned product improvement (P3I) and Special Studies	19.431	-	-	-	-
Description: Funded EELV product improvements, replacement components, system enhancements, and special studies to allow EELV to meet National Launch Forecast requirements through 2030.					
FY 2014 Accomplishments: Continue P3I efforts to include but not limited to the completion of secondary payload standard service, research to develop new engine possibilities and propulsion development. Conduct special studies (to include but not limited to RD180 engine replacement, alternative manufacturing process, industrial base and other related support activities).					
FY 2015 Plans: Space Launch Range services and capability					
FY 2016 Base Plans: N/A					
Accomplishments/Planned Programs Subtotals	19.431	-	-	-	-

	FY 2014	FY 2015
Congressional Add: Space Launch Range services and capability	-	5.600

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015
FY 2014 Accomplishments: N/A		
FY 2015 Plans: Develop 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	-	5.600

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• SPAF: BA01 Line Item # MSEELV: <i>Evolved Expendable Launch Veh (Space)</i>	-	-	800.201	-	800.201	842.557	842.519	1,294.965	1,318.294	10,327.332	15,425.868
• SPAF: BA01: Line Item # MSEELC: <i>Evolved Expendable Launch Veh (Infrast.)</i>	-	-	571.276	-	571.276	778.217	764.315	511.416	520.632	9,504.815	12,650.671
• MPAF: BA05: Line Item # # MSEELV: <i>Evolved Expendable Launch Vehicle</i>	807.991	732.003	-	-	-	-	-	-	-	-	11,727.435
• MPAF: BA05: Line Item # MSEELC: <i>Evolved Expendable Launch Veh (Infrast)</i>	559.413	687.753	-	-	-	-	-	-	-	-	-

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. If competition is not viable at the time of need, missions will be awarded to the incumbent.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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
--	---	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-		-		-		-		-	-	710.182	-
Atlas V development	C/FFP	Lockheed Martin : Denver, CO	583.511	-		-		-		-		-	-	583.511	-
Launch Service Development	SS/CPIF	United Launch Services : Denver, CO	174.817	-		-		-		-		-	-	174.817	TBD
Various	Various	Various : ,	0.000	10.856	Oct 2014	5.600	May 2015	-		-		-	-	16.456	-
Subtotal			1,468.510	10.856		5.600		-		-		-	-	1,484.966	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
SPO Range Mission Spt	Various	Space and Missile Center : Los Angeles AFB, CA	43.617	-		-		-		-		-	-	43.617	-
FFRDC Mission Assurance	SS/CPAF	Aerospace : El Segundo, CA	76.612	6.246	Oct 2013	-		-		-		-	-	82.858	-
Special studies	Various	Various : ,	1.566	0.260	Oct 2014	-		-		-		-	-	1.826	-
Subtotal			121.795	6.506		-		-		-		-	-	128.301	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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			-	-		-		-		-		-	-	-	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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
--	---	--

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Cntr Spt (PMA)	Various	Various : Various,	22.757	2.069	Oct 2013	-		-		-		-	-	24.826	-
Subtotal			22.757	2.069		-		-		-		-	-	24.826	-
Project Cost Totals			1,613.062	19.431		5.600		-		-		-	-	1,638.093	-

Remarks
N/A

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

ESPA Phase IID	[REDACTED]																											
RL10C First Engine Delivery	[REDACTED]																											
GPS MT Eastern and Western Range Full Operational Capability	[REDACTED]																											
Special Studies (SS) Upper Stage Engine Risk Reduction	[REDACTED]																											
Rocket Propulsion and Risk Redution					[REDACTED]																							
Space Launch Range Services and Capability					[REDACTED]																							

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
ESPA Phase IID	2	2014	1	2016
RL10C First Engine Delivery	1	2014	2	2014
GPS MT Eastern and Western Range Full Operational Capability	2	2014	2	2015
Special Studies (SS) Upper Stage Engine Risk Reduction	1	2014	1	2015
Rocket Propulsion and Risk Redution	4	2014	4	2015
Space Launch Range Services and Capability	3	2015	1	2017

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 Liquid Rocket Engine			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
650006: Next Generation Liquid Rocket Engine	-	-	220.000	84.438	-	84.438	59.528	49.589	49.581	49.575	-	512.711
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2016, Project 650006, Next Generation Rocket Engine, includes new start efforts for the Evolved Expendable Launch Vehicle program.

A. Mission Description and Budget Item Justification

This program funds research and development activities and related studies support to reduce risk and mature domestic rocket propulsion technologies to enable our long-term rocket propulsion/launch system national security space requirements and shared investments in the development of new or upgraded launch systems.

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

	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Domestic Launch Service Providers	-	-	84.438	-	84.438
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 NSS requirement available by the end of FY2022.					
FY 2014 Accomplishments: N/A					
FY 2015 Plans: N/A					
FY 2016 Base Plans: Invest in domestic launch providers' launch systems. This investment is for in 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.					
FY 2016 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	-	-	84.438	-	84.438

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

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 Liquid Rocket Engine</i>
--	--	--

	FY 2014	FY 2015
Congressional Add: Rocket Propulsion System Technical Maturation and Risk Reduction	-	220.000
FY 2014 Accomplishments: N/A		
FY 2015 Plans: Continue research to develop new engine possibilities and propulsion development. Conduct special studies (to include but not limited to alternate manufacturing processes, launch system architecture, and other related activities). Continue efforts to provide robust modeling and design tools, reduce the risk of key propulsion system components, invest in material and manufacturing development, and advanced propulsion technologies.		
Congressional Adds Subtotals	-	220.000

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

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• SPAF BA01: Line Item # MSEELV: <i>Evolved Expendable Launch Veh (Space)</i>	-	-	800.201	-	800.201	842.557	842.519	1,294.965	1,318.294	10,327.332	15,425.868
• SPAF: BA01: Line Item # MSEELC: <i>Evolved Expendable Launch Veh (Infrast)</i>	-	-	571.276	-	571.276	778.217	764.315	511.416	520.632	9,504.815	12,650.671
• MPAF: BA05: Line Item # MSEELV: <i>Evolved Expendable Launch Veh (Space)</i>	807.991	732.003	-	-	-	-	-	-	-	-	11,727.435
• MPAF: BA05: Line Item # MSEELC: <i>Evolved Expendable Launch Veh (infrast)</i>	559.413	687.735	-	-	-	-	-	-	-	-	-

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.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 Liquid Rocket Engine</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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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 Liquid Rocket Engine
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Various	Various	Various : ,	0.000	-		204.390	Feb 2015	74.888	Oct 2015	-		74.888	167.121	446.399	-
Subtotal			0.000	-		204.390		74.888		-		74.888	167.121	446.399	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Mission Assurance	SS/CPAF	Aerospace : El Segundo, CA	0.000	-		7.600	Feb 2015	4.240	Oct 2015	-		4.240	18.271	30.111	-
Subtotal			0.000	-		7.600		4.240		-		4.240	18.271	30.111	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Cntr Spt	Various	Various : ,	0.000	-		8.010	Feb 2015	5.310	Oct 2015	-		5.310	22.881	36.201	-
Subtotal			0.000	-		8.010		5.310		-		5.310	22.881	36.201	-

			Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			0.000	-		220.000		84.438		-		84.438	208.273	512.711	-

Remarks
Preliminary program office estimate only.

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 Liquid Rocket Engine</i>

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Next Generation Rocket Engine Risk Reduction	[REDACTED]																											
Rocket propulsion system development	[REDACTED]																											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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 Liquid Rocket Engine</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Next Generation Rocket Engine Risk Reduction	3	2014	4	2015
Rocket propulsion system development	2	2015	4	2020

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0604932F / <i>Long Range Standoff Weapon</i>
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	1.836	5.000	3.438	36.643	-	36.643	133.740	420.173	650.446	543.049	Continuing	Continuing
657011: <i>LONG RANGE STAND-OFF</i>	1.836	5.000	3.438	36.643	-	36.643	133.740	420.173	650.446	543.049	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

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 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 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>
Previous President's Budget	5.000	4.938	9.886	-	9.886
Current President's Budget	5.000	3.438	36.643	-	36.643
Total Adjustments	-	-1.500	26.757	-	26.757
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-1.500			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	26.757	-	26.757

Change Summary Explanation

FY15: Congressional Directed Reduction, -\$1.5M for execution adjustment
 FY16: Program accelerated 2 years, \$26.757M

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 0604932F / <i>Long Range Standoff Weapon</i>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016
<p>Title: Materiel Solution Analysis (MSA)</p> <p>Description: Conduct Long Range Stand Off pre-Milestone A activities.</p> <p>FY 2014 Accomplishments: Continued LRSO Milestone A (MS A) preparations. Activities included: Pre-TMRR (Technology Maturation and Risk Reduction) activities with industry (concept refinement and technology analyses), modeling and simulation support, engineering studies, program cost and schedule estimation, acquisition strategy refinement, risk reduction efforts, initial requirements definition, develop MS A exit/TMRR entrance documentation.</p> <p>FY 2015 Plans: Continue LRSO MS A preparation. Activities include: 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/TMMR entrance documentation. Continue to support the Department of Defense (DoD)/ Department of Energy(DOE) Interagency warhead life extension program 6.X process.</p> <p>FY 2016 Plans: 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, preparation for RFP release and source selection activities. 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, producibility and supportability. Perform planning activities necessary to integrate LRSO with aircraft. 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>		5.000	3.438	6.000
<p>Title: Technology Maturation and Risk Reduction (TMRR)</p> <p>Description: Conduct technology maturation and risk reduction.</p> <p>FY 2016 Plans: Award contracts for tech development effort to develop, mature, and support the design, integration, verification, validation, test, manufacturing processes, and logistic support plans. Establishes and implements practices that ensure the following are met: requirements flow down, requirement allocation to hardware and software, requirements compliance matrix, system performance,</p>		-	-	18.643

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 2014	FY 2015	FY 2016
reliability, maintainability, product assurance, testability, producibility and supportability.			
Title: Aircraft Integration Description: Accomplishes LRSO aircraft integration. FY 2016 Plans: Perform planning activities necessary to integrate LRSO with aircraft using MIL STD 1760D based aircraft/store interface. Ensures the logical, electrical, and physical interfaces of the LRSO as defined in the ICD.	-	-	6.000
Title: Test Support Description: Test activities and support for LRSO design validation and verification and nuclear certification. FY 2016 Plans: Perform test activities and support for LRSO design validation and verification and nuclear certification.	-	-	6.000
Accomplishments/Planned Programs Subtotals	5.000	3.438	36.643

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Contract	TBD	TBD : ,	0.000	-		-		18.643	Aug 2016	-		18.643	Continuing	Continuing	-
Subtotal			0.000	-		-		18.643		-		18.643	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Material Solution Analysis Support	Various	Various : ,	1.321	2.400	Jan 2014	0.500	Jan 2015	6.000	Nov 2015	-		6.000	Continuing	Continuing	-
Aircraft Integration	Various	Various : ,	0.000	-		-		4.000	Jan 2016	-		4.000	Continuing	Continuing	-
Subtotal			1.321	2.400		0.500		10.000		-		10.000	-	-	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test Support	Various	Various : ,	0.000	-		-		3.000	Jun 2016	-		3.000	Continuing	Continuing	-
Subtotal			0.000	-		-		3.000		-		3.000	-	-	-

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Program Management Administration	Various	Various : ,	0.515	2.600	Oct 2013	2.938	Oct 2014	5.000	Oct 2015	-		5.000	Continuing	Continuing	-
Subtotal			0.515	2.600		2.938		5.000		-		5.000	-	-	-

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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	2014	3	2016
Milestone A Decision	1	2016	1	2016
Technology Maturation and Risk Reduction Phase	1	2016	4	2020
Technology Maturation and Risk Reduction Contract Award	4	2016	4	2016

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	65.370	76.553	59.826	142.551	-	142.551	190.973	180.205	169.655	159.157	152.373	1,196.663
655082: <i>ICBM FUZE SUPPORT</i>	65.370	76.553	59.826	142.551	-	142.551	190.973	180.205	169.655	159.157	152.373	1,196.663
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

MDAP/MAIS Code: 0498

Note

Prior years funding \$9.740M in PE 0604222F FY11 and \$39.717M in PE 0604851F FY12 was also executed.

A. Mission Description and Budget Item Justification

The ICBM Fuze Modernization program designs and develops a form, fit, function 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 fuze replacement with the NNSA W78/88-1 Life Extension Program warhead were deferred.

The US Air Force (USAF) will develop the Mk21 fuze utilizing the National Nuclear Security Administration (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 Thermal Protection Device (TPD).

The ICBM Fuze Modernization program will also integrate the fuze into associated MM III weapon system hardware, support equipment, data, flight test hardware, and training materials. It will also conduct required system testing (including ground and flight tests). The program coordinates USAF Mk21 fuze replacement development efforts with the Department of Energy (DOE) to synchronize USAF arming and fuze development activities with the DOE warhead requirements. When prudent, the ICBM Fuze Modernization 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 weapon acquisition, the USAF will implement joint Department of Defense (DoD)-DOE Nuclear Weapons Life Cycle Activities. The ICBM Fuze Modernization program will be tailored to use joint DoD/DOE Instruction 5030.55 for Nuclear Acquisition (also known as the Phase 6.X processes) for routine nuclear stockpile activities to align with USN and NNSA operations.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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
---	---

In the FY16 budget request, Mk21 fuze program rebaseline planning was completed and funding adjusted to match the USAF Service Cost Position. Rebaseline plans include additional efforts to leverage all common USN technologies and acceleration of Mk21 flight test vehicle development by SNL-CA supporting critical flight testing beginning in FY19.

This program is in Budget Activity 5, System Development and Demonstration (SDD). The program was authorized to enter Phase 6.3 "Development Engineering" which is the equivalent of Milestone B. The program is conducting engineering development tasks aimed at meeting validated requirements prior to Phase 6.4 "Production Engineering," which is scheduled for FY19 (Objective).

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	118.411	59.826	88.473	-	88.473
Current President's Budget	76.553	59.826	142.551	-	142.551
Total Adjustments	-41.858	-	54.078	-	54.078
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-14.000	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-18.387	-			
• SBIR/STTR Transfer	-9.471	-			
• Other Adjustments	-	-	54.078	-	54.078

Change Summary Explanation

FY2014 funding reflects a \$14M Congressional Rescission, \$18.387M transfer to higher AF priorities, and \$9.471M transfer to SBIR/STTR.

FY2016 funding reflects an increase of \$54.078M based on completion of Mk21 fuze program rebaseline planning and to match the USAF Service Cost Position. Rebaseline plans include additional effort to leverage all common USN technologies and acceleration of Mk21 flight test vehicle development by SNL-CA supporting critical flight testing beginning in FY19.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Title: Fuze Design and Development	52.629	42.914	115.732
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 2014 Accomplishments:			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p>Matured development of common parts, components, and technology for application to Mk21 replacement fuze. Implemented nuclear surety themes informed by trades as directed by NSPD-28. Supported integration and flight test planning. Conducted trade studies and initiated conceptual designs to address operational system issues and meet future requirements. Completed Phase 6.2A and received approval to enter Phase 6.3.</p> <p>FY 2015 Plans: Continue to mature development of common parts, components, and technology for application to the Mk21 replacement fuze. Continue component conceptual design development of common and unique parts. Conduct Component Conceptual Design Review and Initial Baseline Review. Implement nuclear surety themes informed by trades as directed by NNSA. SNL-NM will continue 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 design continues to meet the AF functional requirements and unique applicable environments at the component level. SNL will complete 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 the Flight Test Unit 1 (FTU1).</p> <p>FY 2016 Plans: 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 the FTU1.</p>				
<p>Title: Weapon System Integration/Systems Engineering</p> <p>Description: Integrate Mk21 fuze and warhead designs and the MM III weapon system. Validate designs through ground test and integration test beds. Plan and conduct necessary ground and flight testing. Coordinate design, development and flight test efforts with fuze developer.</p> <p>FY 2014 Accomplishments:</p>		17.811	16.912	26.819

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
Continued developing MM III weapon system hardware and software modifications to support Mk21 replacement fuze designs. Created a flight test plan for fuze related developmental hardware including extended range tests. FY 2015 Plans: Continue to provide Systems Engineering, Integration, and Management expertise in support of USAF and SNL development of the Mk21 replacement fuze. Integrate AFA with the MMIII weapon system for partially and fully completed components during the development build. Test and verify SNL developed Lab Test Units and corresponding Ground Test Units using the MMIII Integrated Test Bed. Testing will 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 MMIII weapon system during the development build. Continue to test and verify SNL developed Lab Test Units and corresponding Ground Test Units via the MMIII Integrated Test Bed. Assess the program's impact on Minuteman III system-level effectiveness.				
Title: W78/88-1 Life Extension Program Analysis - Lead Project Office (AFNWC) Description: Coordinate USAF ICBM Fuze Modernization program efforts with NNSA W78/88-1 LEP developmental efforts. Synchronize USAF arming and fuzing and DOE warhead requirements. Study and assess weapon system cost, schedule and performance impacts. FY 2014 Accomplishments: Evaluated performance requirements, physical characteristics, logistical and operational concepts and physical environments. Developed common Military Characteristics and Stockpile-to-Target Sequence requirements. Developed and validated modeling and simulation and supported developmental planning. Completed W78/88-1 study which developed options for W78/88-1 LEP continuation once this portion of the program is reestablished. FY 2015 Plans: This effort has been discontinued as a result of the deferral of the W78/88-1 LEP effort beyond the FYDP. FY 2016 Plans: This effort has been discontinued as a result of the deferral of the W78/88-1 LEP effort beyond the FYDP.		6.113	-	-
Accomplishments/Planned Programs Subtotals		76.553	59.826	142.551

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• MPAF: BA05: Line Item # M30MLG: <i>Minuteman III Modifications</i>	-	4.649	13.700	-	13.700	17.235	6.372	9.934	12.217	765.494	829.601

Remarks

Other Program Funding Summary reflects equipment buys in FY15-19 as part of a life of type buy that will enable the ICBM Fuze Modernization program to continue leveraging from the Navy's design, development and production activities.

E. Acquisition Strategy

The USAF Mk21 fuze will be modernized in a collaborative effort with the USN Mk5 fuze reducing total program cost and development time by leveraging potential compatibility and commonality of ICBM and Submarine Launched Ballistic Missile warheads and fuze components. The USN Mk5 fuze will be developed first, followed by the USAF Mk21 fuze. The USN Mk5 fuze entered Phase 6.3 Development Engineering in August 2012. USAF Mk21 fuze entered Phase 6.3 in August 2013. Both services participate in all design and development efforts to ensure use of adaptable components, subassemblies and technology. Both services will use NNSA/SNL to perform fuze design and development. The USAF will separately compete and contract for MM III unique missile modification and fuze integration efforts utilizing a combination of the Integration Support Contract (ISC) for SETA and the Reentry System/Reentry Vehicle Integration Contract for weapons system integration. Both services will use NSC to perform production and sustainment.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604933F / ICBM Fuze Modernization	Project (Number/Name) 655082 / ICBM FUZE SUPPORT
--	---	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Preliminary Design Development	MIPR	Sandia National Labs : Albuquerque, NM	38.112	45.110	Jan 2014	44.230	Jan 2015	82.158	Jan 2016	-		82.158	519.063	728.673	-
EMD	Various	Various : ,	2.006	0.155	Mar 2014	0.176	Dec 2014	-		-		-	-	2.337	TBD
National Security Campus (formerly Kansas City Plant)	MIPR	National Security Campus : Kansas City, MO	0.000	5.731	Jan 2014	-		25.013	Jan 2016	-		25.013	116.331	147.075	-
Sandia External Production (SEP)	MIPR	Sandia National Labs : Albuquerque, NM	0.000	-		-		8.561	Jan 2016	-		8.561	48.178	56.739	-
Weapon System Integration - ICBM Prime	C/CPAF	Northrop Grumman : Clearfield, UT	13.641	12.771	Dec 2013	-		-		-		-	-	26.412	26.412
Weapon System Integration - RS/RV SSC	SS/CPAF	Lockheed Martin : Valley Forge, PA	0.000	-		7.748	Jan 2015	18.152	Dec 2015	-		18.152	133.694	159.594	159.594
Subtotal			53.759	63.767		52.154		133.884		-		133.884	817.266	1,120.830	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Engineering Support - BAH	C/FP	Booz Allen Hamilton : Clearfield, UT	3.257	-		-		-		-		-	-	3.257	20.060
Engineering Support - BAE	C/CPAF	BAE : Clearfield, UT	0.000	3.204	Dec 2013	2.100	Jul 2015	1.708	Jun 2016	-		1.708	13.414	20.426	20.426
Subtotal			3.257	3.204		2.100		1.708		-		1.708	13.414	23.683	40.486

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Lead Project Office Support	MIPR	AFNWC : Albuquerque, NM	4.407	6.113	Jul 2014	-		-		-		-	-	10.520	10.520

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604933F / ICBM Fuze Modernization	Project (Number/Name) 655082 / ICBM FUZE SUPPORT
--	---	--

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Phase 6.3 Developmental Engineering																																
Phase 6.4 Production Engineering																																
Component - Conceptual Design Review (Oct 2014)																																
Integrated Baseline Review (Mar 2015)																																
Baseline Design Review (Mar 2017)																																
Prototype Design Review (Feb 2018)																																
Final Design Review (Dec 2019)																																

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604933F / ICBM Fuze Modernization	Project (Number/Name) 655082 / ICBM FUZE SUPPORT
--	---	--

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Phase 6.3 Developmental Engineering	1	2014	1	2019
Phase 6.4 Production Engineering	2	2019	4	2020
Component - Conceptual Design Review (Oct 2014)	1	2015	1	2015
Integrated Baseline Review (Mar 2015)	2	2015	2	2015
Baseline Design Review (Mar 2017)	2	2017	2	2017
Prototype Design Review (Feb 2018)	2	2018	2	2018
Final Design Review (Dec 2019)	1	2020	1	2020

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	110.432	88.268	173.647	140.640	-	140.640	72.467	1.399	1.426	1.452	23.348	613.079
654785: <i>F-22 INCREMENT 3.2B</i>	110.432	88.268	173.647	140.640	-	140.640	72.467	1.399	1.426	1.452	23.348	613.079
Quantity of RDT&E Articles	9	-	-	-	-	-	-	-	-	-	-	-

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 (Common 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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	115.000	173.647	141.575	-	141.575
Current President's Budget	88.268	173.647	140.640	-	140.640
Total Adjustments	-26.732	-	-0.935	-	-0.935
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-23.000	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-3.732	-			
• Other Adjustments	-	-	-0.935	-	-0.935

Change Summary Explanation

FY14: \$26.732 reduction due to: \$23M for Congressional Rescission and \$3.732M due to SBIR

FY15: N/A

FY16: \$0.935M reduction due to inflation rate adjustments

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
---	----------------	----------------	----------------

Title: F -22 Increment 3.2B	75.028	109.097	79.640
------------------------------------	--------	---------	--------

Description: The F-22 Increment 3.2B Modernization Program consists of the studies, analysis, demonstrations, and hardware/software development necessary to provide Increment 3.2B capabilities including 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. Mission Support of the F-22 Program Office: travel, computer costs, and other miscellaneous contract support.

FY 2014 Accomplishments:

F-22 Increment 3.2B finalized system design and continued Development, Code, Integration and Flight Test. Provided Management and infrastructure activities in support of the F-22 Program Office.

FY 2015 Plans:

F-22 Increment 3.2B will continue work in the Development, Code, Integration, and Test Phase. In addition will provide management and infrastructure activities in support of the F-22 Program Office.

FY 2016 Plans:

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
F-22 Increment 3.2B will continue work in the Development, Code, Integration, and Test Phase in preparation for 3QFY16 Milestone C. In addition, will conduct management and infrastructure activities in support of the F-22 Program Office.				
Title: Combined Test Force (CTF)		3.730	29.500	27.500
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.				
FY 2014 Accomplishments: The CTF accomplished detailed test planning of Increment 3.2B and continued testing AIM-9X separations for a full AIM-9X integration in Increment 3.2B. CTF initiated Increment 3.2B Flight Test.				
FY 2015 Plans: The CTF will continue detailed test planning and Increment 3.2B Flight Test execution.				
FY 2016 Plans: The CTF will complete developmental flight test in preparation for Low Rate Initial Production (LRIP) decision (Milestone C).				
Title: Lab Test & Operations		9.510	35.050	33.500
Description: Increment 3.2B Lab Test & Operations will plan and conduct software build, integration & testing in the F-22 system integration at the laboratories: the Agile Integration Lab (AIL); the Raptor Integration Lab (RaIL); the Air Combat Simulation (ACS) Lab; the Vehicle Management System (VMS) Vehicle Integration Facility (VIF); and the Vehicle System Simulator (VSS).				
FY 2014 Accomplishments: F-22 Increment 3.2B Lab Test & Operations planned and conducted software builds, integration & testing in the F-22 system integration at the laboratories: the Agile Integration Lab (AIL); the Raptor Integration Lab (RaIL); the Air Combat Simulation (ACS) Lab; the Vehicle Management System (VMS) Vehicle Integration Facility (VIF); and the Vehicle System Simulator (VSS).				
FY 2015 Plans: Increment 3.2B Lab Test & Operations will continue to plan and conduct software builds, integration & testing on production representative hardware in the F-22 system integration laboratories: the Agile Integration Lab (AIL); the Raptor Integration Lab (RaIL); the Air Combat Simulation (ACS) Lab; the Vehicle Management System (VMS) Vehicle Integration Facility (VIF); and the Vehicle System Simulator (VSS). To enhance software maturation, the developmental software labs will deliver several planned software versions to support developmental flight test execution.				
FY 2016 Plans:				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 2014	FY 2015	FY 2016
Increment 3.2B Lab Test & Operations will continue to plan and conduct software builds, integration & testing on production representative hardware in the 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). Increment 3.2B Lab Test & Operations will deliver the fully integrated Operational Flight Program (OFF) required to complete developmental flight test and resolve performance deficiencies in preparation for Air Force Operational Flight Test Evaluation.			
Accomplishments/Planned Programs Subtotals	88.268	173.647	140.640

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• RDT&E: BA07: PE 0207138F: <i>F-22A Squadrons, RDT&E*</i>	266.431	146.299	262.552	-	262.552	382.198	406.094	415.207	422.636	Continuing	Continuing
• APAF: BA05: Line Item # F2232B: <i>Increment 3.2B**</i>	-	28.500	69.325	-	69.325	79.091	144.831	13.187	20.529	-	355.463
• APAF: BA05: Line Item # F02200: <i>F-22A***</i>	358.268	301.426	129.251	-	129.251	285.014	218.692	222.923	275.407	Continuing	Continuing
• APAF: BA056: 000999: <i>Initial Spares</i>	-	-	2.934	-	2.934	4.470	7.782	-	-	-	15.186
• RDT&E: BA07: PE 0207163F: <i>AIM-120D, AMRAAM T&E, RDT&E****</i>	20.830	23.940	5.820	-	5.820	-	-	-	-	-	50.590

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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
---	--

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
****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 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 Indefinite Delivery/Indefinite Quantity 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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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
--	--	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	107.877	75.028	Nov 2013	109.097	Nov 2014	79.640	Nov 2015	-		79.640	71.082	442.724	488.035
Subtotal			107.877	75.028		109.097		79.640		-		79.640	71.082	442.724	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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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,	0.660	3.730	Nov 2013	29.500	Dec 2014	27.500	Dec 2015	-		27.500	21.100	82.490	-
Laboratory Test Operations	SS/ Various	Lockheed Martin : Fort Worth, TX	1.895	9.510	Nov 2013	35.050	Nov 2014	33.500	Nov 2015	-		33.500	7.910	87.865	-
Subtotal			2.555	13.240		64.550		61.000		-		61.000	29.010	170.355	-

Remarks
FY12 and prior year costs for Increment 3.2B are shown under PE 0207138F. FY13 and later are shown under PE 0605213F. The Combined Test Force and Laboratory Test & Operations costs appear to increase significantly starting in FY2013 due to the addition of Increment 3.2B test costs. The corresponding decrease in test costs are captured in PE 0207138F documentation.

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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	2014	2	2015
Increment 3.2B Code, Integration, and Test	1	2014	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)	2	2017	4	2017
Increment 3.2B Fleet Release	2	2018	2	2018
Increment 3.2B Retrofit	2	2018	4	2020

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	-	5.332	3.598	-	3.598	0.946	-	-	-	-	9.876
655313: <i>Hard Target Void Sensing Fuze</i>	-	-	5.332	3.598	-	3.598	0.946	-	-	-	-	9.876
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.

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	-	5.332	3.622	-	3.622
Current President's Budget	-	5.332	3.598	-	3.598
Total Adjustments	-	-	-0.024	-	-0.024
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-0.024	-	-0.024

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

Change Summary Explanation

No Significant Program Changes

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

	FY 2014	FY 2015	FY 2016
Title: HTVSF Test Support Description: BLU-109/BLU-113 follow-on testing; post-Milestone C (MS C) development. FY 2014 Accomplishments: Not Applicable FY 2015 Plans: 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: BLU-109/BLU-113 follow-on testing and post-MS C development requirements as derived from the MS C decision	-	4.536	3.598
Title: Program Management Administration Description: TEAS,TAMS,Travel and Government Purchase Card (GPC) FY 2014 Accomplishments: Not Applicable FY 2015 Plans: TEAS,TAMS,Travel and Government Purchase Card (GPC) FY 2016 Plans: Not Applicable	-	0.796	-
Accomplishments/Planned Programs Subtotals	-	5.332	3.598

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE: BA04: PE 0604635F: <i>Ground Attack Weapons Fuze Development</i>	17.271	-	-	-	-	-	-	-	-	-	-

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• PAAF: BA01: Line Item # 356120: <i>Fuzes</i>	-	13.280	31.451	-	31.451	25.013	28.013	-	-	-	-

Remarks

- PAAF dollars in War Reserve Materiel (WRM; Fuzes) fund initial procurement of 400/474/1574/2552 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
 Estimated Contract completion date: 31 Mar 2015
 Fixed Price Incentive Firm
 Estimated Contract Length - 48 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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	-		0.796	Oct 2014	-		-		-	Continuing	Continuing	-
Subtotal			-	-	-	0.796		-		-		-	-	-	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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,	-	-		4.536	Jan 2015	3.598	Jan 2016	-		3.598	Continuing	Continuing	-
Subtotal			-	-	-	4.536		3.598		-		3.598	-	-	-

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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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			-	-	-	-	-	-	-	-	-	-	-	-	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force								Date: February 2015			
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 2014	FY 2015		FY 2016 Base	FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-	5.332		3.598	-		3.598	-	-	-

Remarks

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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	2014	2	2015
Soil Box Flight Test	4	2014	4	2014
GBU-28 Sled Test	2	2015	2	2015
BLU-113 Flight Test DT	2	2015	2	2015
Milestone C	2	2015	2	2015
Follow-on Testing/Development	3	2015	1	2017

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	3,231.025	1,505.476	786.437	602.364	-	602.364	314.333	21.380	4.363	-	-	6,465.378
655271: <i>KC-46 RDT&E</i>	3,231.025	1,505.476	786.437	602.364	-	602.364	314.333	21.380	4.363	-	-	6,465.378
Quantity of RDT&E Articles	4	-	-	-	-	-	-	-	-	-	-	

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 the KC-Z. The initial KC-46 increment 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 Defense Acquisition Board (DAB) on 23 Feb 2011, received approval to enter Engineering and Manufacturing Development (EMD) from OUSD(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. Initial sustainment efforts will be provided via Interim Contractor Support (ICS). KC-46 funding will also support a follow-on sustainment planning Business Case Analysis (BCA), various studies/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 world-wide operations; will have the capability to perform missions in chemical and biological environments; will have the ability to operate in up to medium threat environments with self-defense/protection (both active and passive) capabilities; and will have necessary battle space awareness to mitigate survivability threats.

The KC-46 development effort will also procure the necessary ground and flight test assets to support development/operational test. The program has procured four RDT&E aircraft for integration and demonstration of capability which will be operationally fielded after a successful operational test phase. In addition, aircrew and maintenance training systems will be developed and procured using KC-46 funding. The Aircrew Training System (ATS) entered source selection on 31 May 2012 and a contract was awarded on 1 May 2013 to FlightSafety Services Corp. The ATS contract will provide Aircrew Training Devices (ATDs), to include Weapon System Trainers (WST), Boom Operator Trainers (BOT), Fuselage Trainers (FuT) and Part-Task Trainers (PTT) at each Main Operating Base (MOB) and the Formal Training Unit (FTU). The ATS will also support Distributed Mission Operations (DMO), provide aircrew instruction, develop courseware, provide logistics support, acquire Technical Data Packages (TDP) to support future competition efforts, and manage training device concurrency with the aircraft. The Maintenance Training System (MTS) is scheduled to enter source selection in FY2015.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force / BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0605221F / KC-46
--	---

This program is in Budget Activity 05, 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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	1,558.590	776.937	606.368	-	606.368
Current President's Budget	1,505.476	786.437	602.364	-	602.364
Total Adjustments	-53.114	9.500	-4.004	-	-4.004
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	9.500			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-53.114	-			
• Other Adjustments	-	-	-4.004	-	-4.004

Change Summary Explanation

FY2015: Increase of \$9.5M RDT&E due to Congressional add for Air Force requested transfer from APAF line 3

FY2016: Decrease of \$4.004M RDT&E due to deflation adjustment.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Title: KC-46 Aircraft Product Development	1,408.894	681.811	341.552
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 4 EMD aircraft; procure live fire assets; procure any required Government Furnished Equipment; procure simulator and maintenance data; develop technical manuals and Type 1 training; conduct development and operational testing.			
FY 2014 Accomplishments: Continued aircraft manufacturing and certification/qualification testing.			
FY 2015 Plans: Continue aircraft manufacturing and certification/qualification testing.			
FY 2016 Plans:			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
Continue aircraft manufacturing and certification/qualification testing.				
Title: KC-46 Trainer Product Development - Aircrew Training System		41.561	37.671	7.606
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 Aircrew Training Devices (ATDs), courseware, and associated support equipment.				
FY 2014 Accomplishments: Continued activities associated with Aircrew Training System development, to include: ATDs, Courseware Preliminary Design Reviews (PDRs), and sub-system Critical Design Reviews (CDRs).				
FY 2015 Plans: Continue activities associated with Aircrew Training System development. Anticipate completion of Courseware and ATD CDRs, and initiate Contractor Evaluation & Verification Testing for the ATDs.				
FY 2016 Plans: Delivery of Courseware and ATDs, and conduct Government Acceptance Testing, commencing in second quarter FY2016.				
Title: KC-46 Trainer Product Development - Maintenance Training System		-	1.200	186.349
Description: The KC-46 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 devices into a "blended" solution. This blended solution includes the appropriate mix of hardware and software, "high-fidelity" Augmented Hardware Training Devices (AHTDs), Part Task Trainers (PTTs), Interactive Multimedia Instruction (IMI), and emerging technologies to meet validated AMC Maintenance training requirements.				
FY 2014 Accomplishments: N/A				
FY 2015 Plans: Award KC-46 Maintenance Training System Engineering and Manufacturing Development contract.				
FY 2016 Plans: Continue activities associated with Maintenance Training System development.				
Title: KC-46 Support		29.704	27.273	24.657

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 2014	FY 2015	FY 2016
<p>Description: Development, integration and demonstration of the KC-46 mission planning capability. In addition, studies and analysis supporting planning activities for future efficiency initiatives, business case analyses, KC-Y & KC-Z planning, and misc. program office support & planning. Also includes requirements such as travel, office supplies, training courses, and service contracts.</p> <p>FY 2014 Accomplishments: Completed the design of the Mission Planning Environment (MPE). Continued MPE Phase I Development and began Full Qualification Testing (FQT). Continued program support activities</p> <p>FY 2015 Plans: Develop Phase II of the Mission Planning Environment (MPE), continue FQT and begin Development Testing (DT). Continue program support activities</p> <p>FY 2016 Plans: Complete FQT on the Mission Planning System for use in KC-46 Initial Operational Test & Evaluation (IOT&E). Continue program support activities</p>			
<p>Title: KC-46 Test & Evaluation</p> <p>Description: To begin re-capitalizing the aging tanker fleet, Test & Evaluation activities will be conducted to include the following types of activities: Development Test & Evaluation support, 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 2014 Accomplishments: Continued KC-46 Integrated Test & Evaluation planning and began Live Fire Testing</p> <p>FY 2015 Plans: Conduct 767-2C and KC-46 First Flights and begin Ground and Flight Integrated Test & Evaluation. Continue Live Fire Testing and other Test & Evaluation planning activities. Conduct Operational Assessment #2 supporting MS-C.</p> <p>FY 2016 Plans: Complete Ground and Flight Integrated Test & Evaluation and Live Fire Testing; continue other Test & Evaluation 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 IOT&E.</p>	25.317	38.482	42.200
Accomplishments/Planned Programs Subtotals	1,505.476	786.437	602.364

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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
--	---

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

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• APAF: BA02: Line Item #: <i>KC046A</i>	-	1,573.185	2,426.792	-	2,426.792	3,116.887	3,207.227	3,275.563	3,294.863	22,264.839	39,159.357

Remarks

E. Acquisition Strategy

The KC-46 program acquisition strategy is to procure an existing commercial, Federal Aviation Administration (FAA) certified aircraft modified to meet USAF requirements. 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 Defense Acquisition Board (DAB) on 23 Feb 2011, received approval to enter Engineering and Manufacturing Development (EMD) from OUSD(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 FY 2011 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.

Production will begin in FY2015 with the first of two Low-Rate Initial Production (LRIP) lots (Firm Fixed Priced (FFP)) and then Full-Rate Production (FRP) options (FFP with Not to Exceed (NTE) + Economic Price Adjustment (EPA)). The LRIP and FRP options will be exercised following a successful Milestone C for the LRIP decision, and a successful completion of Initial Operational Test and Evaluation (IOT&E) for the FRP decision.

The Aircrew Training System (ATS) acquisition strategy is to provide Aircrew Training Devices (ATDs), and associated support structure, to each Main Operating Base (MOB) and the Formal Training Unit (FTU). The ATS entered source selection on 31 May 2012, and a contract was awarded on 1 May 2013 to FlightSafety Services Corp. The ATS contract procurement was conducted via a full and open competition per Federal Acquisition Regulation (FAR) Part 15, and resulted in a FY 2013 EMD FPIF contract. The EMD phase will develop and procure aircrew training devices. All ATDs will be supported with courseware, Training System Support Center, technical data package and support equipment to ensure system availability and concurrency with the aircraft. Production devices will commence in FY2015 as FFP options. The government plans to compete the development, deployment, and sustainment of a Maintenance Training System, separately.

Based on the market research and a cost effectiveness analysis, the engines will be procured as contractor furnished equipment (CFE) for EMD. Following EMD, the government will assess the potential of breaking out the engines as a separate procurement based on an updated market analysis.

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

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force Date: February 2015

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 0605221F / KC-46

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. RAA is defined as 18 aircraft meeting final production configuration with all required training and support in place. Initial Operational Capability (IOC) will be attained when the Commander, Air Mobility Command (AMC/CC) determines the unit is operationally war ready. AMC has not yet determined an IOC date. Full Operational Capability (FOC) is expected approximately 24 months after IOC.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force											Date: February 2015				
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0605221F / KC-46					Project (Number/Name) 655271 / KC-46 RDT&E				

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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-46 aircraft non-recurring development, integration, and testing, 4 RDT&E tanker aircraft and support	C/FPIF	The Boeing Company : Seattle, WA	3,113.894	1,408.895	Oct 2013	681.811	Mar 2015	341.552	Mar 2016	-		341.552	261.784	5,807.936	4,393.857
Aircrew Training System	C/FPIF	FlightSafety Services Corp. : Centennial, CO	16.500	41.561	Jan 2014	37.671	Feb 2015	7.606	Dec 2015	-		7.606	11.449	114.787	78.370
Develop a Maintenance Training System	TBD	TBD : TBD,	0.000	-		1.200	Nov 2015	186.349	Dec 2015	-		186.349	39.626	227.175	-
Subtotal			3,130.394	1,450.456		720.682		535.507		-		535.507	312.859	6,149.898	-

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 Milestone B Service Cost Position (SCP), which accounts for the ceiling price of the contract plus the financial risk of potential design changes for the KC-46 Aircraft.

The MTS contract award is an estimated date.

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Studies and Analysis associated with the development, integration, and demonstration of KC-46 capability & future planning	Various	Various : Various,	16.193	18.185	Oct 2013	11.596	Oct 2014	13.525	Oct 2015	-		13.525	6.282	65.781	-
Subtotal			16.193	18.185		11.596		13.525		-		13.525	6.282	65.781	-

Remarks

These contracts are on an as needed basis, with various contract types and performing activities.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force											Date: February 2015				
Appropriation/Budget Activity 3600 / 5						R-1 Program Element (Number/Name) PE 0605221F / KC-46					Project (Number/Name) 655271 / KC-46 RDT&E				

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Testing and Planning support of development & operational test, FAA & military certification, and aircraft qualification activities	Various	Various : Various,	34.800	25.317	Oct 2013	38.482	Oct 2014	42.200	Oct 2015	-		42.200	16.600	157.399	-
Subtotal			34.800	25.317		38.482		42.200		-		42.200	16.600	157.399	-

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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 - KC-46 A&AS Support	C/FFP	PESystems Inc. : Dayton, OH	27.411	7.479	Feb 2014	7.663	Jan 2015	5.006	Jan 2016	-		5.006	0.066	47.625	-
Program Management Administration - Trainer A&AS Support	C/FFP	National Technologies Assoc. Inc. : Dayton, OH	0.000	1.800	Dec 2013	2.387	Dec 2014	2.387	Dec 2015	-		2.387	3.042	9.616	-
Program Management Administration - Other	Various	KC-46 Program Office : Dayton, W-P AFB, OH	22.227	2.239	Oct 2013	5.627	Oct 2014	3.739	Oct 2015	-		3.739	1.227	35.059	-
Subtotal			49.638	11.518		15.677		11.132		-		11.132	4.335	92.300	-

Remarks
2 A&AS contracts over \$1M. Other PMA funding includes but is not limited to: A&AS contracts less than \$1M, travel, supplies and training.

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	3,231.025	1,505.476	786.437	602.364	-	602.364	340.076	6,465.378	-

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605221F / KC-46	Project (Number/Name) 655271 / KC-46 RDT&E

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
EMD: KC-46 Aircraft	1	2014	2	2018
Test & Evaluation	1	2014	2	2017
767-2C First Flight	1	2015	1	2015
Tanker First Flight	3	2015	3	2015
Operational Assessment #2	1	2015	3	2015
Initial Operational Test & Evaluation	1	2017	2	2017
Low Rate Initial Production - Lot 1	1	2016	1	2017
Low Rate Initial Production - Lot 2	3	2016	4	2017
Full Rate Production - Lot 3	1	2018	1	2019
Full Rate Production - Lot 4	3	2018	1	2020
Maintenance Tech Order Development	1	2014	2	2017
100% Tech Order In Process Review	1	2016	1	2016
Deliver Formal Tech Orders	2	2017	2	2017
Support Equipment Analysis	1	2014	3	2016
Provisioning	1	2014	2	2018
Depot Maintenance Inter-servicing (DMI), Source of Repair Assignment Process (SORAP), Activation Planning & FAA Certifications	1	2014	2	2020
First C-Check	3	2018	3	2018
Aircrew Training System Development & Updates	1	2014	4	2019
Maintenance Training System Development & Updates	1	2016	3	2018

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	0.000	-	8.201	11.395	-	11.395	12.152	107.173	262.765	275.879	581.113	1,258.678
655340: <i>Advanced Trainer Replacement T-X</i>	0.000	-	8.201	11.395	-	11.395	12.152	107.163	251.524	245.803	401.979	1,038.217
655361: <i>Stores-Aircraft Interface</i>	0.000	-	-	-	-	-	-	0.010	11.241	30.076	179.134	220.461

MDAP/MAIS Code: 436

Note

In FY2015, Project 655340, Advanced Trainer Replacement T-X, efforts were transferred from Program 0604233F, Specialized Undergraduate Flight Training, to Program 0605223F, Advanced Pilot Training, in order to improve transparency of this ACAT I acquisition program.

In FY 2018, Project 655361 Stores-Aircraft Interface includes new start efforts for a companion trainer.

A. Mission Description and Budget Item Justification

The Advanced Trainer Replacement, T-X, will replace Air Education and Training Command's (AETC) T-38C aircraft and associated Ground Based Training System (GBTS) 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 T-38C was first introduced in 1961 and now average's 45 years. T-X will close training gaps which the T-38 cannot fully address and have grown with the introduction of the 4th and 5th generation fighter aircraft.

The Stores-Aircraft Interface project provides funding for the Companion Trainer Aircraft which is intended to develop a variant of the Advanced Pilot Training (APT) T-X aircraft to serve as a "Red Air" adversary or aggressor capability for 5th generation fighter aircraft. A version of the T-X equipped with radar/data-link and hard-points for weapons and jammer carriage is envisioned for this role.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because OSD/AT&L has approved proceeding toward Milestone B to conduct engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
---	--

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	-	8.201	11.920	-	11.920
Current President's Budget	-	8.201	11.395	-	11.395
Total Adjustments	-	-	-0.525	-	-0.525
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-0.525	-	-0.525

Change Summary Explanation

For FY 2015, activity transferred from PE 0604233F.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
655340: <i>Advanced Trainer Replacement T-X</i>	-	-	8.201	11.395	-	11.395	12.152	107.163	251.524	245.803	401.979	1,038.217
Quantity of RDT&E Articles	-	-	-	-	-	-	-	6	-	-		

Note

In FY2015, Project 655340, Advanced Trainer Replacement T-X, efforts were transferred from Program 0604233F, Specialized Undergraduate Flight Training, to Program 0605223F, Advanced Pilot Training, in order to improve transparency of this ACAT I acquisition program.

A. Mission Description and Budget Item Justification

The Advanced Trainer Replacement, T-X, will replace AETC's T-38C aircraft and associated Ground Based Training System (GBTS) currently used in the fighter/bomber advanced Specialized Undergraduate Pilot Training (SUPT) track as well as in the Introduction to Fighter Fundamentals (IFF) program. Program is developing an acquisition strategy and related documentation to initiate an acquisition program with OSD direction to return for an RFP Release Decision DAB in FY2016. Although the acquisition strategy has not been approved, the quantity of EMD articles is projected to be six.

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

	FY 2014	FY 2015	FY 2016
Title: Advanced Pilot Training (APT) Family of Systems (FoS)	-	8.201	11.395
Description: Studies, analysis, acquisition documentation and market research activities to reduce risk in support of acquisition strategy, engineering and manufacturing development. Includes 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 2014 Accomplishments: N/A			
FY 2015 Plans: Studies, analysis, acquisition documentation and market research activities to reduce risk in support of acquisition strategy, engineering and manufacturing development. 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 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.			
Accomplishments/Planned Programs Subtotals	-	8.201	11.395

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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>

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE: BA05: PE 0604233F: <i>Advanced Trainer Replacement T-X</i>	1.049	-	-	-	-	-	-	-	-	-	4.548

Remarks

In FY2015, Project 655340, Advanced Trainer Replacement T-X, efforts were transferred from Program 0604233F, Specialized Undergraduate Flight Training, to Program 0605223F, Advanced Pilot Training in order to improve transparency of this ACAT I acquisition program.

D. Acquisition Strategy

A full and open competitive source selection is anticipated with OSD direction to return for an RFP Release Decision DAB in FY2016. The acquisition strategy 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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	--	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 (T-X) Family of Systems (FoS) Future Contracts	Various	Not specified. ; ,	0.000	-		-		-		-		-	1,018.621	1,018.621	-
Subtotal			0.000	-		-		-		-		-	1,018.621	1,018.621	-

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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 (T-X) Family of Systems (FoS) - Studies and Analysis	Various	TBD : TBD,	0.000	-		2.000	Jun 2015	4.000	Jun 2016	-		4.000	-	6.000	-
Advanced Pilot Training (T-X) Family of Systems (FoS) - A&AS	Various	TBD : TBD,	0.000	-		5.924	Apr 2015	6.841	Apr 2016	-		6.841	-	12.765	-
Subtotal			0.000	-		7.924		10.841		-		10.841	-	18.765	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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			-	-		-		-		-		-	-	-	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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 Validation																												
AoA Refresh Support																												
Mil Air Certification Requirements Analysis																												
Mil to Mil Engagements																												
Acquisition Strategy Development																												
Acquisition Strategy Approval																												
Sustainment Model																												
Cost Estimate Preparation Certification																												
Pre Milestone B (RFP Release) Decision Point																												
RFP Release																												
Source Selection																												
Milestone B																												
Engineering and Manufacturing Development																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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	1	2014	2	2015
CDD Validation	2	2015	2	2015
AoA Refresh Support	1	2014	2	2014
Mil Air Certification Requirements Analysis	1	2014	4	2014
Mil to Mil Engagements	2	2014	4	2014
Acquisition Strategy Development	1	2015	4	2015
Acquisition Strategy Approval	4	2015	4	2015
Sustainment Model	2	2015	4	2015
Cost Estimate Preparation Certification	1	2015	3	2016
Pre Milestone B (RFP Release) Decision Point	4	2016	4	2016
RFP Release	4	2016	1	2017
Source Selection	1	2017	4	2017
Milestone B	1	2018	1	2018
Engineering and Manufacturing Development	1	2018	4	2020

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0605223F / <i>Advanced Pilot Training</i>				Project (Number/Name) 655361 / <i>Stores-Aircraft Interface</i>			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
655361: <i>Stores-Aircraft Interface</i>	-	-	-	-	-	-	-	0.010	11.241	30.076	179.134	220.461
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2018, Project 655361 Stores-Aircraft Interface includes new start efforts for a companion trainer.

A. Mission Description and Budget Item Justification

The Companion Trainer is intended to develop a variant of the Advanced Pilot Training (APT) T-X aircraft to provide a "Red Air" adversary or aggressor capability for 5th generation fighter aircraft. An Office of the Secretary of Defense (OSD) endorsed report estimates considerable savings over the life of the F-35 through use of Companion Trainer due to significantly lower operating costs. The T-X variant will be equipped with radar/data-link and hard-points for weapons and jammer carriage is envisioned for this role. Missionization of the T-X to meet Companion Trainer requirements is expected to begin in FY2019.

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

	FY 2014	FY 2015	FY 2016
Title: Companion Trainer	-	-	-
Description: Missionize the Advanced Pilot Training (APT) T-X to meet the "Red Air" adversary/aggressor role.			
FY 2014 Accomplishments: N/A			
FY 2015 Plans: N/A			
FY 2016 Plans: N/A			
Accomplishments/Planned Programs Subtotals	-	-	-

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

N/A

Remarks

D. Acquisition Strategy

Acquisition strategy for Companion Trainer variant will be developed.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605223F / <i>Advanced Pilot Training</i>	Project (Number/Name) 655361 / <i>Stores-Aircraft Interface</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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605223F / <i>Advanced Pilot Training</i>	Project (Number/Name) 655361 / <i>Stores-Aircraft Interface</i>
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	-	-	-	-	-	-	-	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605223F / <i>Advanced Pilot Training</i>	Project (Number/Name) 655361 / <i>Stores-Aircraft Interface</i>
--	--	---

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Begin Companion Trainer Missionization																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605223F / <i>Advanced Pilot Training</i>	Project (Number/Name) 655361 / <i>Stores-Aircraft Interface</i>
--	--	---

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Begin Companion Trainer Missionization	2	2019	4	2020

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	43.900	333.558	100.000	156.085	-	156.085	422.514	457.856	415.360	134.975	41.642	2,105.890
654364: <i>Combat Rescue Helicopter</i>	43.900	333.558	100.000	156.085	-	156.085	422.514	457.856	415.360	134.975	41.642	2,105.890
Quantity of RDT&E Articles	-	4	-	-	-	-	5	-	-	-	-	-

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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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
---	---

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	333.558	-	10.973	-	10.973
Current President's Budget	333.558	100.000	156.085	-	156.085
Total Adjustments	-	100.000	145.112	-	145.112
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	100.000			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	145.112	-	145.112

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

Project: 654364: *Combat Rescue Helicopter*

Congressional Add: *Combat Rescue Helicopter*

Congressional Add Subtotals for Project: 654364

Congressional Add Totals for all Projects

	FY 2014	FY 2015
	-	100.000
Congressional Add Subtotals for Project: 654364	-	100.000
Congressional Add Totals for all Projects	-	100.000

Change Summary Explanation

FY16: Changes in funding reflects the SECAF decision's to continue the CRH program.

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

	FY 2014	FY 2015	FY 2016
Title: Combat Rescue Helicopter (CRH)	331.028	-	155.803
Description: Procure a new helicopter, associated training system and support elements that leverage fielded, non-developmental technologies to recapitalize the HH-60G fleet.			
FY 2014 Accomplishments: Awarded CRH contract. Procured 4 EMD aircraft and associated training system and product support. Conducted developmental work on CRH aircraft, training systems and associated product support. Performed management services such as studies and analyses, miscellaneous program office support, travel, office supplies, training courses and service contracts.			
FY 2015 Plans:			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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
---	---

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
N/A			
FY 2016 Plans: Conduct development work on CRH 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.			
Title: Combat Rescue Helicopter Test and Evaluation Description: Test and evaluation of the Combat Rescue Helicopter 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.	2.530	-	0.282
FY 2014 Accomplishments: Conducted test and evaluation of the Combat Rescue Helicopter 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.			
FY 2015 Plans: N/A			
FY 2016 Plans: Test and evaluation of the Combat Rescue Helicopter 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	333.558	-	156.085

	FY 2014	FY 2015
Congressional Add: Combat Rescue Helicopter	-	100.000
FY 2014 Accomplishments: N/A		
FY 2015 Plans: Conduct development work on CRH 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 Systems Requirement Review and Training Systems Requirements Review.		
Congressional Adds Subtotals	-	100.000

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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
---	---

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• APAF:BA 04:Line Item #10HHX0: <i>Combat Rescue Helicopter</i>	-	-	-	-	-	-	-	89.605	627.811	6,991.238	7,708.654

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.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605229F / CSAR HH-60 Recapitalization	Project (Number/Name) 654364 / Combat Rescue Helicopter
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	30.343	325.434	Jun 2014	91.456	Feb 2015	147.616	Dec 2015	-		147.616	1,367.907	1,962.756	1,501.557
Subtotal			30.343	325.434		91.456		147.616		-		147.616	1,367.907	1,962.756	1,501.557

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Various	Various : Various,	0.351	2.530	May 2014	-		0.282	Dec 2015	-		0.282	78.884	82.047	-
Subtotal			0.351	2.530		-		0.282		-		0.282	78.884	82.047	-

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Various	Various : Various,	2.402	2.269	Apr 2014	4.962	Jan 2015	5.046	Apr 2016	-		5.046	15.556	30.235	-
CRH Other PMA	Various	Various : Various,	10.804	3.325		3.582		3.141		-		3.141	10.000	30.852	-
Subtotal			13.206	5.594		8.544		8.187		-		8.187	25.556	61.087	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force							Date: February 2015				
Appropriation/Budget Activity 3600 / 5				R-1 Program Element (Number/Name) PE 0605229F / CSAR HH-60 Recapitalization			Project (Number/Name) 654364 / Combat Rescue Helicopter				
	Prior Years	FY 2014		FY 2015		FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	43.900	333.558		100.000		156.085	-	156.085	1,472.347	2,105.890	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605229F / CSAR HH-60 Recapitalization	Project (Number/Name) 654364 / Combat Rescue Helicopter

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Milestone B			■																									
CRH EMD Development			■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Aircraft System Requirements Review							■																					
Aircraft Preliminary Design Review											■																	
Aircraft Critical Design Review															■													
CRH Training System EMD Development			■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Training Systems System Requirements Review							■																					
Training Systems Preliminary Design Review															■													
Training Systems Critical Design Review																												
CRH Test and Evaluation			■		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Developmental Test and Evaluation																												
Milestone C																											■	
Required Assets Available for Initial Operational Capability																												■

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
Milestone B	3	2014	3	2014
CRH EMD Development	3	2014	3	2020
Aircraft System Requirements Review	3	2015	3	2015
Aircraft Preliminary Design Review	3	2016	3	2016
Aircraft Critical Design Review	3	2017	3	2017
CRH Training System EMD Development	3	2014	3	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	3	2014	4	2020
Developmental Test and Evaluation	4	2018	4	2020
Milestone C	1	2020	1	2020
Required Assets Available for Initial Operational Capability	4	2020	4	2020

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	84.777	2.611	4.497	-	-	-	-	-	-	-	-	91.885
655249: <i>HC-130Recap</i>	84.777	2.611	4.497	-	-	-	-	-	-	-	-	91.885
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	

MDAP/MAIS Code: 257

Note

In 2016, PE 0605278F, HC/MC-130 Recap RDT&E, Project 655249, HC-130 Recap, HC/MC-130 Recap BA5 efforts were transferred to PE 0605278F, HC/MC-130 Recap, RDT&E Project Number 675006, HC/MC-130 Recap as the program achieved full rate production.

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 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 an 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. Note: Beginning in FY16 this program is being reported in BA7, project # 655249.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	2.611	7.497	24.179	-	24.179
Current President's Budget	2.611	4.497	-	-	-
Total Adjustments	-	-3.000	-24.179	-	-24.179
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-3.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-24.179	-	-24.179

Change Summary Explanation

FY15: Congressional Reduction in the FY15 budget for forward financing.

FY16: Funding moved to BA07.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
---	----------------	----------------	----------------

<p>Title: Test and Evaluation</p> <p>Description: Test and evaluation planning, conduct, and support for developmental and operational testing.</p> <p>FY 2014 Accomplishments: Funding provided to support test for Block 6.5 follow on software build.</p> <p>FY 2015 Plans: Funding provided to support developmental and operational testing.</p> <p>FY 2016 Plans: Funding moved to BA 7</p>	0.510	0.600	-
--	-------	-------	---

<p>Title: Continuous Improvement Program</p> <p>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.</p> <p>FY 2014 Accomplishments:</p>	2.101	1.297	-
--	-------	-------	---

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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
---	---

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Funding provided to add system and software modifications to the aircraft configurations as identified as deficiency reports by using command such as defensive systems, displays, lighting, airdrop/approaches, ICS, EO/IR, and radar. FY 2015 Plans: Funding provided to add system and software modifications to the aircraft configurations as identified as deficiency reports by using command. FY 2016 Plans: Funding moved to BA 7			
Title: Block 8.1 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). FY 2014 Accomplishments: N/A FY 2015 Plans: HC/MC-130J delta Block 8.1 development will begin. FY 2016 Plans: Funding moved to BA 7	-	2.600	-
Accomplishments/Planned Programs Subtotals			
	2.611	4.497	-

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• P-59: APAF HC/ MC-130J Block 8.1	-	-	-	-	-	-	-	32.209	-	293.229	325.438
• P-6,7: BA02:APAF PE0207224F, HC-130 Recap	210.121	382.024	493.934	-	493.934	320.407	10.550	-	103.663	648.384	2,115.082
• P-8, 9: BA02: APAF PE0207230F, MC-130 Recap	453.434	372.971	888.472	-	888.472	603.246	483.563	611.173	353.420	2,524.383	6,290.662
Remarks											

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015
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>	
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.		

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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
--	---	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	SS/CPAF	Lockheed Martin : Marietta, GA	45.670	-		-		-		-		-	-	45.670	TBD
Continuous Improvement Program (CIP)	SS/CPFF	Lockheed Martin : Marietta, GA	19.314	2.101	Aug 2015	1.297	May 2015	-		-		-	-	22.712	TBD
Block 8.1	SS/CIPI	Lockheed Martin : Marietta, GA	4.716	-		2.600	Sep 2015	-		-		-	61.905	69.221	TBD
Subtotal			69.700	2.101		3.897		-		-		-	61.905	137.603	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Various	AFLCMC/WIS : WPAFB, OH	4.931	-		-		-		-		-	-	4.931	-
Subtotal			4.931	-		-		-		-		-	-	4.931	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test and Evaluation Support	C/FFP	46th Test Wing : EAFB, FL	10.146	0.510	Feb 2015	0.600	May 2015	-		-		-	-	11.256	TBD
Subtotal			10.146	0.510		0.600		-		-		-	-	11.256	-

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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			-	-		-		-		-		-	-	-	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force **Date:** February 2015

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
--	---	--

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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)																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force **Date:** February 2015

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
--	---	--

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Software Development Test and Evaluation	2	2014	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	2014	4	2019

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	0.000	261.554	307.898	228.230	-	228.230	257.254	233.187	662.937	674.798	Continuing	Continuing
657103: <i>Advanced MILSATCOM</i>	0.000	185.563	191.358	53.505	-	53.505	21.316	-	-	-	-	451.742
657104: <i>Evolved AEHF MILSATCOM (EAM)</i>	0.000	75.991	116.540	174.725	-	174.725	235.938	233.187	662.937	674.798	Continuing	Continuing

MDAP/MAIS Code: 261

Note

Prior Years funds for Advanced EHF MILSATCOM (Space) are in Budget Activity 4, PE 0603430F, Project 644050, Advanced MILSATCOM, and Project 64A030, Evolved AEHF MILSATCOM.

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.

With SV-1 and SV-2 launched and Initial Operational Capability (IOC) expected in 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 for a MILSATCOM Space Modernization Initiative (SMI), to fund 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. The SV-6 crypto redesign funding is reported in the AEHF (SV 5-6 Subprogram) Acquisition Program Baseline; 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

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
---	---

SATCOM in Joint Operations" study, and currently being 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).

The FY2016 funding request was reduced by \$18.631M to account for the availability of prior 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.

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	265.634	314.378	258.378	-	258.378
Current President's Budget	261.554	307.898	228.230	-	228.230
Total Adjustments	-4.080	-6.480	-30.148	-	-30.148
• Congressional General Reductions	-	-0.680			
• Congressional Directed Reductions	-	-5.800			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	2.000	-			
• SBIR/STTR Transfer	-6.080	-			
• Other Adjustments	-	-	-30.148	-	-30.148

Change Summary Explanation

FY14: +\$2.0M below threshold reprogramming for the Protected Satellite Communications Services (PSCS) Analysis of Alternatives

FY15: -\$5.8M Congressional Directed Reduction for Evolved AEHF excessive program management services

FY16: -\$18.631M to account for availability of prior execution balances, -\$10.0M to support higher Air Force priorities, -\$1.517M inflation adjustment

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
657103: <i>Advanced MILSATCOM</i>	-	185.563	191.358	53.505	-	53.505	21.316	-	-	-	-	451.742
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

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.

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 2014	FY 2015	FY 2016
Title: AEHF SVs 1-2, Mission Control Segment (MCS)	6.520	-	-
Description: Maintain AEHF MILSATCOM satellites, MCS, and cryptography			
FY 2014 Accomplishments: Funded System Development and Demonstration (SDD) contract Incentive Fee, continued program office support and related activities, and conducted studies/analyses.			
FY 2015 Plans: N/A			
FY 2016 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
N/A				
<p>Title: AEHF Interim Contractor Support (ICS)</p> <p>Description: Funds ICS for first two AEHF satellites, MCS, Cryptography, and AEHF Calibration Facility (ACF) until Initial Operational Capability (IOC) declaration</p> <p>FY 2014 Accomplishments: Conducted ICS for all on-orbit AEHF satellite support, MCS, AEHF Key Management Architecture (KMA) and ACF sustainment.</p> <p>FY 2015 Plans: Continue ICS for AEHF satellites' on-orbit support, MCS, AEHF KMA, and ACF leading to a 3QFY2015 IOC.</p> <p>FY 2016 Plans: N/A</p>		117.818	116.929	-
<p>Title: AEHF Key Management Infrastructure (KMI) transition</p> <p>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.</p> <p>FY 2014 Accomplishments: Developed and conducted systems engineering, integration and test of the Protected SATCOM Key Management Architecture (PKMA). SPO transferred funds to NSA for the development of the PKMA centralized elements, and to enable testing and integration of the AEHF Local Key Management functionality within the KMI client with the AEHF system. SPO initiated PKMA integration activities with the AEHF prime contractor, Lockheed Martin.</p> <p>FY 2015 Plans: Continue KMI transition. Funds transferred to NSA to complete initial development of Protected SATCOM Key Management Architecture (PKMA) centralized elements except for critical factory components (FY 2016). Continue testing with AEHF Local Key Management functionality, with the KMI client, and AEHF system. Start execution of developmental test and evaluation events. Develop and coordinate transition and test plans with AEHF prime contractor, Lockheed Martin, and EPS CAPS contractor, Northrop Grumman Information Systems.</p> <p>FY 2016 Plans:</p>		61.225	74.429	53.505

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

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 2014	FY 2015	FY 2016
Continue KMI transition. Funds transferred to NSA to complete initial development of Protected SATCOM Key Management Architecture (PKMA) centralized elements and continue testing with AEHF Local Key Management functionality with the KMI client and AEHF system. Plan and execute operational acceptance tests, AEHF factory tests and EPS factory tests.			
Accomplishments/Planned Programs Subtotals	185.563	191.358	53.505

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

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• MPAF: BA05: Line Item # ADV555: <i>Advanced EHF</i>	328.350	298.462	333.366	-	333.366	650.718	57.300	29.527	31.427	16.000	5,705.673
• RDT&E: BA05: PE 0605433F: <i>Wideband Global SATCOM (Space)</i>	11.674	16.328	8.660	-	8.660	18.320	20.266	-	-	-	309.173

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 will perform 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 will incorporate 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 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 L-3 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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	0.000	10.100	Mar 2014	10.200	Mar 2015	-		-		-	-	20.300	-
AEHF SVs 1-2 and MCS Interim Contractor Support	SS/CPIF	Lockheed Martin : Sunnyvale, CA	0.000	104.432	Dec 2013	103.129	Dec 2014	-		-		-	-	207.561	207.561
GFP - AEHF Calibration Facility (ACF)	Various	Lincoln Labs : Lexington, MA	0.000	3.286	Dec 2013	-		-		-		-	-	3.286	-
New KMI component development	MIPR	NSA : Ft Meade, MD	0.000	54.800	Dec 2013	53.389	Dec 2014	38.656	Dec 2015	-		38.656	7.745	154.590	-
Install/Integrate/Test new AEHF KMI components	SS/CPIF	Lockheed Martin : Sunnyvale, CA	0.000	3.979	Sep 2014	5.825	Dec 2014	5.438	Dec 2015	-		5.438	1.656	16.898	16.898
Install/Integrate/Test new EPS KMI components	SS/CPAF	Northrop Grumman Information Systems : Redondo Beach, CA	0.000	-		8.315	Feb 2015	4.576	Dec 2016	-		4.576	3.785	16.676	16.676
Test new KMI hardware/software	MIPR	AFLCMC : San Antonio, TX	0.000	1.946	Apr 2014	6.400	Aug 2014	4.800	Aug 2015	-		4.800	8.100	21.246	-
Subtotal			0.000	178.543		187.258		53.470		-		53.470	21.286	440.557	-

Remarks

FY14 funds transferred from PE 0603430F, Project 644050.

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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			-	-		-		-		-		-	-	-	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Test and Evaluation support	Various	Various : Various,	0.000	0.250	Dec 2013	-		-		-		-	-	0.250	-
Subtotal			0.000	0.250		-		-		-		-	-	0.250	-

Remarks
FY14 funds transferred from PE 0603430F, Project 644050.

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 FFRDC (PMA)	RO	The Aerospace Corporation : El Segundo, CA	0.000	1.742	Dec 2013	1.404	Dec 2014	-		-		-	-	3.146	-
Business Operating Support Services & Acquisition Mission Support (PMA)	Various	Various : Various,	0.000	5.028	Dec 2013	2.696	Dec 2014	0.035	Dec 2015	-		0.035	0.030	7.789	-
Subtotal			0.000	6.770		4.100		0.035		-		0.035	0.030	10.935	-

Remarks
FY14 funds transferred from PE 0603430F, Project 644050.

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	185.563	191.358	53.505	-	53.505	21.316	451.742	-

Remarks
Prior Years funds for Advanced EHF MILSATCOM (Space) are in PE 0603430F, Project 644050, Advanced MILSATCOM, Budget Activity 4.

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Deliver Ground Segment Software Increment 7.5 (eXtended Data Rate capability to International Partners)	■																											
Award Cryptologic & Cyber Systems Division (CCSD) PKMA contract				■																								
Award LM PKMA Integration and Test Contract					■																							
Award NG PKMA Integration and Test Contract						■																						
Multiservice Operational Test and Evaluation (MOT&E)				■	■																							
Initial Operational Capability (IOC) objective						■																						
PKMA development complete										■																		
Operations Transition to PKMA														■														
Operations Acceptance of PKMA																											■	

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
Deliver Ground Segment Software Increment 7.5 (eXtended Data Rate capability to International Partners)	1	2014	1	2014
Award Cryptologic & Cyber Systems Division (CCSD) PKMA contract	4	2014	4	2014
Award LM PKMA Integration and Test Contract	1	2015	1	2015
Award NG PKMA Integration and Test Contract	2	2015	2	2015
Multiservice Operational Test and Evaluation (MOT&E)	4	2014	1	2015
Initial Operational Capability (IOC) objective	3	2015	3	2015
PKMA development complete	3	2016	3	2016
Operations Transition to PKMA	2	2017	2	2017
Operations Acceptance of PKMA	4	2017	4	2017

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
657104: <i>Evolved AEHF MILSATCOM (EAM)</i>	-	75.991	116.540	174.725	-	174.725	235.938	233.187	662.937	674.798	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

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

This project funds the MILSATCOM Space Modernization Initiative (SMI) and Protected Satellite Communications Services (PSCS) efforts. The SMI and PSCS strategy is to evolve current and future Protected MILSATCOM systems and develop a more affordable and resilient MILSATCOM enterprise that will be capable of meeting near term and emerging MILSATCOM requirements. The SMI strategy is to continue to invest in developing the Protected Tactical Waveform (PTW) technologies, mature the Protected Tactical testbed, demonstrate resilient and affordable wideband protected technologies that will evolve current and future protected MILSATCOM systems and leverage commercial technologies that are capable of meeting MILSATCOM requirements. Other SMI efforts include reducing parts/obsolescence risk to future AEHF space vehicles, explore viable self protection technologies such as Space Situational Awareness sensors, expand the commercial transponder coverage and evaluate other potential technologies that are capable of meeting current and future SATCOM operations.

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

	FY 2014	FY 2015	FY 2016
Title: AEHF SV-6 Flight Crypto & Future AEHF Parts Obsolescence Mitigation	14.391	20.000	-
Description: AEHF SV-6 flight cryptographic equipment redesign effort and future AEHF parts obsolescence mitigation effort. Included in PNO 261.			
FY 2014 Accomplishments: Continued efforts for the SV 6 flight crypto development and mitigation of identified parts obsolescence that may affect the future stability of the AEHF product line, particularly the payload.			
FY 2015 Plans: Complete the SV-6 flight crypto effort and complete the AEHF parts/obsolescence effort.			
FY 2016 Plans: N/A			
Title: AEHF Capabilities Insertion Program (CIP)	19.434	41.826	32.116
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; these efforts are included in PNO			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
261. Develop software to increase current AEHF terminal data rates with adaptive coding algorithms. Explore possible Space Situational Awareness (SSA) technologies for current and future space systems.				
<p>FY 2014 Accomplishments: Awarded a contract and began the first phase of software development to improve the AEHF ground Mission Control Segment (MCS); included validation of a refactored software baseline and CIP design adequacy assessments. Completed a working prototype version of adaptive coding that can be integrated with Navy's Navy Multiband Terminal (NMT) and the Army SMART-T terminals. Once fully functional, adaptive coding will increase these terminal data rates up to 800%.</p> <p>FY 2015 Plans: Complete Phase I of the MCS software development. Award Phase II contract to execute software development of capability improvements; includes Internal Process Reviews (IPRs) to assess design suitability and implementation of functionality to deliver increased system capacity. Conduct early assessment of hosted SSA sensor capabilities.</p> <p>FY 2016 Plans: Complete Phase II development to improve system capacity. Award and begin executing phase III contract to deliver capability improvements and other upgrades; includes accommodating a larger user population through improved resource utilization efficiencies. Continue assessment of hosted SSA sensor capabilities leading to a potential integration of sensors onto production AEHF space vehicles.</p>				
<p>Title: Protected MILSATCOM "Design for Affordability" and Protected Testbed</p> <p>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 for the Protected Tactical demonstration efforts.</p> <p>FY 2014 Accomplishments: Awarded the Protected Broad Agency Announcement (BAA) Phase III contract, validated and completed the Protected BAA Phase II results, completed last Protected BAA Phase III test, conducted and completed the PTW compatibility and contractor developed modem tests, and completed the PTW modem over-the-air demonstrations.</p> <p>FY 2015 Plans: Conduct PTW component level demonstrations over wideband systems using existing fielded terminals with newly designed contractor provided PTW brassboard modems, mature the PTW technology, generate PTW modem test reports, and continue to develop the PTW documents. Design and mature the Protected Tactical Testbed components, mission management segments,</p>		42.166	20.409	32.851

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p>key management areas, and conduct PTW modem over the air (OTA) test with contractor modems and test newly developed hardware and software components for PTW.</p> <p>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 protected tactical waveform. Continue to build ground hub test vectors, 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.</p>				
<p>Title: Protected Tactical Demonstration</p> <p>Description: Previously funded in the Protected MILSATCOM "Design for Affordability" effort, 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 verified by NSA. The Protected Tactical Demonstration will produce 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.</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: Award contracts, develop and deliver government designed Protected Tactical Waveform (PTW) modem requirements, design and build MMS simulator and requirements, develop space payload requirements and wideband system hub segments, conduct SDR and prepare for PDR.</p> <p>FY 2016 Plans: Review system/functional requirements and conduct the PDR and CDR in Phase I. Continue to mature all contractors developed prototype PTW terminal modems and ECUs; continue to mature and test MMS simulator; integrate contractor PTW modems into wideband terminals; demo and test the MMS simulator with the ground hub; continue to develop interface control documents for ECUs and other protected tactical components. Conduct other risk reduction tests with PTW and MMS simulator.</p>		-	23.795	95.435
<p>Title: Evolved AEHF (E-AEHF)</p>		-	10.510	14.323

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016
<p>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 National Voice Conferencing (PNVC), Nuclear Command and Control (NC2) strategic networks, terminal report back, and Emergency Action Message (EAM) dissemination.</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: Define system/payload definitions and conduct trade analysis on various XDR systems.</p> <p>FY 2016 Plans: Research and determine system technical requirements and associated spacecraft/payload requirements. Continue research with industry to maximize affordability and develop a requirements plan for XDR backwards compatibility.</p>			
Accomplishments/Planned Programs Subtotals	75.991	116.540	174.725

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• MPAF: BA05: Line Item # ADV555: <i>Advanced EHF</i>	328.350	298.462	333.366	-	333.366	650.718	57.300	29.527	31.427	16.000	5,705.673

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, 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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Various	Various : Various,	0.000	14.391	Dec 2013	20.000	Dec 2014	-		-		-	-	34.391	-
AEHF Capabilities Insertion Program (CIP)	SS/ Various	Lockheed Martin : Sunnyvale, CA	0.000	14.325	Jun 2014	41.826	Jan 2015	24.243	Jan 2016	-		24.243	Continuing	Continuing	56.151
Protected MILSATCOM "Adaptive Coding"	Various	MIT/LL : Various,	0.000	1.899	Jan 2014	-		-		-		-	-	1.899	-
Protected MILSATCOM "Design for Affordability" Phase 3 BAA #1	C/FFP	The Boeing Company : El Segundo, CA	0.000	5.995	Feb 2014	-		-		-		-	-	5.995	5.995
Protected MILSATCOM "Design for Affordability" Phase 3 BAA #2	C/FFP	Loral : Palo Alto, CA	0.000	4.400	Feb 2014	-		-		-		-	-	4.400	4.400
Protected MILSATCOM "Design for Affordability" Phase 3 BAA #3	C/FFP	Raytheon : Marlborough, MA	0.000	3.981	Feb 2014	-		-		-		-	-	3.981	3.981
Protected MILSATCOM "Design for Affordability" Phase 3 BAA #4	C/FFP	L3 COM - West : Salt Lake City, UT	0.000	3.374	Feb 2014	-		-		-		-	-	3.374	3.374
Protected Tactical Demonstration (Modem)	TBD	TBD : TBD,	0.000	-		1.500	Sep 2015	74.300	Jan 2016	-		74.300	Continuing	Continuing	-
Protected Tactical Demonstration (Mission Management System simulator)	Various	Various : Various,	0.000	-		15.960	Oct 2014	16.350	Jan 2016	-		16.350	Continuing	Continuing	-
Evolved AEHF (E-AEHF)	Various	Various : Various,	0.000	-		3.339	Jun 2015	9.839	Jan 2016	-		9.839	Continuing	Continuing	-
Protected Testbed	Various	MIT/LL : Various,	0.000	7.030	Dec 2013	14.128	Dec 2014	22.531	Jan 2016	-		22.531	Continuing	Continuing	-
Subtotal			0.000	55.395		96.753		147.263		-		147.263	-	-	-

Remarks
AEHF CIP contract target value is based on FY14-15 funds. FY16 and out are not on contract yet.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force												Date: February 2015			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 5				PE 0605431F / Advanced EHF MILSATCOM (SPACE)				657104 / Evolved AEHF MILSATCOM (EAM)							
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
Enterprise Systems Engineering and Integration	C/Various	Linquest : Los Angeles, CA	0.000	4.030	Dec 2013	4.516	Dec 2014	6.128	Jan 2016	-		6.128	Continuing	Continuing	-
Subtotal			0.000	4.030		4.516		6.128		-		6.128	-	-	-
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
FFRDC to support MILSATCOM Enterprise (PMA)	Various	Various : Various,	0.000	10.832	Jan 2014	10.800	Jan 2015	10.800	Jan 2016	-		10.800	Continuing	Continuing	-
Program Office Support & Other Related Activities (PMA)	Various	Various : Various,	0.000	0.160	Dec 2013	0.100	Dec 2014	0.100	Dec 2015	-		0.100	Continuing	Continuing	-
Business Operating Support Services & Acquisition Mission Support (PMA)	Various	Various : Various,	0.000	5.574	Dec 2013	4.371	Dec 2014	10.434	Jan 2016	-		10.434	Continuing	Continuing	-
Subtotal			0.000	16.566		15.271		21.334		-		21.334	-	-	-
Project Cost Totals			0.000	75.991		116.540		174.725		-		174.725	-	-	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force							Date: February 2015			
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract	

Remarks
 Prior Years funds for Advanced EHF MILSATCOM (Space) are in PE 0603430F, Project 64A030, Evolved AEHF MILSATCOM, Budget Activity 4.

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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 Phase 3 options for Protected MILSATCOM "Design for Affordability"		■																										
Award AEHF CIP contract - Phase I			■																									
Outbrief Protected AoA							■																					
Initiate Evolved AEHF system definitions							■																					
Award AEHF CIP contract - Phase II							■																					
Award Protected Tactical Demonstration (Modem)								■																				
Award AEHF CIP contract - Phase III											■																	
Initiate Protected Tactical Service (PTS) Risk Reduction and System Definition (RRSD)															■													
Initiate Evolved AEHF RRSD															■													
Award PTS contract																				■								
Conduct Protected Tactical End to End Over the Air Demonstration																											■	

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
Award Phase 3 options for Protected MILSATCOM "Design for Affordability"	2	2014	2	2014
Award AEHF CIP contract - Phase I	3	2014	3	2014
Outbrief Protected AoA	3	2015	3	2015
Initiate Evolved AEHF system definitions	3	2015	3	2015
Award AEHF CIP contract - Phase II	3	2015	3	2015
Award Protected Tactical Demonstration (Modem)	4	2015	4	2015
Award AEHF CIP contract - Phase III	3	2016	3	2016
Initiate Protected Tactical Service (PTS) Risk Reduction and System Definition (RRSD)	2	2017	2	2017
Initiate Evolved AEHF RRSD	2	2017	2	2017
Award PTS contract	4	2018	4	2018
Conduct Protected Tactical End to End Over the Air Demonstration	3	2019	3	2019

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	0.000	101.401	103.245	72.084	-	72.084	51.320	24.724	-	-	-	352.774
657105: <i>Polar Satellite Communications</i>	0.000	101.401	103.245	72.084	-	72.084	51.320	24.724	-	-	-	352.774
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

MDAP/MAIS Code: 121

Note

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. The EPS system 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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0605432F I Polar MILSATCOM (SPACE)
--	---

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	104.582	103.552	72.563	-	72.563
Current President's Budget	101.401	103.245	72.084	-	72.084
Total Adjustments	-3.181	-0.307	-0.479	-	-0.479
• Congressional General Reductions	-	-0.307			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-3.181	-			
• Other Adjustments	-	-	-0.479	-	-0.479

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
<p>Title: EPS</p> <p>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.</p> <p>FY 2014 Accomplishments: Continued to integrate the two EPS payloads onto the host satellites. Completed the CDR for CAPS and initiated build, integration and test for the segment. Continued integrating and testing of the ground Gateway segment and completed site preparation at Clear AFS, AK. Successfully completed EPS Milestone B review and EPS system-level CDR.</p> <p>FY 2015 Plans: Continue integration of Payload #2 onto host satellite and conduct Payload #1 check out. Will begin Gateway segment installation. Will continue developing, integrating and testing CAPS to verify full functionality with the other segments.</p> <p>FY 2016 Plans: Complete Integration & Test and finalize system installation for CAPS at Schriever AFB. Execute factory intersegment testing between CAPS, payload, and the terminals. Execute EPS Key Management Architecture (KMA) testing. Execute CAPS to Mission Ground Station (MGS) intersegment testing. Execute payload on-orbit intersegment testing between CAPS, Interim Command and Control (IC2), Payload, Gateway and the polar user terminals. Complete lead development test organization (LDTO) part 1.</p>	101.401	103.245	72.084
Accomplishments/Planned Programs Subtotals	101.401	103.245	72.084

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity
 3600: *Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)*

R-1 Program Element (Number/Name)
 PE 0605432F / *Polar MILSATCOM (SPACE)*

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• None: <i>None</i>	-	-	-	-	-	-	-	-	-	-	-

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605432F / Polar MILSATCOM (SPACE)	Project (Number/Name) 657105 / Polar Satellite Communications
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	0.000	52.520	Dec 2013	55.607	Nov 2014	27.562	Nov 2015	-		27.562	20.668	156.357	148.600
Gateway architecture development	MIPR	Space and Naval Warfare Systems Command (SPAWAR) Systems Center - Pacific : San Diego, CA	0.000	17.590	Dec 2013	9.512	Nov 2014	8.687	Nov 2015	-		8.687	11.709	47.498	-
EPS Design/Development Contract	SS/CPAF	NGAS : Redondo Beach, CA	0.000	0.670	Dec 2013	11.761	Nov 2014	12.415	Nov 2015	-		12.415	21.080	45.926	-
IC2 Development	MIPR	Lincoln Labs : Boston, MA	0.000	1.080	Dec 2013	0.850	Nov 2014	4.000	Nov 2015	-		4.000	-	5.930	-
Subtotal			0.000	71.860		77.730		52.664		-		52.664	53.457	255.711	-

Remarks
FY14 funds transferred from PE 0603432F, Project 644052.

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 & Integration	C/Variou	Linquest : Los Angeles, CA	0.000	7.400	Dec 2013	4.420	Nov 2014	6.498	Nov 2015	-		6.498	5.419	23.737	-
Systems Integration/ Ground Software Support	MIPR	Johns Hopkins University/Applied Physics Lab : Columbia, MD	0.000	2.300	Dec 2013	1.280	Nov 2014	1.386	Nov 2015	-		1.386	1.380	6.346	-
Subtotal			0.000	9.700		5.700		7.884		-		7.884	6.799	30.083	-

Remarks
FY14 funds transferred from PE 0603432F, Project 644052.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0605432F / Polar MILSATCOM (SPACE)	Project (Number/Name) 657105 / Polar Satellite Communications
--	---	---

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	Space and Naval Warfare Systems Center - Pacific : San Diego, CA	0.000	0.461	Dec 2013	-		-		-		-	-	0.461	-
Subtotal			0.000	0.461		-		-		-		-	-	0.461	-

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 FFRDC engineering (PMA)	Various	Various : Various,	0.000	10.180	Dec 2013	10.037	Nov 2014	8.270	Nov 2015	-		8.270	10.908	39.395	-
Program Office Support	Various	Various : Various,	0.000	0.400	Dec 2013	1.604	Nov 2014	0.966	Nov 2015	-		0.966	0.986	3.956	-
Business Ops Support Services/Acquisition Mission Support (PMA)	Various	Various : Various,	0.000	8.800	Dec 2013	8.174	Nov 2014	2.300	Nov 2015	-		2.300	3.894	23.168	-
Subtotal			0.000	19.380		19.815		11.536		-		11.536	15.788	66.519	-

Remarks
FY14 funds transferred from PE 0603432F, Project 644052.

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		0.000	101.401	103.245	72.084	-	72.084	76.044	352.774	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force **Date:** February 2015

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>
--	--	--

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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																												■

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force **Date:** February 2015

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>
--	--	--

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	1	2017	4	2017
Conduct MOT&E	2	2018	2	2018
IOC/FOC declaration	3	2018	3	2018

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	11.674	31.328	56.343	-	56.343	44.116	20.266	-	-	-	163.727
657102: <i>Command and Control Sys-Consolidated (CCS-C)</i>	-	11.674	16.328	8.660	-	8.660	18.320	20.266	-	-	-	75.248
657107: <i>WGS Space Systems Resiliency Upgrade</i>	-	-	15.000	47.683	-	47.683	25.796	-	-	-	-	88.479

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 MILSATCOM Command and Control System-Consolidated (CCS-C) system provides integrated launch and on-orbit command and control (C2) functionality, and backup operations at Schriever AFB and Vandenberg AFB, for MILSATCOM satellites as the legacy capability provided by the Air Force Satellite Control Network (PE 0305110F) has phased out according to plan. CCS-C uses modified commercial off the shelf hardware/software to control emerging and legacy MILSATCOM systems including Milstar, DSCS, 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 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.

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 FY2016 funding request was reduced by \$5.397 million to account for the availability of prior execution balances.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	12.489	31.425	41.615	-	41.615
Current President's Budget	11.674	31.328	56.343	-	56.343
Total Adjustments	-0.815	-0.097	14.728	-	14.728
• Congressional General Reductions	-	-0.097			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.815	-			
• Other Adjustments	-	-	14.728	-	14.728

Change Summary Explanation

FY2016 net change is +\$14.728M which is composed of the following: +\$23.0M for the WGS Ka-band anti-jam enhancement, -\$2.5M for reduced number of modifications incorporated into CCS-C software, -\$5.397M to account for the availability of prior execution balances, and -\$0.375M inflation adjustment

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
657102: <i>Command and Control Sys-Consolidated (CCS-C)</i>	-	11.674	16.328	8.660	-	8.660	18.320	20.266	-	-	-	75.248
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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, and backup operations at Schriever AFB and Vandenberg AFB, for MILSATCOM satellites as the legacy capability provided by the Air Force Satellite Control Network (PE 0305110F) has phased out according to plan. 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 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 2014	FY 2015	FY 2016
Title: CCS-C development	11.674	16.328	8.660
Description: Develop system architecture to provide enhanced C2 of MILSATCOM satellites.			
FY 2014 Accomplishments: Funded engineering studies to explore/define architecture evolution prototypes for risk reduction, addition of new cross-domain capability, enhancement of Information Assurance posture, integration and testing of upgraded ground based cryptologic equipment, and initiation of architecture changes to increase WGS capacity and reduce system downtime.			
FY 2015 Plans: Continue CCS-C contract 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 Preliminary Design Review (PDR).			
FY 2016 Plans:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
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).			
Accomplishments/Planned Programs Subtotals	11.674	16.328	8.660

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• OPAF: BA03: Line Item # 836780: <i>Milsatcom Space</i>	0.261	0.265	0.271	-	0.271	0.276	0.280	0.285	-	-	1.638
• MPAF: BA05: Line Item # ADV555: <i>Advanced EHF</i>	2.350	3.670	1.890	-	1.890	2.338	-	-	-	-	10.248
• MPAF: BA05: Line Item # GAP000: <i>Wideband Global System Procurement</i>	-	5.609	2.083	-	2.083	2.083	-	-	-	-	11.114

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.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force												Date: February 2015			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 5				PE 0605433F / WIDEBAND GLOBAL SATCOM (SPACE)				657102 / Command and Control Sys-Consolidated (CCS-C)							
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
Production and Sustainment Contract	C/FPIF	Kratos : San Diego, CA	-	8.852	May 2014	11.198	Oct 2014	3.535	Oct 2015	-		3.535	Continuing	Continuing	TBD
Subtotal			-	8.852		11.198		3.535		-		3.535	-	-	-
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
CCS-C Systems Engineering and Integration (SE&I)	C/CPIF	LinQuest : Los Angeles, CA	-	0.889	Mar 2014	0.794	Oct 2014	0.723	Oct 2015	-		0.723	Continuing	Continuing	TBD
Subtotal			-	0.889		0.794		0.723		-		0.723	-	-	-
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
CCS-C Program Support Cost (PMA)	Various	Various : Various,	-	1.933	May 2014	4.336	Oct 2014	4.402	Oct 2015	-		4.402	Continuing	Continuing	TBD
Subtotal			-	1.933		4.336		4.402		-		4.402	-	-	-
Project Cost Totals			-	11.674		16.328		8.660		-		8.660	-	-	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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)

FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

Capacity Upgrade: "Wideband Capacity Capability Improvement."	[REDACTED]																											
Resource Pooling:--"Processing Architecture Capability Improvement for Better Resource Management" --"Automated Data Synchronization for Increased Efficiency."	[REDACTED]																											
Cryptography Upgrade: "Replace CCS-C KI-17 with KS-252"	[REDACTED]																											
Interoperability: "Interoperability Capability Improvement to Migrate to USB standard"	[REDACTED]																											
Secure FTP: "Cross-Domain Capability Improvement for secure data transfer"	[REDACTED]																											
IA Controls: "8500 Compliance Capability Improvement for security."	[REDACTED]																											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
Interoperability: "Interoperability Capability Improvement to Migrate to USB standard"	1	2017	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

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
657107: WGS Space Systems Resiliency Upgrade	-	-	15.000	47.683	-	47.683	25.796	-	-	-	-	88.479
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) 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. FY15 funds initiated an X-band ground based anti-jam development. FY16 PB adds funding for a Ka-band ground based anti-jam development.

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

	FY 2014	FY 2015	FY 2016
Title: WGS Upgrade	-	15.000	47.683
Description: Upgrade WGS system to both locate and neutralize ground-based jamming threats.			
FY 2014 Accomplishments: Not Applicable.			
FY 2015 Plans: Funds System Requirements Definition, and initial Ground Based Receiver Equipment Development for X-band.			
FY 2016 Plans: X-band: continues 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, and initial Rack Integration and Test (I&T).			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Ka-band: anti-jam development; covers system requirements definition and initial ground based receiver equipment development.			
Accomplishments/Planned Programs Subtotals	-	15.000	47.683

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

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• MPAF: BA05: Line Item # GAP000: <i>Wideband Global System Procurement</i>	33.998	36.071	53.476	-	53.476	65.397	48.310	11.220	-	-	3,203.649

Remarks

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force												Date: February 2015			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 5				PE 0605433F / WIDEBAND GLOBAL SATCOM (SPACE)				657107 / WGS Space Systems Resiliency Upgrade							
Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
WGS Upgrade	SS/FFP	The Boeing Company : El Segundo, CA	-	-		13.700	Mar 2015	46.040	Oct 2015	-		46.040	Continuing	Continuing	52.620
Subtotal			-	-		13.700		46.040		-		46.040	-	-	52.620
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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
WGS FFRDC (PMA)	Various	Aerospace : El Segundo, CA	-	-		1.000	Feb 2015	0.689	Oct 2015	-		0.689	Continuing	Continuing	6.180
Business Operating Support Services & Acquisition Mission Support (PMA)	Various	Various : ,	-	-		0.300	Feb 2015	0.954	Nov 2015	-		0.954	Continuing	Continuing	1.200
Subtotal			-	-		1.300		1.643		-		1.643	-	-	7.380

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force								Date: February 2015				
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>				
	Prior Years	FY 2014	FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-	15.000		47.683		-		47.683	-	-	60.000

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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																												
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)																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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)	3	2015	3	2015
Ground Based Receiver Equipment Development	4	2015	3	2016
GSCCE Software Development (GBAN)	1	2016	3	2016
RAM Patch Development	1	2016	3	2016
In Service Calibration / Geolocation / Beam SW	2	2016	4	2016
Rack Integration & Test	4	2016	2	2017
Fielding and Activation	3	2017	2	2018
Contract Award (Ka-band)	1	2016	1	2016
Ground Based Receiver Equipment Development (Ka)	2	2016	1	2017
GSCCE Software Development (GBAN) (Ka)	2	2016	1	2017
RAM Patch Development (Ka)	3	2016	2	2017
Geolocation / Beam Pointing SW (Ka)	3	2016	2	2017
Rack Integration & Test (Ka)	2	2017	3	2017
System Integration & Test and IA Certification (Ka)	2	2017	4	2017
Fielding and Activation (Ka)	3	2017	1	2018

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	0.000	-	85.938	47.629	-	47.629	-	-	-	-	-	133.567
654945: <i>AOC 10.2 Development</i>	0.000	-	85.938	47.629	-	47.629	-	-	-	-	-	133.567
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

MDAP/MAIS Code: N42

Note
In FY 2015, PE 0605458F, Air & Space Ops Center 10.2, project 654945, AOC 10.2 Development, efforts were transferred from PE 0604458F, Air & Space Ops Center, project 644945, AOC Increment 10.2 development, in order to align post Milestone B development efforts with Budget Activity 05, System Development & Demonstration (SDD).

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 COCOMs, 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.

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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force				Date: February 2015		
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>				
B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	
Previous President's Budget	-	85.938	47.946	-	47.946	
Current President's Budget	-	85.938	47.629	-	47.629	
Total Adjustments	-	-	-0.317	-	-0.317	
• Congressional General Reductions	-	-				
• Congressional Directed Reductions	-	-				
• Congressional Rescissions	-	-				
• Congressional Adds	-	-				
• Congressional Directed Transfers	-	-				
• Reprogrammings	-	-				
• SBIR/STTR Transfer	-	-				
• Other Adjustments	-	-	-0.317	-	-0.317	
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2014	FY 2015	FY 2016
Title: AOC WS Inc 10.2 Prime Development				-	81.541	45.447
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.						
FY 2014 Accomplishments: N/A						
FY 2015 Plans: Continue contractor modernization and provides contractor support for development and operational testing, training, and initial site deployment. This includes but is not limited to obtaining an Interim Authority to Test (IATT), preparing to obtain an Authority to Operate (ATO), conducting the contractor System Acceptance Test (SAT), conducting 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 IOT&E sites will begin.						
FY 2016 Plans: Completes contractor modernization and provides contractor support for development and operational testing, training, and initial site deployment. This includes but is not limited obtain an Authority to Operate (ATO), completing the Government Developmental Testing (DT) and Operational Assessment. Operational Test activities will occur including installation of the IOT&E sites. OT phase I, conducted at CAOC-X, will be focused on operational suitability. OT phase II, conducted at the 1st operational site, will be focused on operational effectiveness.						
Title: AOC WS Inc 10.2 Test and Evaluation				-	1.922	1.424

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016
<p>Description: Test and Evaluation</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: Plan and implement 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, conducting test, and documentation review.</p> <p>FY 2016 Plans: Will plan and implement 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, conducting test, and documentation review.</p>				
<p>Title: AOC WS Inc 10.2 Training</p> <p>Description: Training</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 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 also includes curriculum and courseware / material development, instructor training, class / Computer Based Training conduct, and training surveys / analysis / updates / enhanced simulation capabilities.</p> <p>FY 2016 Plans: Planned effort will include, 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 will also includes curriculum and courseware / material development, instructor training, class / Computer Based Training conduct, and training surveys / analysis / updates / enhanced simulation capabilities.</p>		-	2.475	0.758
Accomplishments/Planned Programs Subtotals		-	85.938	47.629

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

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

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• RDTE: BA07: PE 0207410F: <i>Air and Space Operations Center Weapon System (AOC WS)</i>	-	-	-	-	-	-	-	-	-	-	264.584
• RDTE: BA04: PE 0604458F: <i>Air & Space Ops Center</i>	60.971	-	-	-	-	-	-	-	-	-	60.971
• OPAF BA03 Line Item # 834560: <i>Air & Space Operations Ctr Inc 10.2</i>	-	-	24.246	-	24.246	50.877	43.219	32.038	32.606	373.583	438.800

Remarks

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. The AOC Modernization Contract was competitively awarded on 25 October 2011, but due to contract protests and associated delays, the actual start date was 20 December 2011. The Modernization contractor is using a system of systems perspective, and is following systems engineering rigor, to evolve AOC to a Net-Centric environment, compliant with DoD Service Oriented Architecture (SOA) standards.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 :	0.000	-		2.187	Feb 2015	-		-		-	-	2.187	-
AOC 10.2 Modernization Contract	C/CPIF	Northrop Grumman : Herndon, VA	0.000	-		70.015	Oct 2014	38.884	Oct 2015	-		38.884	-	108.899	212.958
AOC 10.2 Training	C/Various	TBD : TBD,	0.000	-		2.475	Jan 2015	0.758	Jan 2016	-		0.758	-	3.233	-
Subtotal			0.000	-		74.677		39.642		-		39.642	-	114.319	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Test	Various	Various : Various,	0.000	-		1.921	Dec 2014	1.424	Jan 2016	-		1.424	-	3.345	TBD
Subtotal			0.000	-		1.921		1.424		-		1.424	-	3.345	-

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-		4.008	Oct 2014	2.413	Oct 2015	-		2.413	-	6.421	TBD
Program Management Administration	C/Various	Various : Hanscom AFB, MA	0.000	-		5.332	Oct 2014	4.150	Oct 2015	-		4.150	-	9.482	TBD
Subtotal			0.000	-		9.340		6.563		-		6.563	-	15.903	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force								Date: February 2015			
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 2014	FY 2015		FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals	0.000	-	85.938		47.629	-	47.629	-	133.567	-	

Remarks

In FY 2014, PE 0604458F, Project Number 644945, AOC Inc. 10.2, efforts were transferred from PE 0207410F, AOC WS, Project Number 675117, in order to improve transparency of ACAT 1 Acquisition programs.

In FY 2015, PE 0605458F, Air & Space Ops Center 10.2, project number 654945, AOC 10.2 Development, efforts were transferred from PE 0604458F, Air & Space Ops Center, project number 644945, AOC Increment 10.2 Development, in order to align post Milestone B development efforts with funding in RDT&E Budget Activity 05, System Development & Demonstration (SDD).

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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 B (OCT 2013)	■																											
AOC Inc 10.2 Critical Design Review (MAR 2014)		■																										
AOC Inc 10.2 Milestone C (NOV 2015)											■																	
AOC Inc 10.2 Full Deployment Decision (DEC 2016)															■													
AOC Inc 10.2 Design/Development	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
AOC Inc 10.2 Development Test (DT)/ Operational Test (OT) and Initial Operational Test and Evaluation (IOT&E)											■	■																
AOC Inc 10.2 Fielding to Support IOT&E at the Help Desk											■	■																
AOC Inc 10.2 Fielding to Support IOT&E at the Formal Training Unit (FTU)											■	■																
AOC Inc 10.2 Fielding to Support IOT&E at the Initial Site											■	■																

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
AOC Inc 10.2 Milestone B (OCT 2013)	1	2014	1	2014
AOC Inc 10.2 Critical Design Review (MAR 2014)	2	2014	2	2014
AOC Inc 10.2 Milestone C (NOV 2015)	1	2016	1	2016
AOC Inc 10.2 Full Deployment Decision (DEC 2016)	1	2017	1	2017
AOC Inc 10.2 Design/Development	1	2014	3	2015
AOC Inc 10.2 Development Test (DT)/Operational Test (OT) and Initial Operational Test and Evaluation (IOT&E)	3	2015	3	2016
AOC Inc 10.2 Fielding to Support IOT&E at the Help Desk	2	2015	2	2016
AOC Inc 10.2 Fielding to Support IOT&E at the Formal Training Unit (FTU)	2	2015	2	2016
AOC Inc 10.2 Fielding to Support IOT&E at the Initial Site	2	2015	3	2016

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 / B-2 Defensive Management System
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	381.849	248.971	98.768	271.961	-	271.961	247.860	199.285	128.834	93.303	-	1,670.831
653844: B-2 DMS	381.849	248.971	98.768	271.961	-	271.961	247.860	199.285	128.834	93.303	-	1,670.831
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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. By leveraging modern "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 in 2019, Low Rate Initial Production will begin in early FY20. After a successful Operational Test and Evaluation, the Full Rate Production decision will occur in 2020. FY19 aircraft modification funds will be used to procure long lead components. Life of type buys may be implemented, when appropriate, to address diminishing manufacturing sources and materiel shortages for affected components and subassemblies to protect the planned production program by mitigating unplanned part redesign and requalification risks.

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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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
--	---

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	257.500	98.768	227.668	-	227.668
Current President's Budget	248.971	98.768	271.961	-	271.961
Total Adjustments	-8.529	-	44.293	-	44.293
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-8.529	-			
• Other Adjustments	-	-	44.293	-	44.293

Change Summary Explanation

FY16 \$44.293M funds DMS-M to the revised Program Office Estimate following reductions in years FY13-FY15.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
<p>Title: B-2 Defensive Management System Modernization (DMS-M) Tech Development Ph 2</p> <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 2014 Accomplishments: Conducted Preliminary Design Review and continued preparation for a Milestone B decision in FY-2015 to enter Engineering and Manufacturing Development.</p> <p>FY 2015 Plans: Complete DMS Modernization Technology Development. Conduct Milestone B decision.</p>	248.971	98.768	-
<p>Title: B-2 Defensive Management System Modernization (DMS-M) EMD</p> <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 2016 Plans:</p>	-	-	271.961

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
---	--

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Begin DMS Modernization Engineering and Manufacturing Development (EMD) Phase.			
Accomplishments/Planned Programs Subtotals	248.971	98.768	271.961

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• APAF: BA07: Line Item #b2dms0: <i>B-2 DMS</i>	-	-	-	-	-	-	-	81.088	211.307	513.693	806.088
• APAF: BA07: Line Item #751: <i>Other Production Charges</i>	-	-	-	-	-	-	-	-	6.535	-	-

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 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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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
--	---	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Ph1	SS/CPIF	Various : Various,	127.333	-		-		-		-		-	-	127.333	-
Air Vehicle - Technology Development Ph 2	SS/CPFF	Various : Various,	242.673	238.207	Dec 2013	94.427	Mar 2015	-		-		-	-	575.307	-
Air Vehicle - Engineering and Manufacturing Development (EMD)	SS/CPIF	Various : Various,	0.000	-		-		257.869	Nov 2015	-		257.869	586.645	844.514	TBD
Subtotal			370.006	238.207		94.427		257.869		-		257.869	586.645	1,547.154	-

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

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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,	1.239	1.985	Mar 2014	0.895	Jan 2015	5.695	Dec 2015	-		5.695	45.983	55.797	TBD
Subtotal			1.239	1.985		0.895		5.695		-		5.695	45.983	55.797	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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
--	---	--

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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,	10.604	8.779	Dec 2013	3.446	Dec 2014	8.397	Dec 2015	-		8.397	36.654	67.880	-
Subtotal			10.604	8.779		3.446		8.397		-		8.397	36.654	67.880	-
Project Cost Totals			381.849	248.971		98.768		271.961		-		271.961	669.282	1,670.831	-

Remarks
Northrop-Grumman, the prime contractor for the B-2 weapon system, is the integrator and major contractor for B-2 DMS activities.

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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 Preliminary Design Review																												
DMS-M Milestone B Decision																												
DMS-M EMD Contract Award																												
DMS-M Critical Design Review																												
DMS-M EMD																												
DMS-M Milestone C																												
DMS-M Advance Procurement (AP)																												
DMS-M Low Rate Initial Production (LRIP)																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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 Preliminary Design Review	4	2014	4	2014
DMS-M Milestone B Decision	4	2015	4	2015
DMS-M EMD Contract Award	1	2016	1	2016
DMS-M Critical Design Review	4	2016	4	2016
DMS-M EMD	1	2016	2	2019
DMS-M Milestone C	2	2019	2	2019
DMS-M Advance Procurement (AP)	1	2019	1	2019
DMS-M Low Rate Initial Production (LRIP)	1	2020	4	2020

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	143.990	33.000	168.357	212.121	-	212.121	206.283	152.435	99.732	48.188	26.610	1,090.716
657007: <i>B61 LIFE EXTENSION PROGRAM</i>	143.990	33.000	168.357	212.121	-	212.121	206.283	152.435	99.732	48.188	26.610	1,090.716
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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.

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	33.000	198.357	213.532	-	213.532
Current President's Budget	33.000	168.357	212.121	-	212.121
Total Adjustments	-	-30.000	-1.411	-	-1.411
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-30.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-1.411	-	-1.411

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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>		
Change Summary Explanation FY15: Congressional Mark of -\$30M for favorable cost variances/Forward financing. FY16: Other adjustment reduction of -\$1.411M for inflation.				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016
Title: Engineering & Manufacturing Development Contract (B61)		17.500	97.776	87.145
Description: Prime contract to develop, test, integrate and nuclear certify a guided TKA in support of the B61-12 LEP.				
FY 2014 Accomplishments: Performed B61-12 TKA development, design, test, integration, qualification and nuclear certification activities in support of the B61-12 LEP. Supported design, integration and testing of the B61-12 system and verification of requirements and validation of TKA performance. Established B61-12 TKA program practices that ensured 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.				
FY 2015 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. Conducts contractor flight tests with weapons drops in preparation for the Critical Design Review (CDR). Conducts Environmental and Separation Flight Testing. Provides support to DOE flight tests in preparation for the Baseline Design Review (BDR) for the bomb assembly (BA). Supports aircraft Operational Flight Program (OFP) development and integration to deliver the OFP test tapes for flight testing.				
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 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 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.				
Title: All Up Round (AUR) Technical Integration (B61)		5.769	11.858	12.512

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p>Description: Covers all system engineering tasks in support of AUR technical integration, qualification & fielding, including program support to the B61 LEP POG.</p> <p>FY 2014 Accomplishments: Performed B61-12 system qualification plan, warhead component qualification, TKA qualifications, and B61-12 AUR integration activities. Provided support to maintain technical and programmatic schedules and program documents that support the AUR technical integration. Developed warhead-to-TKA interface requirements and design. Provided technical expertise to maintain B61-12 aircraft compatibility with delivery platforms through completion of the test and evaluation program. Developed Compatibility Test Units (CTU) 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. Conducted test assessments to validate model & 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.</p> <p>FY 2015 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 Compatibility Test Units (CTUs) to support early 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 development of trainers and other USAF configurations. Provides AUR integration support to the DOE flight tests in support of the BDR for the BA.</p> <p>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 CTUs 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</p>				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
management of B61-12 AUR drawings, interface control documents, and system specifications; and development of trainers and other USAF configurations. Provides AUR integration support to the DOE flight tests in support of the BDR Review for the BA. Provides AUR integration support to the DOE in preparation for System Qualification drops.				
<p>Title: Aircraft Integration (B61)</p> <p>Description: B61-12 integration with aircraft, including mission planning system upgrades to accommodate the new weapon variant and weapon design compatibility with objective aircraft.</p> <p>FY 2014 Accomplishments: Provided meeting participation/membership and fit checks with aircraft. Continued test tapes development and demonstration/validation of the OFP. Continued mission planning upgrades for aircraft and design compatibility with objective aircraft.</p> <p>FY 2015 Plans: Continues meeting participation/membership and integration activities with aircraft. Continues test tapes development and demonstration/validation of the OFP. Continues mission planning upgrades for aircraft and design compatibility with objective aircraft. Conducting aircraft OFP development and integration to deliver the OFP test tapes in support of flight testing.</p> <p>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.</p>		6.652	45.557	62.111
<p>Title: Test Support (B61)</p> <p>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).</p> <p>FY 2014 Accomplishments: Test planning and execution activities to support B61-12 weapon development, AUR technical integration and aircraft integration were conducted. Conducted ground test activities to verify warhead-to-tailkit integration to include wind tunnel testing. Conducted aircraft and support equipment fit check activities. Continued flight testing to verify aircraft flight environments in support of weapon development, and AUR design verification. Continued development and delivery of necessary BAs to accomplish TKA test and trainer activities.</p> <p>FY 2015 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</p>		3.079	13.166	50.353

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 2014	FY 2015	FY 2016
environmental and separation flight testing, initial autopilot and contractor flight tests with weapons drops in preparation for the CDR. 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 BA. Supports aircraft OFP development and integration to deliver the OFP test tapes in support of flight testing. <i>FY 2016 Plans:</i> 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.			
Accomplishments/Planned Programs Subtotals	33.000	168.357	212.121

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

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• PAAF: BA01 Line Item # 354040: B61	-	-	-	-	-	-	146.575	208.615	2.478	-	357.668

Remarks

E. Acquisition Strategy
 Full and open competition as approved by the MDA. Per the MDA the Engineering Manufacturing and Development (EMD) phase consists of EMD phase 1 and EMD phase 2.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force												Date: February 2015				
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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 Contract	C/CPIF	Boeing : St Charles, MO	91.861	15.059	Nov 2013	91.974	Nov 2014	80.805	Nov 2015	-		80.805	167.822	447.521	185.000	
Subtotal			91.861	15.059		91.974		80.805		-		80.805	167.822	447.521	185.000	
Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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,	11.234	5.769	Apr 2014	11.858	Oct 2014	12.512	Oct 2015	-		12.512	37.357	78.730	-	
Aircraft Integration	MIPR	Various : various,	17.540	6.652	Oct 2014	45.557	Oct 2014	62.111	Oct 2015	-		62.111	120.459	252.319	-	
Subtotal			28.774	12.421		57.415		74.623		-		74.623	157.816	331.049	-	
Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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	MIPR	96 TW : Eglin, FL	12.042	3.079	Jun 2014	13.166	Oct 2014	50.353	Oct 2015	-		50.353	161.848	240.488	-	
Subtotal			12.042	3.079		13.166		50.353		-		50.353	161.848	240.488	-	
Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 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,	11.313	2.441	Oct 2013	5.802	Oct 2014	6.340	Oct 2015	-		6.340	19.152	45.048	-	
Subtotal			11.313	2.441		5.802		6.340		-		6.340	19.152	45.048	-	
Project Cost Totals			143.990	33.000		168.357		212.121		-		212.121	506.638	1,064.106	-	

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force							Date: February 2015			
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract	

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force **Date:** February 2015

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>
--	--	--

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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 & Manufacturing Development Phase 1 & 2																												
Engineering & Manufacturing Development Phase 2 option																												
All-Up-Round Integraton Test																												
Ground Test/WTT/Flight Test																												
F-15E Integration																												
PDR																												
CDR																												
F-16 Integration																												
B-2A Integration																												
PA-200 Integration																												
F-35 Integration																												
Milestone C Decision																												
Production																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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 & 2	1	2014	4	2020
Engineering & Manufacturing Development Phase 2 option	1	2016	1	2016
All-Up-Round Integraton Test	1	2014	4	2018
Ground Test/WTT/Flight Test	1	2014	4	2019
F-15E Integration	1	2014	4	2018
PDR	4	2014	4	2014
CDR	1	2016	1	2016
F-16 Integration	1	2015	4	2018
B-2A Integration	2	2015	4	2018
PA-200 Integration	3	2015	4	2017
F-35 Integration	3	2015	4	2018
Milestone C Decision	3	2018	3	2018
Production	3	2018	4	2020

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	-	-	186.481	-	186.481	214.428	120.158	247.368	127.855	Continuing	Continuing
657108: EPAWSS DEVELOPMENT	-	-	-	186.481	-	186.481	214.428	120.158	247.368	127.855	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
 In FY 2016, PE 0207171F, F-15 EPAWSS, Project 676038 was transferred to PE 0207171F, F-15 EPAWSS, Project 657108 BA05 to align BA with stage of development

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 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.

This program is in Budget Activity 5, Engineering and Manufacturing Development(EMD), beginning in FY 2016, because this budget activity includes design, engineering, and manufacturing development tests.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0207171F / F-15 EPAWSS
---	---

B. Program Change Summary (\$ in Millions)	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	186.481	-	186.481
Total Adjustments	-	-	186.481	-	186.481
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	186.481	-	186.481

Change Summary Explanation

In FY 2015, EPAWSS efforts were transferred from Budget Activity 7, Operational Systems Development, PE 0207134F, Project Number 670131 to Budget Activity 7, Operational Systems Development, PE 0207171F, Project Number 676038 per Air Force direction.

In FY 2016, EPAWSS efforts were transferred from Budget Activity 7, Operational Systems Development, PE 0207171F, Project Number 676038 to Budget Activity 5, Engineering and Manufacturing Development, PE 0207171F, Project Number 657108 per OSD direction.

C. Accomplishments/Planned Programs (\$ in Millions)	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>
Title: Eagle Passive/Active Warning Survivability System (EPAWSS)	-	-	186.481
Description: Planned replacement of the existing F-15 self-protection, Tactical Electronic Warfare System (TEWS). This includes technical and acquisition related studies.			
FY 2016 Plans: Complete TMRR PDR-level design to support Milestone B decision. Refine design for FY 17 CDR. Continue acquisition planning for EMD and Milestone B. Award and execute EMD development and test contract.			
Accomplishments/Planned Programs Subtotals	-	-	186.481

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• F15EWS: <i>Aircraft Modification</i>	-	-	-	-	-	-	-	233.400	195.600	4,322.868	4,751.868

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 0207171F / <i>F-15 EPAWSS</i>
---	--

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
------------------	----------------	----------------	-------------------------------	------------------------------	--------------------------------	----------------	----------------	----------------	----------------	-----------------------------------	-------------------

Remarks
FY 19 & FY 20 funding is for F-15 C/D & F-15 E Procurement.

E. Acquisition Strategy

Pending MDA approval the overall 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.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207171F / F-15 EPAWSS	Project (Number/Name) 657108 / EPAWSS DEVELOPMENT
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	TBD	TBD : TBD,	-	-		-		91.673	Dec 2015	-		91.673	Continuing	Continuing	137.501
F-15 EPAWSS EMD	TBD	TBD : TBD,	-	-		-		78.370	Aug 2016	-		78.370	Continuing	Continuing	611.055
F-15 EPAWSS	Various	Various : Various,	-	-		-		15.299	Dec 2015	-		15.299	Continuing	Continuing	146.741
Subtotal			-	-		-		185.342		-		185.342	-	-	895.297

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

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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,	-	-		-		1.139	Dec 2015	-		1.139	Continuing	Continuing	1.139
Subtotal			-	-		-		1.139		-		1.139	-	-	1.139

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207171F / <i>F-15 EPAWSS</i>	Project (Number/Name) 657108 / <i>EPAWSS DEVELOPMENT</i>
--	--	--

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-	-	186.481	-	186.481	-	-	896.436

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 to provide budget transparency.

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force			Date: February 2015
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207171F / F-15 EPAWSS	Project (Number/Name) 657108 / EPAWSS DEVELOPMENT	

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
AoA Complete		■																										
CDD JROC Approved				■																								
EPAWSS MS A								■																				
EPAWSS TMRR Contract Award								■																				
EPAWSS MS B												■																
EPAWSS EMD Contract Award												■																
EPAWSS MS C																								■				

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
AoA Complete	2	2014	2	2014
CDD JROC Approved	4	2014	4	2014
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

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	4.663	8.831	18.082	-	18.082	13.283	11.685	11.904	12.117	Continuing	Continuing
655012: <i>Full Combat Mission Training</i>	-	-	2.612	2.666	-	2.666	2.803	2.858	2.910	2.963	Continuing	Continuing
655354: <i>F-16 Block 40/50 MTC</i>	-	4.663	6.219	15.416	-	15.416	10.480	8.827	8.994	9.154	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.

RDT&E for 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 Centers (MTC), efforts are focused on development and demonstration of the F-16 Block 40/50 MTC.

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	4.663	8.831	18.202	-	18.202
Current President's Budget	4.663	8.831	18.082	-	18.082
Total Adjustments	-	-	-0.120	-	-0.120
• Congressional General Reductions	-	-	-	-	-
• Congressional Directed Reductions	-	-	-	-	-
• Congressional Rescissions	-	-	-	-	-
• Congressional Adds	-	-	-	-	-
• Congressional Directed Transfers	-	-	-	-	-
• Reprogrammings	-	-	-	-	-
• SBIR/STTR Transfer	-	-	-	-	-
• Other Adjustments	-	-	-0.120	-	-0.120

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
655012: Full Combat Mission Training	-	-	2.612	2.666	-	2.666	2.803	2.858	2.910	2.963	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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
<p>Title: FCMT Cross Domain Solutions (CDS)</p> <p>Description: Development, demonstration and insertion of multi-level security capability.</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: N/A</p> <p>FY 2016 Base Plans: Provide Multi-Level-Security (MLS) test bed support for MLS testing and implementation on, but not limited to the F-22 and F-35 Trainers</p> <p>FY 2016 OCO Plans: N/A</p>	-	-	1.666	-	1.666
<p>Title: FCMT Develop DMO Capabilities</p> <p>Description: Development,demonstration,studies and insersion of DMO/LVC related technologies and profiency based continuation training strategies</p>	-	1.012	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
<p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: Research and Development to include but not limited to support for the integration of F-35, Joint and Coalition trainers into the Combat Air Forces (CAF) DMO network.</p>					
<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 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: - Transition training assessment and performance measurement tools to operational units for readiness studies. - Complete training credibility assessments of an ACC identified set of Virtual and Constructive environments.</p> <p>FY 2016 Base Plans: Integrate performance evaluation and After Action Reporting (AAR) tools for the operational MTCs</p> <p>FY 2016 OCO Plans: N/A</p>	-	0.600	1.000	-	1.000
<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 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: Research and development to include but not limited to support for the integration of F-35, Joint and Coalition Trainers into the Combat Air Forces (CAF) DMO network.</p> <p>FY 2016 Base Plans:</p>	-	1.000	-	-	-

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
N/A					
FY 2016 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	-	2.612	2.666	-	2.666

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 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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Enhanced DMO Capabilities for B-1, B-2 & Joint Terminal Control Training and Rehearsal System [JTC TRS])	SS/ Various	AFLCMC/WNS AFMC : Dayton, OH	-	-		1.012	Dec 2014	-		-		-	Continuing	Continuing	-
Subtotal			-	-		1.012		-		-		-	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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, Testing and insertion of Multi-level-security protocols, Validation of Warfighter Seasoning, Identification of Training and Rehearsal Gaps,	Various	Air Force Research Lab, 711 Human Performance Wing, Human : Dayton, OH	-	-		1.600	Dec 2014	2.666	Dec 2015	-		2.666	Continuing	Continuing	-
Subtotal			-	-		1.600		2.666		-		2.666	-	-	-

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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			-	-		-		-		-		-	-	-	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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

FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4

B-2 Mod kits install																								
R&D on integration of coalition trainers into the CAF DMO Network																								
Transition assessment and performance measurement tools to operational units																								
Training credibility assessments of a set of ACC identified Virtual and Constructive environments																								
Start CDS rule set development for F16 and Coalition DMO event																								
Trade study examining fidelity and training impacts associated with Rule set implementations for F16 and F22 DMO training																								
Development of CDS rules for F15E and F35 DMO training																								
Development and integration testing of distributed 5 eyes training CDS rule set for DMO																								
Squadron training analysis tool (F-22 integration)																								
Deliver Integrated Performance Evaluation & After Action Review toolkit for Langley DTC																								

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
B-2 Mod kits install	1	2014	3	2015
R&D on integration of coalition trainers into the CAF DMO Network	1	2015	3	2016
Transition assessment and performance measurement tools to operational units	1	2015	2	2016
Training credibility assessments of a set of ACC identified Virtual and Constructive environments	2	2015	3	2016
Start CDS rule set development for F16 and Coalition DMO event	1	2016	4	2017
Trade study examining fidelity and training impacts associated with Rule set implementations for F16 and F22 DMO training	3	2016	2	2018
Development of CDS rules for F15E and F35 DMO training	3	2016	4	2018
Development and integration testing of distributed 5 eyes training CDS rule set for DMO	2	2016	4	2017
Squadron training analysis tool (F-22 integration)	1	2016	3	2017
Deliver Integrated Performance Evaluation & After Action Review toolkit for Langley DTC	2	2016	3	2017

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
655354: F-16 Block 40/50 MTC	-	4.663	6.219	15.416	-	15.416	10.480	8.827	8.994	9.154	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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: F-16 MTC Modification Development	4.663	6.219	15.416	-	15.416
Description: Development and testing of modifications to the F-16 MTC to maintain concurrency with F-16 aircraft.					
FY 2014 Accomplishments: Development, tested and fielded F-16 MTC Operational Flight Plan (OFF) M6.2+ Phase 1 (Baseline) Concurrency modifications.					
FY 2015 Plans: - Development, test and fielding F-16 MTC Operational Flight Plan (OFF) M6.2+ Phase 2 (upgrades) - Initially defined OFF M7.1+ concurrency modifications.					
FY 2016 Base Plans: - Development, test and fielding F-16 MTC Operational Flight Plan (OFF) M7.1+ - Initial definition of OFF M7.2+ concurrency modifications.					
FY 2016 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	4.663	6.219	15.416	-	15.416

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• APAF: BA05: Line Item #OTHACF: <i>Other Aircraft</i>	0.602	2.751	2.459	-	2.459	1.884	1.922	1.957	1.909	Continuing	Continuing
• APAF: BA06: Line item # 000999: <i>Initial Spares/Repair Parts</i>	0.037	0.130	0.290	-	0.290	0.284	0.221	0.214	0.218	Continuing	Continuing
• APAF: BA07: Line Item #OTHACF: <i>Other Aircraft</i>	-	0.027	-	-	-	-	-	-	-	Continuing	Continuing

Remarks

D. Acquisition Strategy

F-16 Block 40/50 MTCs are being developed and fielded 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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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
--	--	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 MTC Trainer Development	C/Various	L3 Comm, Link Simulation & Training : Arlington, TX	-	4.572	Jan 2014	6.093	Dec 2014	15.241	Dec 2015	-		15.241	Continuing	Continuing	TBD
Subtotal			-	4.572		6.093		15.241		-		15.241	-	-	-

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	-	0.091	Dec 2013	0.126	Dec 2014	0.175	Dec 2015	-		0.175	Continuing	Continuing	TBD
Subtotal			-	0.091		0.126		0.175		-		0.175	-	-	-

			Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	4.663	6.219	15.416	-	15.416	-	-	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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 Kunsan AB ROK Fielded			██████																									
MTC Holloman AFB NM Fielded			██████																									
MTC Spangdahlem AB GE Fielded				██████																								
OFP M7.1+					████████████████████																							
OFP M7.2+									████████████████████																			
MTC Misawa AB JA											██████																	
MTC Aviano AB IT Fielded												██████																
OFP M8.1+																	████████████████████											

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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	2014	2	2015
OFP M 6.2+ Phase 1	1	2014	2	2015
OFP M6.2+ Phase 2	1	2014	4	2015
MTC Kunsan AB ROK Fielded	3	2014	4	2014
MTC Holloman AFB NM Fielded	3	2014	4	2014
MTC Spangdahlem AB GE Fielded	1	2015	2	2015
OFP M7.1+	2	2015	3	2017
OFP M7.2+	3	2016	3	2018
MTC Misawa AB JA	2	2017	3	2017
MTC Aviano AB IT Fielded	4	2017	1	2018
OFP M8.1+	3	2018	3	2020

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	-	-	0.993	-	0.993	1.885	0.793	0.955	-	Continuing	Continuing
654522: CSAR EMD	-	-	-	0.993	-	0.993	1.885	0.793	0.955	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
In FY16, Project 654522 CSAR EMD, includes new start efforts for CSEL Crypto.

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 cost prohibitive 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.

In FY16, Project 654522 CSAR EMD, includes new start efforts for CSEL Crypto.

B. Program Change Summary (\$ in Millions)	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	0.993	-	0.993
Total Adjustments	-	-	0.993	-	0.993
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	0.993	-	0.993

C. Accomplishments/Planned Programs (\$ in Millions)	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>
Title: CSEL Crypto	-	-	0.993

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
---	---

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Description: A NSA Cryptographic Modernization mandate and the Ultra High Frequency Follow-On satellite constellation at end of life are both driving cost prohibitive 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.			
Accomplishments/Planned Programs Subtotals	-	-	0.993

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</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>	8.428	-	-	-	-	-	-	-	-	-	-

Remarks

E. Acquisition Strategy
Projects will be awarded following full and open competition and will use evolutionary acquisition strategy based on incremental development.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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/Various	Various : Hanscom AFB, MA	-	-		-		0.363	Jan 2016	-		0.363	Continuing	Continuing	-
Systems Engineering	SS/ Various	MITRE : Bedford, MA	-	-		-		0.630	Jan 2016	-		0.630	Continuing	Continuing	-
Subtotal			-	-	-	-	-	0.993		-		0.993	-	-	-

			Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	-	-	0.993	-	0.993	-	-	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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>

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
CSEL Crypto																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
CSEL Crypto	1	2016	4	2020

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 / <i>NextGen JSTARS</i>
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	-	73.088	44.343	-	44.343	298.521	377.827	192.073	313.959	Continuing	Continuing
650003: <i>JSTARS Recapitalization</i>	-	-	73.088	44.343	-	44.343	298.521	377.827	192.073	313.959	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
 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, NextGen JSTARS, Project 650003, JSTARS Recapitalization (Recap) in order to consolidate efforts and continue risk reduction activities.

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 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 (personnel on foot), and stationary ground/surface targets (including maritime). 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 sub-system technologies onto a commercially available business class jet. 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 the warfighter's highlighted mission area gaps.

The JSTARS Recap program consists of multiple efforts (reflected in the R-3), culminating in the integration of four major subsystems. The major subsystems include: BMC2 subsystem; Sensor subsystem; Air Vehicle subsystem; Communications subsystem. The USAF has developed and maintained the system's government reference architecture which adheres to an Open Systems Architecture (OSA) and shapes how industry will plan their integration activities towards this materiel solution. The USAF has allocated resources to support internal System Engineering and Integration activities aimed at bolstering competition, improving affordability, and

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 0307581F / <i>NextGen JSTARS</i>
--	---

reducing overall weapons system life-cycle costs. To instill affordability and strategic agility the government is pursuing an OSA. The net result of this technical/business approach is to ensure the design of the system is adaptable/flexible to meet changing threats, which includes a responsive industrial base.

This program is in Budget Activity 05, System Development and Demonstration (SDD) because it is conducting engineering and manufacturing development (EMD) tasks aimed at meeting validated requirements prior to full-rate production. MDD acquisition decisions are expected to happen in 2QFY15, allowing the program to enter the TMRR phase and then an expected MS B decision in 2017.

Activities also include studies, analyses, and risk reduction activities addressing all subsystems to support both current program planning/execution and future program planning.

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	-	73.088	334.137	-	334.137
Current President's Budget	-	73.088	44.343	-	44.343
Total Adjustments	-	-	-289.794	-	-289.794
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-289.794	-	-289.794

Change Summary Explanation

The current President's Budget decreased FY16 by \$289.794M because the draft acquisition strategy was revised to put more emphasis on the upfront TMRR phase, addressing top integration risks. As a result, the TMRR phase was extended to 14 months, allowing the government adequate time to validate industry's system-level design maturity/readiness.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Title: Technology Maturation and Risk Reduction (TMRR)	-	73.088	44.343
Description: The TMRR effort leverages DoD's prior investments and Industry's Internal Research and Development (IR&D) investments to conduct technical reviews and subsystem prototype demonstrations. The goal of TMRR is to validate industry's system-level design readiness/maturity with respect to top integration risks and use of OSA and Open Mission System (OMS) standards. The TMRR phase better informs the government about the integration complexity and associated lifecycle risks			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 0307581F / <i>NextGen JSTARS</i>
---	---

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
involved with different system-level design solutions. Activities also include studies, analyses, and risk reduction activities addressing all subsystems to support current program planning/execution and future program planning.			
<i>FY 2015 Plans:</i> Pending a Defense Acquisition Board (DAB) decision, contracts will be awarded in FY15, tasking industry to conduct system-level technical reviews. FY15 activities include, but are not limited to, multiple system-level System Requirements Reviews (SRRs), program planning, program documentation, and test planning. Additional program office/independent studies and analyses will be done to better inform the government about integration risks, use of OSA/OMS, and subsystem performance, continuing the business goal of "owning the technical baseline."			
<i>FY 2016 Plans:</i> The Industry Teams awarded contracts in FY15 will complete their system level designs, conduct multiple system-level technical reviews (to include System Functional Reviews (SFRs) and Preliminary Design Reviews (PDRs)), and conduct subsystem prototype demonstrations.			
Additional FY16 activities may include but are not limited to program planning for EMD, defining test objectives/data analysis requirements, defining long lead test assets/ranges/instrumentation, setting up the test management infrastructure required to execute the EMD test program, and studies/analyses activities addressing subsystems to support current program planning/execution and future program planning.			
Accomplishments/Planned Programs Subtotals	-	73.088	44.343

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• APAF: BA05: Line Item # E0800: <i>JSTARS Recap Production</i>	-	-	-	-	-	-	0.214	268.277	537.000	4,039.259	4,844.750

Remarks

E. Acquisition Strategy

The Acquisition Strategy intends to competitively acquire a system comprised of a business-class commercial derivative aircraft with integrated BMC2, radar, and communication subsystems. The intent is to integrate available systems and mature technologies using OSA to minimize the risks for the EMD phase and lower lifecycle costs. The program plans to enter the Defense Acquisition System at MDD and conduct a TMRR phase. Following TMRR, there will be a separate full and open competition for EMD. The implementation of OSA and OMS are fundamental to the business goals of the program. The JSTARS Recap program is a pre-Major Defense Acquisition Program (MDAP) that will conduct a Milestone A in 3QFY15 and Milestone B in 4QFY17. EMD is planned for 4QFY17 to achieve system affordability goals

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force Date: February 2015

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>NextGen JSTARS</i>

and support the warfighter's Initial Operational Capability (IOC) date. The program will determine if the use of incentives for the EMD contract are appropriate for both the delivery of test aircraft and modified/certified test aircraft. Post Milestone C, the program will follow-up with a Low Rate Initial Production (LRIP) contract award, procuring 3 aircraft aimed at achieving IOC 4QFY23. The remaining 12 aircraft will be procured in full rate production (FRP) to support a Full Operational Capability (FOC) in 4QFY26.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0307581F / <i>NextGen JSTARS</i>	Project (Number/Name) 650003 / <i>JSTARS Recapitalization</i>
--	---	---

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
TMRR 1	C/FFP	TBD : TBD,	-	-		17.695	Jun 2015	7.193	Jun 2015	-		7.193	-	24.888	24.888
TMRR 2	C/FFP	TBD : TBD,	-	-		17.695	Jun 2015	7.193	Jun 2015	-		7.193	-	24.888	24.888
TMRR 3	C/FFP	TBD : TBD,	-	-		17.695	Jun 2015	7.193	Jun 2015	-		7.193	-	24.888	24.888
Subtotal			-	-		53.085		21.579		-		21.579	-	74.664	74.664

Remarks
TMRR contracts will be awarded in June 2015 and will be incrementally funded in FY15 and FY16.

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 Activities	Various	Various : Various,	-	-		-		2.054	Oct 2015	-		2.054	Continuing	Continuing	3.233
Subtotal			-	-		-		2.054		-		2.054	-	-	3.233

Remarks
Test Activities in FY16 will include, but are not limited to, detailed test planning and provisioning activities to include the writing of a detailed test plan and safety plan, setting up the test execution data and documentation management infrastructure, developing data analysis tools, provisioning for test assets, instrumentation and ranges. These activities will be done utilizing the DoD Major Ranges & Test Facilities which include, but are not limited to, the AFTC (412TW and 96TW), Joint Interoperability Test Center (JITC), the 346th TS, Live Fire Test Organizations (AFLCMC/EZJA and 96th TG Det 1), and Operational Test Agencies (AFOTEC).

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0307581F / <i>NextGen JSTARS</i>	Project (Number/Name) 650003 / <i>JSTARS Recapitalization</i>
--	---	---

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
TMRR	Various	Various : Bedford, MA	-	-		20.003	Oct 2014	20.710	Oct 2015	-		20.710	Continuing	Continuing	54.948
Subtotal			-	-		20.003		20.710		-		20.710	-	-	54.948

Remarks
High percentage of management services is a result of FFRDC and other contractor support required to conduct studies and analysis to better inform the government about the integration risks, use of OSA/OMS, and subsystem performance towards "owning the technical baseline". Specific activities include modeling and analysis to better understand/anticipate performance, establishment of SILs for development/integration, and OMS compliance testing. In addition, contractor support is necessary for all the required acquisition documentation.

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-	73.088	44.343	-	44.343	-	-	132.845

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0307581F / <i>NextGen JSTARS</i>	Project (Number/Name) 650003 / <i>JSTARS Recapitalization</i>
--	---	---

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Risk Reduction	■																											
MDD						■																						
Milestone A							■																					
TMRR							■	■	■	■	■	■																
Test Activities									■	■	■	■	■	■	■	■												
SRR								■																				
SFR										■																		
PDR											■	■																
Milestone B															■													
EMD															■	■	■	■	■	■								
T-1 and T-2 Green Aircraft Buys															■													
CDR																				■								
Developmental Test and Evaluation																											■	■

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0307581F / <i>NextGen JSTARS</i>	Project (Number/Name) 650003 / <i>JSTARS Recapitalization</i>
--	---	---

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Risk Reduction	1	2014	4	2014
MDD	2	2015	2	2015
Milestone A	3	2015	3	2015
TMRR	3	2015	3	2016
Test Activities	1	2016	3	2017
SRR	4	2015	4	2015
SFR	1	2016	1	2016
PDR	2	2016	3	2016
Milestone B	4	2017	4	2017
EMD	4	2017	4	2020
T-1 and T-2 Green Aircraft Buys	4	2017	4	2017
CDR	4	2018	4	2018
Developmental Test and Evaluation	1	2020	4	2020

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0401318F / CV-22
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	368.330	46.705	-	-	-	-	-	-	-	-	-	415.035
654103: CV-22	368.330	46.705	-	-	-	-	-	-	-	-	-	415.035
Quantity of RDT&E Articles	2	-	-	-	-	-	-	-	-	-	-	

MDAP/MAIS Code: 212

Note
In FY2015, PE 0401318F CV-22, Project 654103 CV-22 efforts were transferred to PE 0401318F, Project 676033 CV-22 RDT&E Post Production in order to align efforts in Budget Activity 07, Operational System Development.

A. Mission Description and Budget Item Justification
The CV-22 is a Special Operations Forces (SOF) variant of the 1st generation V-22 tilt-rotor, multi-mission aircraft. CV-22 RDT&E provides development, integration, testing and enhancement of critical capability to insert, extract, and re-supply special operations forces into politically or militarily denied areas. The CV-22 Block 10 configuration added terrain following radar, additional fuel tanks, additional radios, flare/chaff dispensers, radio frequency/infrared and defensive countermeasures, weapons, situational awareness improvements, and Communications, Navigation, Surveillance/Air Traffic Management (CNS/ATM) to the V-22 Block B aircraft. Block 20 development includes, but is not limited to, improved communications, situational awareness, software, and other requirements specified in the V-22 Block C/20 Capabilities Production Document. A future capabilities increment is following Block 20 to enhance defensive systems and self-deployment capabilities such as improved engine performance, additional CNS/ATM, and improved communications and networking capabilities. CV-22 RDT&E also provides for a baseline CV-22 flight test aircraft for validation/verification of Block 20 and various software and reliability and maintainability mods. The V-22 Joint Program Office is developing improved operational safety, suitability, and effectiveness capabilities in incremental modifications. Ongoing planning and associated activities will take place to prevent Diminishing Manufacturing Sources (DMS) and obsolescence issues, as required.

US Special Operations Command (USSOCOM) and USAF jointly fund development projects to meet operational safety, suitability, and effectiveness mission needs. This includes designing, prototyping, integrating, testing and fielding proposed solutions to emerging warfighter issues. USSOCOM funds the development, integration and testing of Special Operations Forces (SOF) unique mission capability, while USAF funds interoperability, basic air vehicle enhancements, integration of Air Force and Navy maintenance and information systems used with the V-22, support for operational testing, and CV-22 implementation and testing of MV-22 Block B and Block C changes. USSOCOM and USAF jointly fund correction of deficiencies and Block 20 development. Block 20 increments 1 and 3 are developed with USAF funds and increment 2 is developed with USSOCOM funds.

This program was 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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0401318F / CV-22
---	---

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	46.705	-	-	-	-
Current President's Budget	46.705	-	-	-	-
Total Adjustments	-	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-	-	-

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
<p>Title: CV-22 Block 20 RDT&E</p> <p>Description: Develop, test, and evaluate additional capabilities for the CV-22 aircraft. The V-22 Joint Program Office is developing improved operational safety, suitability, and effectiveness. Block 20 development includes, but is not limited to, improved communications, software, and other requirements specified in the V-22 Block C/20 Capabilities Production Document.</p> <p>FY 2014 Accomplishments: Conducted long-range communications Critical Design Review (CDR).</p> <p>FY 2015 Plans: See BA07 Program Element 0401318F CV-22 for FY15 activities and funding.</p> <p>FY 2016 Plans: See BA07 Program Element 0401318F CV-22 for FY15 activities and funding.</p>	18.078	-	-
<p>Title: Enhanced Self-Deployment Capabilities</p> <p>Description: Future capabilities increment to enhance self-deployment capabilities such as Engine Time-On-Wing Improvement and Area Navigation (Global Positioning System) (RNAV(GPS)).</p> <p>FY 2014 Accomplishments:</p>	4.630	-	-

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 0401318F / CV-22
---	---

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
RDT&E activities continued for Enhanced Self-deployment Capabilities. Initiated RDT&E activities for RNAV(GPS). Prepared plan to implement Required Navigation Performance Area Navigation (RNP/RNAV) in CV-22 Integrated Avionics Processor (IAP) configured aircraft. FY 2015 Plans: See BA07 Program Element 0401318F CV-22 for FY15 activities and funding. FY 2016 Plans: See BA07 Program Element 0401318F CV-22 for FY15 activities and funding.			
Title: Improved Inlet Solution Description: Initiate Improved Inlet Solution (IIS) development to increase engine time on wing, resolve Air Force Special Operations Command #1 priority deficiency, and reduce Operations & Support cost. Improved Inlet Solution is a joint V-22 effort being developed in conjunction with the Department of the Navy. FY 2014 Accomplishments: Conducted System Readiness Review (SRR) FY 2015 Plans: See BA07 Program Element 0401318F CV-22 for FY15 activities and funding. FY 2016 Plans: See BA07 Program Element 0401318F CV-22 for FY15 activities and funding.	23.997	-	-
Accomplishments/Planned Programs Subtotals	46.705	-	-

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>FY 2016</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
			<u>Base</u>	<u>OCO</u>	<u>Total</u>						
• RDT&E: BA07: PE 0401318F: CV-22	-	38.719	36.576	-	36.576	17.369	14.324	14.595	14.856	64.821	201.260
• RDT&E: BA07: PE 1160421BB: <i>Special Operations, CV-22 Development</i>	-	-	-	-	-	-	-	-	-	-	520.411

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0401318F / CV-22
---	---

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

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• RDT&E: BA07: PE 1160403BB: <i>Special Operations, Aviation Systems</i>	2.817	0.182	-	-	-	0.707	14.372	21.806	-	-	39.884
• APAF: BA02: Line Item #1000CV2200: <i>CV-22 Modification</i>	104.199	21.578	18.832	-	18.832	20.158	18.522	23.307	21.505	-	1,713.822
• APAF: BA04: Line Item #V022A0: <i>CV-22 (MYP)</i>	285.998	15.000	-	-	-	-	-	-	-	-	4,244.528
• APAF: BA05: Line Item #V02200: <i>CV-22 Mods</i>	19.555	74.874	58.828	-	58.828	63.960	66.420	69.400	71.367	138.529	692.634
• APAF: BA07: Line Item #B00100: <i>CV-22 Post Production Support</i>	-	16.931	3.353	-	3.353	-	-	-	-	-	20.284
• RDT&E: BA05: PE 0604262N: <i>V-22A</i>	42.205	57.749	87.918	-	87.918	138.217	126.239	88.584	56.037	245.000	9,879.554

Remarks

E. Acquisition Strategy

The V-22 Joint Program Office (NAVAIRSYSCOM PMA-275) ensures that CV-22 changes are incorporated into the ongoing V-22 production line with minimal impact. The Joint Program Office (JPO) is developing new capabilities for the V-22 in blocks. Block 0 and Block 10 have completed development, and Block 20 is currently underway. NAVAIRSYSCOM awarded a cost plus fixed fee contract with the prime contractor in Dec 2007 for Block 20 development and test. After Block 20 development and test, future development efforts beyond Block 20 will be conducted as pre-planned product improvements. Development activities for the V-22 program are performed by the prime contractor selected on a sole-source basis. Bell-Boeing is a strategic partnership between Bell Helicopter and Boeing Integrated Defense Systems. OSD re-designated the V-22 program from ACAT 1D to ACAT 1C on 24 Jul 2012.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0401318F / CV-22	Project (Number/Name) 654103 / CV-22
--	---	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
2 Production Representative Test Vehicles	SS/CPAF	Bell Boeing : Amarillo, TX	161.859	-		-		-		-		-	-	161.859	-
Block 10 Development	SS/CPAF	Bell Boeing : Amarillo, TX	44.025	-		-		-		-		-	-	44.025	-
Block 10 Development Tech Support	Various	Various : Various,	11.886	-		-		-		-		-	-	11.886	-
Situational Awareness Hazard Avoidance Federated Terminal	C/CPAF	Manufacturing Technology Inc : Fort Walton Beach, FL	5.000	-		-		-		-		-	-	5.000	-
Block 20 Development	SS/CPFF	Bell Boeing : Amarillo, TX	57.608	10.112	Dec 2013	-		-		-		-	-	67.720	161.014
Enhanced Self-deployment Capability	Various	Various : Various,	5.000	4.630	Apr 2014	-		-		-		-	-	9.630	-
Improved Inlet Solution	SS/CPFF	Bell Boeing : Amarillo, TX	0.000	23.997	Jun 2014	-		-		-		-	-	23.997	69.660
Subtotal			285.378	38.739		-		-		-		-	-	324.117	-

Remarks
 The Block 20 Development effort target value of contract differs from the total cost because the target contract value includes some test related funding and USSOCOM MFP-11 funding for Special Operations Forces (SOF) peculiar development efforts.

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Interim Contractor Support	SS/CPAF	Bell Boeing : Amarillo, TX	26.889	-		-		-		-		-	-	26.889	-
Contractor Logistics Support for Test Aircraft	Various	Various : Various,	11.980	1.585	Nov 2013	-		-		-		-	-	13.565	-
Subtotal			38.869	1.585		-		-		-		-	-	40.454	-

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0401318F / CV-22	Project (Number/Name) 654103 / CV-22
--	---	--

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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 20 Increment 3 Development, Testing and Evaluation																												
-- Long range comm upgrades ground and flight tests																												
Enhanced Self Deployment																												
Improved Inlet Solution (IIS)																												
-- IIS development and design reviews																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force **Date:** February 2015

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0401318F / CV-22	Project (Number/Name) 654103 / CV-22
--	---	--

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Block 20 Increment 3 Development, Testing and Evaluation	1	2014	2	2015
-- Long range comm upgrades ground and flight tests	1	2014	2	2015
Enhanced Self Deployment	1	2014	4	2015
Improved Inlet Solution (IIS)	3	2014	2	2015
-- IIS development and design reviews	3	2014	2	2015

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	-	-	102.620	-	102.620	480.977	505.899	513.607	458.672	Continuing	Continuing
655250: <i>Presidential Aircraft Recapitalization</i>	-	-	-	102.620	-	102.620	480.977	505.899	513.607	458.672	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	1	-	1	-	-	-	-		

MDAP/MAIS Code: 425

Note

In FY 2015, PE 0401314F, Operational Support Airlift, Project 675355, Presidential Aircraft Recapitalization efforts were transferred to PE 0401319F, Presidential Aircraft Recap (PAR), Project 655250 Presidential Aircraft Recapitalization, in order to improve transparency for ACAT I acquisition programs.

In FY 2016, PE 0401319F, Presidential Aircraft Recapitalization, Project 655250 Presidential Aircraft Recapitalization is transferred to BA 05 PE 0401319F, Presidential Aircraft Recapitalization, Project 655250 Presidential Aircraft Recapitalization to align BA with stage of development.

This program is not a New Start.

A. Mission Description and Budget Item Justification

The PAR program plans to replace the current VC-25A fleet with a new fleet of aircraft to meet the requirements for the President of the United States to execute the three roles of Head of State, Chief Executive, and Commander in Chief. The PAR aircraft will be a four engine commercial derivative wide-body aircraft, uniquely missionized to provide the President of the United States, staff, and guests with safe and reliable air transportation with the equivalent level of communications capability and security available in the White House. Specialized mission equipment will include: electrical upgrades to include dual Auxiliary Power Units (APUs); mission communications system; passenger communications; work and rest environment; executive interiors; military avionics; self-defense systems; autonomous enplaning and deplaning; and autonomous baggage loading. There will be no significant change in the Concept of Operations (CONOPS) or Concept of Employment (CONEMP) from the existing VC-25A platform.

On 28 August 2012, the Under Secretary of Defense for Acquisition, Technology and Logistics (USD (AT&L)) approved the PAR Materiel Development Decision (MDD) and tasked the Air Force to conduct a Requirements and Sustainment Trade Analysis (RASTA). RASTA analysis identified the non-tradable requirements and revalidated the need for a four-engine wide-body aircraft. The RASTA results were presented to the Defense Acquisition Board in August 2013 and were incorporated into the Capability Development Document (CDD). The CDD was validated by the Air Force Requirements Oversight Council (AFROC) in May 2014 and by the Joint Requirements Oversight Council (JROC) in November 2014.

This budget supports acquisition planning efforts and studies as well as pre-Engineering and Manufacturing Development (EMD) contract studies for PAR. Acquisition planning, milestone documentation and risk reduction studies include systems engineering strategy and analysis; risk analysis and management; concept definition

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

and trade studies; test and evaluation strategy; life cycle cost estimates; sustainment and logistics analysis; information support and network analysis; technology and manufacturing maturity analysis and other government costs.

Pre-decisional acquisition strategy planning proposed purchase of the first commercial aircraft for modification and test and evaluation purposes in FY 2016. Funds in FY 2016 would provide initial payments for this aircraft. Upon MDA approval of the acquisition strategy the funding requirement will be reevaluated.

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	102.620	-	102.620
Total Adjustments	-	-	102.620	-	102.620
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	102.620	-	102.620

Change Summary Explanation

FY15 Presidential Aircraft Recapitalization efforts are executed in PE0401319F, Project 675355 BA 07.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Title: Acquisition Planning/Commercial Aircraft Contract	-	-	102.620
Description: Acquisition Planning for Milestone Decision, Studies and Commercial Aircraft			
FY 2014 Accomplishments: FY 2014 Presidential Aircraft Recapitalization efforts are executed in PE0401314F, Project 675355 BA 07			
FY 2015 Plans: FY15 Presidential Aircraft Recapitalization efforts are executed in PE0401319F, Project 675355 BA 07			
FY 2016 Plans: Activities to accomplish pre-EMD studies to improve affordability and reduce program execution risk.			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Predecisional acquisition strategy planning proposed purchase of the first commercial aircraft for modification and test and evaluation purposes in FY 2016. Funds in FY 2016 would provide initial payments for this aircraft. Upon MDA approval of the acquisition strategy the funding requirement will be reevaluated.			
Accomplishments/Planned Programs Subtotals	-	-	102.620

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• RDTE: BA07: PE 0401314F: <i>Operational Support Airlift</i>	6.403	-	-	-	-	-	-	-	-	-	-
• RDTE: BA07: PE0401319F: <i>Presidential Aircraft Recapitalization</i>	-	11.006	-	-	-	-	-	-	-	-	-
• APAF: BA02: Line Item # PAR000: <i>Presidential Aircraft Replacement</i>	-	-	-	-	-	-	-	-	1,061.600	-	-
• MILCON: PE 0401319F: <i>PAR Facilities</i>	-	-	-	-	-	89.700	189.200	23.000	5.000	-	-

Remarks

FY 2014 Presidential Aircraft Recapitalization efforts are executed in PE0401314F, Project 675355 BA 07

FY15 Presidential Aircraft Recapitalization efforts are executed in PE0401319F, Project 655250 BA 07

Pre-decisional acquisition strategy planning proposed procurement of a second PAR aircraft in FY 2020.

MILCON supports facility construction required to house and maintain the Presidential Aircraft fleet at Joint Base Andrews.

E. Acquisition Strategy
Acquisition strategy in development; anticipating MDA approval in FY 2015.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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 Recapitalization</i>
--	--	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PAR Studies & Commercial Aircraft	TBD	TBD ; ,	-	-		-		93.000	Oct 2015	-		93.000	Continuing	Continuing	-
Subtotal			-	-		-		93.000		-		93.000	-	-	-

Remarks
 Activities to accomplish pre-EMD studies to improve affordability and reduce program execution risk.

Predecisional acquisition strategy planning proposed purchase of the first commercial aircraft for modification and test and evaluation purposes in FY 2016. Funds in FY 2016 would provide initial payments for this aircraft. Upon MDA approval of the acquisition strategy the funding requirement will be reevaluated.

Support (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PAR Program Management Activities	Various	AFLCMC/WLJC : Dayton, OH	-	-		-		9.620	Oct 2015	-		9.620	Continuing	Continuing	-
Subtotal			-	-		-		9.620		-		9.620	-	-	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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 Recapitalization</i>
--	--	--

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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
 Program Management Administration enables operation of program office management and oversight to support PAR. Management activities include A&AS support and travel to support developmental planning efforts.

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-	-	102.620	-	102.620	-	-	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 Recapitalization</i>

	FY 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	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-EMD Design Contract																												
Milestone B																												
EMD Contract																												
PDR																												
CDR																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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 Recapitalization</i>

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Pre-EMD Design Contract	4	2014	2	2017
Milestone B	2	2017	2	2017
EMD Contract	3	2017	4	2020
PDR	1	2018	1	2018
CDR	2	2019	2	2019

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0701212F / <i>Automated Test Systems</i>							
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	-	-	14.563	-	14.563	14.545	-	-	-	Continuing	Continuing
6506TE: <i>Test And Evaluation Support Budget Authority</i>	-	-	-	14.563	-	14.563	14.545	-	-	-	Continuing	Continuing

Note

In FY 2016, PE 0701212F, Project 6506TE, Test and Evaluation Support Budget Authority, includes new start efforts for Automated Bomber Test Systems.

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. This RDT&E funding is for Increment 1. Future budget submittals will be for Increment 2 & 3.

B. Program Change Summary (\$ in Millions)

	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	-	-	-	-	-
Current President's Budget	-	-	14.563	-	14.563
Total Adjustments	-	-	14.563	-	14.563
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	14.563	-	14.563

Change Summary Explanation

In FY 2016, Project Number 6506TE, Test & Evaluation Support Budget Authority, is a New Start.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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>			
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
6506TE: <i>Test And Evaluation Support Budget Authority</i>	-	-	-	14.563	-	14.563	14.545	-	-	-	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2016, Project 6506TE, Test and Evaluation Support Budget Authority, includes a new start effort for Automated Bomber Test Systems.

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. This RDT&E funding is for Increment 1. Future budget submittals will be for Increment 2 & 3.

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Bomber Armament Tester	-	-	14.563	-	14.563
Description: New Common Bomber Armament Tester for B-1, B-2, and B-52.					
FY 2014 Accomplishments: N/A					
FY 2015 Plans: N/A					
FY 2016 Base Plans: - Develop Bomber Armament Tester and Test Program Sets for use with B-2					

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
- Conduct initial test with B-2.					
FY 2016 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	-	-	14.563	-	14.563

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

Remarks

D. Acquisition Strategy

Acquisition Strategy pending Air Force Program Executive Officer Agile Combat Support Approval.

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.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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
--	--	--

Product Development (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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. ; ,	-	-		-		11.458	Jan 2016	-		11.458	Continuing	Continuing	-
Subtotal			-	-		-		11.458		-		11.458	-	-	-

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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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. ; ,	-	-		-		1.580	Jan 2016	-		1.580	Continuing	Continuing	-
Subtotal			-	-		-		1.580		-		1.580	-	-	-

Remarks
Support Cost include Independent verification and validation support, Nuclear Certification Support and Cyber Security authority support.

Test and Evaluation (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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. ; ,	-	-		-		1.250	Jan 2016	-		1.250	Continuing	Continuing	-
Subtotal			-	-		-		1.250		-		1.250	-	-	-

Management Services (\$ in Millions)				FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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	TBD	Not specified. ; ,	-	-		-		0.275	Jan 2016	-		0.275	Continuing	Continuing	-
Subtotal			-	-		-		0.275		-		0.275	-	-	-

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Air Force **Date:** February 2015

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 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
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
PMA costs include travel to support the development of the Bomber Armament Tester. PMA cost also include a Information Assurance expert to advise and support the team. This will ensure the system meets all cyber security and Information assurance requirements.

	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	-	-	-	14.563	-	14.563	-	-	-

Remarks

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Air Force		Date: February 2015
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 2014				FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Full schedule detail awaiting Air Force Program Executive Officer Agile Combat Support approval																												
Initial Nuclear Certification Impact Statement																												
System Functional Review																												
Initial Nuclear Certification Impact Statement																												
Preliminary Design Review																												
Initiate Platform IT document																												
Critical Design Review																												
System Verification Review																												
Developmental Testing																												
Operational Testing																												
Final Nuclear Certification Impact Statement																												
Completed Prototype																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Air Force		Date: February 2015
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
Full schedule detail awaiting Air Force Program Executive Officer Agile Combat Support approval	2	2015	2	2015
Initial Nuclear Certification Impact Statement	1	2016	1	2016
System Functional Review	3	2016	3	2016
Initial Nuclear Certification Impact Statement	1	2016	1	2016
Preliminary Design Review	4	2016	4	2016
Initiate Platform IT document	1	2017	1	2017
Critical Design Review	1	2017	1	2017
System Verification Review	4	2017	4	2017
Developmental Testing	3	2016	1	2017
Operational Testing	2	2018	4	2018
Final Nuclear Certification Impact Statement	4	2018	4	2018
Completed Prototype	4	2018	4	2018

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>							
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	14.786	24.418	23.844	-	23.844	21.846	22.251	22.641	23.045	Continuing	Continuing
662907: <i>Electronic Combat Intel Support</i>	-	1.558	2.631	3.196	-	3.196	2.506	2.564	2.599	2.645	Continuing	Continuing
663321: <i>Electronic Warfare Ground Test Resources</i>	-	9.451	13.188	12.675	-	12.675	12.254	12.475	12.680	12.906	Continuing	Continuing
667500: <i>Foreign Materiel Acquisition/Analysis</i>	-	3.777	8.599	7.973	-	7.973	7.086	7.212	7.362	7.494	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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
---	---

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	14.841	24.418	24.003	-	24.003
Current President's Budget	14.786	24.418	23.844	-	23.844
Total Adjustments	-0.055	-	-0.159	-	-0.159
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.055	-			
• Other Adjustments	-	-	-0.159	-	-0.159

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
662907: <i>Electronic Combat Intel Support</i>	-	1.558	2.631	3.196	-	3.196	2.506	2.564	2.599	2.645	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 2014	FY 2015	FY 2016
Title: FMOT&E	1.558	2.631	3.196
Description: Supports Foreign Materiel Operational Test and Evaluation (FMOT&E)			
FY 2014 Accomplishments: Continued to conduct foreign materiel 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 2015 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 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.			
Accomplishments/Planned Programs Subtotals	1.558	2.631	3.196

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

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• RDTE: BA 06: PE 0605807F: <i>Test and Evaluation Support</i>	724.958	689.509	673.908	-	673.908	666.993	677.220	684.977	697.626	Continuing	Continuing

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force			Date: February 2015		
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)

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
------------------	----------------	----------------	-------------------------------	------------------------------	--------------------------------	----------------	----------------	----------------	----------------	-----------------------------------	-------------------

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.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
663321: <i>Electronic Warfare Ground Test Resources</i>	-	9.451	13.188	12.675	-	12.675	12.254	12.475	12.680	12.906	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 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) & Radio Frequency (RF) semi-active Surface-to-Air Missiles (SAMs), Air-to-Air Missiles (AAMs), RF missile warning, IR and Laser countermeasure functions; integration of actual threat hardware and ground clutter into advanced threat RF and 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 2014	FY 2015	FY 2016
Title: I&M	8.707	11.606	11.030
Description: Provides for planning and improvement & modernization (I&M) of test capabilities to conduct and support the AF EW test process, including DE.			
FY 2014 Accomplishments:			
The 412 EWG/OL-HN continued RF threat simulator reconstitution and completed checkouts for approximately 25% of the delivered RF threat simulator systems. The GWEF at the 96 TW brought the 9-axis Infrared (IR) Flight Motion Simulator (FMS) up to functional status completing development and calibration efforts. The 96 TW began IR simulator software improvements and upgraded system hardware and interfaces to the IR developmental test lab. The Digital Integrated Air Defense System (DIADS)			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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)

fielded a new software release which improved tracker capability and scenario preparation. DIADS also continued development of advanced jamming capabilities and improved weapon command and control algorithms, and validated architecture and simulation upgrades to advance new capabilities to simulate evolving threats. The Advanced Warfare Test & Evaluation Capability (AWTEC) completed Benefield Anechoic Facility (BAF) upgrades providing Electromagnetic Interference/Electromagnetic Compatibility (EMI/EMC) test capabilities in the high and low frequency bands and integration of new test control and RF monitoring systems. AWTEC continued development of Identify Friend or Foe (IFF) software, Advanced Global Navigation System upgrades for the BAF, and awarded a contract to begin upgrading the BAF advanced threat signal generation capabilities to support F-35 and other aircraft platform testing. AWTEC procured free space carts and continued development and integration of a follow-on Advanced Radar Environment Simulation (ARES) build. The National Radar Cross Section (RCS) Test Facility (NRTF) completed development and procurement of the Radar VHF/UHF Measurement System (RVUMS) Antenna Feed Horn system; initiated development and procurement of a new digital receiver system; procured and implemented a high-power transmitter system; and completed design and construction of a new paint booth facility. NRTF also continued upgrades of the machine/supply shops facilities, and initiated modularity studies to improve system efficiency and accuracy studies to improve system sensitivity and resolution.

FY 2015 Plans:

The 96 TW will continue 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 will initiate efforts to develop and integrate a new Ultraviolet (UV) projection capability into the 5-axis test areas. DIADS will continue software conversion to C++ and design, development, architecture validation and simulation upgrades to advance new capabilities to simulate evolving threats, including improvements to command and control models, Electronic Attack/Electronic Protection (EA/EP), and advanced threat tracking capabilities. AWTEC will continue development and procurement of BAF advanced threat signal generation capabilities to support F-35 and other aircraft platform testing. AWTEC will also continue development and integration of Identify Friend or Foe (IFF) software, an Advanced Global Navigation System upgrade, and complete the follow-on ARES build for the BAF. NRTF will complete upgrades to the machine/supply shops and take delivery of a new digital receiver system. NTRF will also complete studies to consolidate and enhance efficiency of operations and accuracy for measuring RCS of Low Observable platforms and antennas, and continue facility upgrades including relocation and refurbishment of a 40-foot in-ground turntable used to support full size fighter class platform testing.

FY 2016 Plans:

The 96 TW will continue development of hardware and software upgrades to 5-axis IR threat simulator capabilities. DIADS will continue software conversion to C++ and develop and validate architecture and simulation upgrades supporting advanced threat simulation capabilities, including improvements to command and control, sensor reactivity, and jamming models. AWTEC will continue development, procurement and integration of new state-of-the-art BAF simulators and threat signal generation capabilities. NRTF will continue facility upgrades to consolidate and enhance operations efficiency and improve RCS

FY 2014	FY 2015	FY 2016

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016
measurement accuracy of Low Observable platforms and antennas, including design studies of next generation radar and RCS metrology requirements.			
Title: EC Test Process Support	0.744	1.582	1.645
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.			
FY 2014 Accomplishments: Continued to provide 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.			
FY 2015 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.			
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.			
Accomplishments/Planned Programs Subtotals	9.451	13.188	12.675

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE: BA 06: PE 0604759F: <i>Major T&E Investment</i>	31.423	47.232	68.302	-	68.302	66.845	66.142	66.436	67.679	Continuing	Continuing
• RDTE: BA 06: PE 0605807F: <i>Test and Evaluation Support</i>	724.958	689.509	673.908	-	673.908	666.993	677.220	684.977	697.626	Continuing	Continuing
• RDTE: BA 06: PE 0605976: <i>Facility Restoration & Modernization - T&E</i>	44.160	46.955	40.518	-	40.518	42.978	43.795	44.349	45.142	Continuing	Continuing

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE: BA 06: PE 0605978F: <i>Facilities Sustainment - T&E Support</i>	29.743	32.965	27.895	-	27.895	28.372	28.914	29.374	29.900	Continuing	Continuing

Remarks

D. Acquisition Strategy

NA

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.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
667500: <i>Foreign Materiel Acquisition/Analysis</i>	-	3.777	8.599	7.973	-	7.973	7.086	7.212	7.362	7.494	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 2014	FY 2015	FY 2016
Title: FMP	3.777	8.599	7.973
Description: Supports USAF Foreign Materiel Program (FMP) Requirements through the acquisition and analysis of foreign materiel.			
FY 2014 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 2015 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 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.			
Accomplishments/Planned Programs Subtotals	3.777	8.599	7.973

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force	Date: February 2015
---	----------------------------

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)

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE: BA 06: PE 0605807F: <i>Test and Evaluation Support</i>	724.958	689.509	673.908	-	673.908	666.993	677.220	684.977	697.626	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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
--	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	31.423	47.232	68.302	-	68.302	66.845	66.142	66.436	67.679	Continuing	Continuing
664597: <i>Air Force Test Investments</i>	-	31.423	47.232	68.302	-	68.302	66.845	66.142	66.436	67.679	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. 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 test and evaluation (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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015
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 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>		

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
--	---

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	32.341	47.232	68.755	-	68.755
Current President's Budget	31.423	47.232	68.302	-	68.302
Total Adjustments	-0.918	-	-0.453	-	-0.453
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.918	-			
• Other Adjustments	-	-	-0.453	-	-0.453

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
---	----------------	----------------	----------------

Title: Airframe/Propulsion/Avionics T&E I&M 20.593 33.755 54.709

Description: Improvement and modernization of the AF capability to test and evaluate Airframe/Propulsion/Avionics (APA)

FY 2014 Accomplishments:

The Joint Airborne Instrumentation Integration (JAI) project completed hardware and data instrumentation system upgrades to approximately 78 percent of AFMC's instrumented airborne test platforms and ground support infrastructure per the test fleet modernization plan. The Telemetry Systems Integration Support (TSIS) Project completed remote control capabilities to all six telemetry (TM) systems (2 fixed antennas and 4 mobile antennas), completed C-band upgrades to two fixed TM ground antenna sites, modified 25 remaining ground-based TM receivers to incorporate C-band capability, and initiated efforts to investigate and resolve TM frequency coverage gaps on the flight line and taxiways at Edwards AFB. The Tunnel 4T project completed installation and verification efforts and began validation efforts of the new Captive Trajectory System (CTS) rig, the nozzle actuator and control systems, and the Data Acquisition System (DAS) at AEDC's 4T transonic wind tunnel.

The Advanced Large Military Engine Capability (ALMEC) Project installed and checked out 4 of 18 main drive exciters; upgraded two exhaust intercoolers, restoring those systems to full capability; installed auto-strainers and isolation valves on the C-Plant air supply water system; completed design efforts and initiated procurement and installation activities on the plant control and air supply water systems; completed preliminary design and specification package development of the facility switchgear systems to replace aging breaker systems; and initiated design and procurement efforts on the H1 heater tube replacements for the C1/C2 aero-propulsion test cells.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p>The Advanced Small Military Engine Capability (ASMEC) completed procurement and installation and checkout of the gas heater system, completed critical design and procurement activities on the air supply and mechanical bypass systems, and completed preliminary design efforts on the plant control systems to upgrade AEDC's T3 high speed altitude test facility. However, due to funding reductions, remaining portions of the ASMEC project were cancelled after FY14.</p> <p>The Improved Transonic Test Capability (IMTTC) developed an adaptive acquisition strategy after completing system level Analysis of Alternative (AoA) and preliminary design for high priority DoD test capability needs: increasing throughput of AEDC's 16T transonic wind tunnel systems with productivity and efficiency enhancements to Data Acquisition Systems (DAS), Test Article Control Systems (TACS) and data networks by removing obsolete equipment with modern technology. Initiated procurement for a hardware integration and software development lab that will reduce potential impacts to MDAP test customers in FY16-18.</p> <p>The Test Instrumentation, Data Systems & Control (TIDSC) completed the development and award of two IDIQ contracts that will be used to procure Digital Temperature Scanners (DTS) and Digital Voltage Scanners (DVS) throughout the TIDSC Program; completed detailed design for the C1 Test Cell; completed data distribution network upgrade for J2 Test Cell; initiated procurement of some C1 Test Cell DTS/DVS units; developed a priority list and order of upgrades for TIDSC facilities across the AEDC Turbine Engine Test and Space & Missiles mission areas.</p> <p>The Ultra High Accuracy Reference System (UHARS) project at Holloman AFB completed integration efforts and initiated fielding, installation and checkout of the GPS and non-GPS based reference systems needed to test and evaluate future navigation and guidance systems. The T&E Board of Directors led tri-service investment planning and joint T&E Reliance efforts directed by the Service Secretaries.</p> <p>FY 2015 Plans: JAII will continue executing instrumentation systems upgrades to remaining AFMC's instrumented airborne test platforms and initiate development efforts on airborne instrumentation network solutions. TSIS will complete remote control upgrades to the remaining TM antenna systems; complete C-band capability modifications to the remaining ground-based TM receivers; and will complete efforts to address TM frequency coverage gaps on the flight line and taxiways at Edwards AFB.</p> <p>ALMEC will complete the Main Drive Exciter project by installing and verifying the remaining 12 main drive exciters; perform the first of four upgrade outages for Engine Test Facility (ETF) plant control systems; upgrade the ETF plant controls network and control room; install new isolation valves on the air supply water system, completing the scope of this project; complete detailed design and procurement for the second of four upgrade efforts on the ETF plant controls project; award a GFE contract for the A3B switchgear and unit substation upgrade project; complete detailed design for the A3B switchgear and unit substation upgrade project and initiate major GFE procurements; complete H1 heater tube procurement and complete H1 Heater Bank 1 upgrade;</p>				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p>begin design activity for modification of the remaining exhaust intercooler for the C1 and C2 test cells; and begin design activity for H1 Heater Bank 1 roof upgrade.</p> <p>IMTTC will complete detailed designs for DAS, TACS (Cart 3 and Cart 1), and data networks by mid-year; execute the modified funding profile to accelerate major procurements that will reduce potential schedule impacts for MDAP test customers in FY16-18. Implement design solutions that will increase commonality with the TIDSC Program toward a future AEDC enterprise data system. Initiate concept development phase to upgrade Test Conditions Controls (TCC) and Next Generation Pressure Sensitive Paint (PSP).</p> <p>TIDSC will complete the ETF core switch data distribution network upgrade; complete the J1 data distribution network upgrade; complete the full C1 upgrade by installing DTS and DVS infrastructure and installing new data distribution network infrastructure; complete the detailed design and hardware procurement for the Arcs facility upgrade (H1, H2, and H3 Test Cells), and complete the detailed design and hardware procurement for the J2 facility measurement system upgrade.</p> <p>UHARS will conduct close-out activities. The Common Range Integrated Instrumentation System (CRIIS) Production project will begin Analysis of Alternative (AoA) studies to address time, space, position information (TSPI) gaps and address design, development and procurement options for upgrading range TSPI instrumentation capabilities. The Landing Gear Test Facility (LGTF) Modernization Program will start their Dynamometer upgrades. This will include development of the specification and aspects of the acquisition process. 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 2016 Plans: JAII will continue executing instrumentation systems upgrades to remaining AFMC's instrumented airborne test platforms and begin developing solutions to address and mitigate spectrum loss.</p> <p>ALMEC will complete the upgrade of H1 Heater Bank 2, which completes the scope of this project; complete the second of four major upgrade outages for the ETF controls project; complete the procurement, installation, and checkout of the A3B switchgear and unit substation project; complete the installation of H1 Heater Bank 1 Roof, 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 complete the detailed design and procurement for the third of four major upgrades for the ETF controls project.</p> <p>IMTTC will complete final detailed design for TACS (Cart 2); complete acceleration of major procurements that will reduce potential schedule impacts for MDAP test customers in FY16-18. Begin preliminary design and develop procurement documents for TCC and PSP.</p>				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 2014	FY 2015	FY 2016
<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 complete the detailed design and hardware procurement for the J1 facility upgrade.</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 two 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 AF vision 2023 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 time, space, and position information (TSPI) modifications.</p> <p>The LGTF Modernization Program will continue with their acquisition processes and expand to include Phase II of the upgrade. This includes system design, fabrication, and installation.</p> <p>Common Airborne Networked Instrumentation System (CANIS) will begin by supporting and complementing the CTEIP-funded Integrated Network Enhanced Telemetry (INET) project by implementing the airborne solutions. FY16 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>Next Generation Turbine Engine Test Capability (NGTETC) restores the capability to existing AEDC infrastructure to make it more efficient, effective, and responsive to emerging test requirements. It will meet the emerging test requirements of 6th generation turbine engines. FY16 will implement a detailed 6th generation turbine engine test capability analysis of alternatives (AoA) for each supporting need (i.e., exhaust cooler, venturi upgrades, cluster valves, compressor in-bleeds, exhaust expansion joint, exhaust sprays, and thermal and power management). The cooler, venturi, cluster valve, and expansion joint upgrades need to be completed by FY18.</p> <p>Modular Mission Control Room Upgrade (MMCRU) will begin in FY16. 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>			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p>Improved Plant Reliability and Efficiency/Transonic Aero Propulsion Test Capability will begin in FY16 and 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. FY16 will begin to restore the capabilities of the main drive motors (re-wind 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> <p>Voice Communication System Upgrade (VCSU) will begin in FY16. FY16 efforts will replace an obsolete AFTC air-to-ground communication system [i.e., Federated Digital Switch (FEDS) voice communication switch] with a modern architecture voice over IP (VOIP) based system to meet current and future point-of-use configurable voice switching and conferencing of all associated test participants. FY16 will include conducting the initial VCSU design study to analyze options and impacts to minimize hardware costs, migrate the external interface (EI) to software, design options and impacts for red (secure)/black (non-secure) switch capability, examine options for hybrid solutions, and prototype selected software designs.</p> <p>Tunnel 16S Reactivation. DoD lacks a suitable capability to meet emerging supersonic ground aerodynamic T&E requirements for next generation high speed aircraft (i.e., Next Generation Air Dominance (NGAD), etc.). Supersonic capabilities are needed to support large supersonic aircraft test models (i.e., wingspans and lengths greater than 3-ft. and 5-ft. respectively at Mach numbers exceeding 1.6M) that require high quality testing and aerodynamic data suitable for aircraft development. Prior to inactivation, AEDC Wind Tunnel 16S met the T&E need, but it has been mothballed. In FY14 and into FY15 major system assessments had been and are being performed to determine reactivation feasibility. These activities will culminate in FY15 with an operational check run to evaluate major system operability. FY16 funding will be used to improve or modernize those Tunnel 16S systems identified in this assessment deemed inadequate to meet the emerging T&E requirements (i.e., NGAD) that have an FY18 need date.</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>Title: Armament/Munitions T&E I&M</p> <p>Description: Improvement and modernization of the AF capability to test and evaluate Armament/Munitions (A/M)</p> <p>FY 2014 Accomplishments: The Advanced Command Destruct System (ACDS) project completed Independent Verification & Validation (IV&V) efforts and final report activities to close out the program. The Advanced Munitions Test Improvement (AMTI) project completed</p>		10.830	10.574	8.887

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 2014	FY 2015	FY 2016
---	----------------	----------------	----------------

integration and acceptance of the Millimeter Wave (MMW) and advanced GPS simulators, real-time scene generation software upgrades, and seeker integration with the MMW and Imaging Infrared simulators to support weapon testing. The Gulf Range Test and Training Control Center (GRTTCC) project completed a critical power system upgrade to the 96 TW's Central Control Facility (CCF); completed integration and checkout of high-resolution video, data distribution and display system hardware; and continued procurement and integration of next generation TM processing systems and upgrades to mission control room computer systems and fiber data links. The Joint Gulf Range Area Network Development (JGRAND) completed design efforts and made preparations to award a contract for development of an Alternate Range Network Operations Control Center (Alt RNOCC) at Eglin test site C-3; continued installation of fiber optical cable to connect test sites D-84 to D-1B and D-84 to Bldg 44; and continued to procure network protocol and security hardware to improve range data communication capabilities at the 96 TW. The Combined High-Speed/High-Resolution (CHSHR) EO/IR Imaging project completed procurement and delivery of approximately 50% of the high-speed digital camera systems and 30% of the infrared camera systems; eliminated dependency on film processing at the Holloman High-Speed Test Track (HHSTT) and procured a new ultra high speed digital camera system for the HHSTT; completed modernization of four Cinetheodolite (Cine-T) long range optical tracking systems at Eglin test site B-70; initiated modernization efforts for four additional Cine-T long range optical tracking systems at Eglin test site C-72; and continued to develop remote C2 operations to provide improved tracking capabilities of IR and long-range optical tracking systems at Eglin AFB. The Next Generation Munitions Test Environment (NGMTE) project initiated environmental approval and range clearing efforts to begin installation of a new insensitive munitions pad at Eglin test site C-80B; completed preparation efforts to award a contract in FY15 to construct a new drop tower on C-80B to support insensitive munitions testing; completed acceptance testing of a new 8,300 foot/second gun system to support insensitive munitions testing and meet MIL-STD 2105 requirements; and continued procurement and installation of new data acquisition and fragment scoring systems supporting the ballistic test ranges and arena test range C-80B to improve gun and munitions test capabilities and meet Joint Munitions Effectiveness Model (JMEM) requirements.

FY 2015 Plans:

GRTTCC will complete integration and checkout of next generation TM processing systems, and will complete upgrades to mission control room computer systems and fiber data links at the 96 TW's CCF. JGRAND will award a contract to develop the Alt RNOCC facility at Eglin test site C-3; continue installation of fiber optical cable to connect test sites D-84 to D-1B and D-84 to Bldg 44; and continue to procure network protocol and security hardware to improve range communication capabilities at the 96 TW. CHSHR EO/IR Imaging will continue procurement and delivery of approximately 70% of the high-speed digital camera systems and 50% of the infrared camera systems; will complete evaluation of the new ultra high speed digital camera system for the HHSTT and will procure additional ultra-high speed and ultra-high resolution digital cameras for the HHSTT; will complete modernization of the four Cine-T long range optical tracking systems at Eglin test site C-72; and will continue to develop remote C2 operations to provide improved tracking capabilities of IR and long-range optical tracking systems at Eglin AFB. NGMTE will continue installation of a new insensitive munitions pad at Eglin test range C-80B; will award a contract to construct a new drop

FY 2014	FY 2015	FY 2016

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p>tower on C-80B to support insensitive munitions testing; will begin efforts to upgrade environmental test chambers and facilities supporting munitions development; will replace and modernize the hydraulic control systems on the ballistic test ranges; and will continue procurement and installation of new data acquisition and fragment scoring systems supporting the ballistic test ranges and arena test range C-80B to improve gun and munitions test capabilities at Eglin AFB.</p> <p>FY 2016 Plans: JGRAND will complete development of the Alt RNOCC facility at Eglin test site C-3, installation of fiber optical cable connecting test sites D-84 to D-1B and D-84 to Bldg 44, and network protocol and security hardware upgrades to improve range communication capabilities at the 96 TW. CHSHR EO/IR Imaging will complete procurement and delivery of approximately 80% of the high-speed digital camera systems and 75% of the infrared camera systems; will continue modernization of IR and long-range Cine-T optical tracking systems; and will continue to develop remote C2 operation upgrades to provide improved tracking capabilities at Eglin AFB. 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. AFMC will initiate improvement and modernization projects to support AF vision 2023 prioritized by the AF Test Investment Planning & Programming (TIPP) process, these may include Maritime Test Support and Eglin Water Range capability upgrades.</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 2014 Accomplishments: C4ISR/Cyber received no I&M funding in FY2014 due to higher priority investments but early planning did begin for two new I&M projects, Improved Command and Control (C2) Test Operations Center (I-C2TOC) and Cyber Defense Test Capability (CDTC), both of which receive funding in FY15. I-C2TOC will develop net-centric C2 battle management operations test and evaluation capabilities, improve communication interfaces and data collection, handling, analysis and display capabilities to support C4ISR end-to-end weapon system testing at Eglin AFB. CDTC will provide an environment, methodology, techniques, and tools necessary to determine cyber defense effectiveness and mission success of systems under test.</p> <p>FY 2015 Plans: I-C2TOC will begin preliminary design and development activity on secure network infrastructure required to enhance net-centric C2 battle management operations and test control capabilities, improve communication interfaces and data collection, handling, analysis and display capabilities supporting C4ISR end-to-end weapon system testing at Eglin AFB.</p> <p>CDTC will begin with 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</p>		-	2.903	4.706

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 2014	FY 2015	FY 2016
vulnerabilities of acquisition systems under test. The study will also identify manpower and test infrastructure investments required to fully execute the cybersecurity T&E process. FY 2016 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, improve communication interfaces and data collection, handling, analysis and display capabilities supporting C4ISR end-to-end weapon system testing at Eglin AFB. AFMC will initiate improvement and modernization projects to support AF vision 2023 prioritized by the AF Test Investment Planning & Programming (TI PP) process, these may include the Multi-layered Security Improvement for Cyber modifications and I-C2TOC acceleration. The CDTC project will continue in FY16 with phase II of the cybersecurity T&E study. During this phase, a detailed test capabilities investment roadmap will be finalized along with detailed plans for acquiring and training the workforce necessary for executing the cybersecurity T&E process. Improved Data Links Hardware-in-the-Loops (HITLs) will begin in FY16 by improving and modernizing the 46 Test Squadron (TS) data link test capabilities. The solution minimizes risk by integrating COTS/GOTS hardware and software into the existing core data link (DL) T&E capabilities. FY16 implementation will include F-35 multi-function data link (MADL) DL emulation, F-22 MADL DL emulation, B-2 DL emulation, and the interoperability and use of net enabled weapons.			
Accomplishments/Planned Programs Subtotals	31.423	47.232	68.302

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• RDTE: BA 06: PE 0604256F: <i>Threat Simulator Development</i>	14.786	24.418	23.844	-	23.844	21.846	22.251	22.641	23.045	Continuing	Continuing
• RDTE: BA 06: PE 0605807F: <i>Test and Evaluation Support</i>	724.958	689.509	673.908	-	673.908	666.993	677.220	684.977	697.626	Continuing	Continuing
• RDTE: BA 06: PE 0605976F: <i>Facility Restoration & Modernization - T&E</i>	44.160	46.955	40.518	-	40.518	42.978	43.795	44.349	45.142	Continuing	Continuing
• RDTE: BA 06: PE 0605978F: <i>Facility Sustainment - T&E Support</i>	29.743	32.965	27.895	-	27.895	28.372	28.914	29.374	29.900	Continuing	Continuing

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
---	---

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
------------------	----------------	----------------	-------------------------------	------------------------------	--------------------------------	----------------	----------------	----------------	----------------	-----------------------------------	-------------------

Remarks

E. Acquisition Strategy

This program element uses several different contracting strategies to provide the most cost effective T&E investment solutions. The main acquisition strategy is to use full and open competition wherever possible to improve and modernize existing test capabilities.

F. Performance Metrics

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

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	32.956	30.443	34.918	-	34.918	34.985	34.579	35.197	35.827	Continuing	Continuing
661110: <i>Project Air Force</i>	-	32.956	30.443	34.918	-	34.918	34.985	34.579	35.197	35.827	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

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

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 and Support because this budget activity includes research, development, and 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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	32.956	30.443	35.151	-	35.151
Current President's Budget	32.956	30.443	34.918	-	34.918
Total Adjustments	-	-	-0.233	-	-0.233
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-0.233	-	-0.233

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Strategy & Doctrine	7.945	7.306	8.265	-	8.265
Description: Provides for continuing analytical research across a broad spectrum of aerospace issues and concerns--strategy and doctrine.					
FY 2014 Accomplishments: Conducted analytical research across a broad spectrum of aerospace issues and concerns--strategy and doctrine.					
FY 2015 Plans: Provide for continuing analytical research across a broad spectrum of aerospace issues and concerns--strategy and doctrine.					
FY 2016 Base Plans:					

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force			Date: February 2015			
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>				
C. Accomplishments/Planned Programs (\$ in Millions)						
		FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Will provide for continuing analytical research across a broad spectrum of aerospace issues and concerns--strategy and doctrine. FY 2016 OCO Plans: N/A						
Title: Force Development Description: Provides analytical research across a broad spectrum of aerospace issues and concerns--force development employment. FY 2014 Accomplishments: Conducted analytical research across a broad spectrum of aerospace issues and concerns--force development employment. FY 2015 Plans: Provide for continuing analytical research across a broad spectrum of aerospace issues and concerns--force development employment. FY 2016 Base Plans: Will provide for continuing analytical research across a broad spectrum of aerospace issues and concerns--force development employment. FY 2016 OCO Plans: N/A		7.765	7.306	8.265	-	8.265
Title: Manpower, Personnel & Training Description: Provides analytical research across a broad spectrum of aerospace issues and concerns--manpower, personnel and training. FY 2014 Accomplishments: Conducted analytical research across a broad spectrum of aerospace issues and concerns--manpower, personnel and training FY 2015 Plans:		8.126	7.306	8.265	-	8.265

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force				Date: February 2015	
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>			
C. Accomplishments/Planned Programs (\$ in Millions)					
	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
<p>Conduct continuing analytical research across a broad spectrum of aerospace issues and concerns--manpower, personnel and training.</p> <p>FY 2016 Base Plans: Will conduct continuing analytical research across a broad spectrum of aerospace issues and concerns--manpower, personnel and training.</p> <p>FY 2016 OCO Plans: N/A</p>					
<p>Title: Resource Management</p> <p>Description: Provides analytical research across a broad spectrum of aerospace issues and concerns--resource management.</p> <p>FY 2014 Accomplishments: Conducted analytical research across a broad spectrum of aerospace issues and concerns--resource management.</p> <p>FY 2015 Plans: Conduct analytical research across a broad spectrum of aerospace issues and concerns--manpower, personnel and training.</p> <p>FY 2016 Base Plans: Will conduct continuing analytical research across a broad spectrum of aerospace issues and concerns--manpower, personnel and training.</p> <p>FY 2016 OCO Plans: N/A</p>	7.674	7.306	8.265	-	8.265
<p>Title: Integrative Research/Direct Support</p> <p>Description: Provides for continuing analytical research across a broad spectrum of aerospace issues and concerns--integrative research/direct support.</p> <p>FY 2014 Accomplishments:</p>	1.446	1.219	1.858	-	1.858

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
---	---

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Conducted continuing analytical research across a broad spectrum of aerospace issues and concerns--integrative research/direct support. FY 2015 Plans: Conduct continuing analytical research across a broad spectrum of aerospace issues and concerns--integrative research/direct support. FY 2016 Base Plans: Will conduct continuing analytical research across a broad spectrum of aerospace issues and concerns--integrative research/direct support. FY 2016 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	32.956	30.443	34.918	-	34.918

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.

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	304.921	-	-	-	-	-	-	-	-	Continuing	Continuing
663005: <i>Small Business Innovation Research</i>	-	304.921	-	-	-	-	-	-	-	-	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 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>
Previous President's Budget	-	-	-	-	-
Current President's Budget	304.921	-	-	-	-
Total Adjustments	304.921	-	-	-	-
• Congressional General Reductions	-	-	-	-	-
• Congressional Directed Reductions	-	-	-	-	-
• Congressional Rescissions	-	-	-	-	-
• Congressional Adds	-	-	-	-	-
• Congressional Directed Transfers	-	-	-	-	-
• Reprogrammings	-	-	-	-	-
• SBIR/STTR Transfer	304.921	-	-	-	-
• Other Adjustments	-	-	-	-	-

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

	FY 2014	FY 2015	FY 2016
Title: Small Business Innovation Research	304.921	-	-
Description: Small Business Innovation Research			
FY 2014 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 the needs and requirements of the Air Force into research and development topics that have military and commercial potential. During one such SBIR investment, AFRL and a small business partner responded to a request from the F-22 Program Office for a flight trainer for use in the field. The collaborators developed a deployable, game-based trainer prototype, which led to a follow-on \$3 million Phase III, Rapid Innovation Fund award for further development of the technology. Another SBIR project resulted in a technology called the Standard Space Trainer, which			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
---	---

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
<p>demonstrated an open modular approach to satellite operator training. The architecture developed is substantially different than the previous approach to satellite training where entire software suites based on the actual satellite system's operational code were developed for trainers. In the past, the Air Force spent \$80 to \$150 million on single satellite training systems. The SST capability developed and delivered high-fidelity training for five satellite systems for just around \$39 million in funding. In fact, a studies and analysis group at Air Education and Training Command estimates that this single SBIR program success will save the Air Force over \$200 million over the next five years.</p> <p>FY 2015 Plans: N/A</p> <p>FY 2016 Plans: N/A</p>			
Accomplishments/Planned Programs Subtotals	304.921	-	-

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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	6.972	10.266	10.476	-	10.476	12.090	12.102	11.786	11.997	Continuing	Continuing
660191: <i>Initial Operational Test and Eval</i>	-	6.972	10.266	10.476	-	10.476	12.090	12.102	11.786	11.997	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.

The FY2016 funding request was reduced by \$1.171 million to account for the availability of prior execution balances.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	10.572	12.266	11.716	-	11.716
Current President's Budget	6.972	10.266	10.476	-	10.476
Total Adjustments	-3.600	-2.000	-1.240	-	-1.240
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-2.000			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-3.600	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-1.240	-	-1.240
 Change Summary Explanation					
FY14: Reduction for \$3.600M due to higher AF priorities					
FY15: \$2.000M Congressionally directed reduction for Weapons OT&E - unjustified increase.					
FY16: Reduction of \$1.171 million to account for the availability of prior execution balances.					

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Title: Air Systems OT&E	3.543	4.142	1.869
Description: Plan, execute and report OT&E for Air Systems			
FY 2014 Accomplishments:			
-Advanced Pilot Training (APT T-X): Conducted early influence			
-AWACS Block 40/45: Conducted early influence			
-C-130J BU 8.1: Conducted early influence			
-Combat Rescue Helicopter (CRH): Conducted early influence			
-(Diminishing Manufacturing Sources) Replacement of Avionics for Global Operations and Navigation (E-3 DRAGON): Conducted early influence			
-F-15 Eagle Passive and Active Warning and Survivability System (F-15 EPAWSS): Conducted early influence			
-F-15E Radar Modernization Program (F-15E RMP): Conducted IOT&E			
-F-22A 3.2A: Planned for FOT&E			
-F-22A 3.2B: Planned for OA			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 2014	FY 2015	FY 2016
<ul style="list-style-type: none"> -HC/MC-130 RECAP: Published Final Report -JSTARS Recap: Conducted early influence -KC-46A: Plan for OA -Miniature Air Launched Decoy - Jammer (MALD-J): Completed IOT&E -MQ-9 Increment 1: Planned for FOT&E -Presidential Aircraft Recapitalization (PAR): Conducted early influence -QF-16: Conducted IOT&E -UH-1N Replacement: Conducted Early Influence <p>FY 2015 Plans:</p> <ul style="list-style-type: none"> -Advanced Pilot Training (APT T-X): Conduct early influence -AWACS Block 40/45: Plan for FOT&E -C-130J BU 8.1: Plan for OA -Combat Rescue Helicopter (CRH): Plan for OA1 -(Diminishing Manufacturing Sources) Replacement of Avionics for Global Operations and Navigation (E-3 DRAGON): Plan for OA -F-15 Eagle Passive and Active Warning and Survivability System (F-15 EPAWSS): Conduct early influence -F-22A 3.2A: Conduct FOT&E -F-22A 3.2B: Conduct OA -F-22 Tactical Mandates (TACMAN): Conduct early influence -JSTARS Recap: Conducted early influence -KC-46A: Conduct OA -Miniature Air Launched Decoy - Jammer (MALD-J): Conduct FOT&E -MQ-9 Increment 1: Conduct FOT&E -Multi-domain Adaptable Processing System (MAPS): Conduct early influence -Presidential Aircraft Recapitalization (PAR): Plan for OA -QF-16: Publish final report -UH-1N Replacement: Conduct Early Influence -Conduct other planning and operational testing for new air system programs as the requirement becomes known to AFOTEC <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 -C-130J BU 8.1: Conduct OA -Combat Rescue Helicopter (CRH): Conduct OA1 			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
-(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: Plan for IOT&E -F-22 Tactical Mandates (TACMAN): Conduct early influence -JSTARS Recap: Conducted early influence -KC-46A: Conduct IOT&E -Miniature Air Launched Decoy - Jammer (MALD-J): Complete FOT&E -MQ-9 Increment 1: Complete FOT&E -Multi-domain Adaptable Processing System (MAPS): Conduct early influence -Presidential Aircraft Recapitalization (PAR): Conduct OA -UH-1N Replacement: Conduct Early Influence -Conduct other planning and operational testing for new air system programs as the requirement becomes known to AFOTEC				
Title: Space Systems OT&E Description: Plan, execute and report OT&E for Space Systems OT&E FY 2014 Accomplishments: -Advanced Extremely High Frequency Satellite Communications (Advanced EHF): Conducted MOT&E -Enhanced Polar System (EPS): Conducted early influence -Global Broadcast Service (GBS): Planned for FOT&E -Global Positioning System Block III (GPS III): Conducted early influence -Military GPS User Equipment (GPS MGUE): Planned for OA -GPS Next Generation Control Segment (GPS OCX): Conducted early influence -Inter-Continental Ballistic Missile Fuze (ICBM FUZE): Conducted early influence -Integrated Strategic Planning and Analysis Network Increment 4 (ISPAN Inc IV): Conducted EOA -Joint Space Operations Center (JSpOC) Mission System (JMS): Planned for OUE -Space Based Infrared System (SBIRS): Planned for OUE1 -Space Fence: Conducted early influence -Weather System Follow-on (WSF): Conducted early influence FY 2015 Plans: -Advanced Extremely High Frequency Satellite Communications (Advanced EHF): Complete MOT&E -Enhanced Polar System (EPS): Plan for OA -Global Broadcast Service (GBS): Conduct FOT&E		1.789	1.330	0.746

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 2014	FY 2015	FY 2016
<ul style="list-style-type: none"> -Global Positioning System Block III (GPS III): Conduct early influence -Military GPS User Equipment (GPS MGUE): Conduct OA -GPS Next Generation Control Segment (GPS OCX): Plan for OA -Inter-Continental Ballistic Missile Fuze (ICBM FUZE): Conduct early influence -Integrated Strategic Planning and Analysis Network Increment 4 (ISPAN Inc IV): Conduct OA -Joint Space Operations Center (JSpOC) Mission System (JMS): Conduct OUE -Space Based Infrared System (SBIRS): Conduct OUE1 -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 2016 Plans:</p> <ul style="list-style-type: none"> -Enhanced Polar System (EPS): Conduct OA -Global Positioning System Block III (GPS III): Conduct early influence -Military GPS User Equipment (GPS MGUE): Plan for OUE -GPS Next Generation Control Segment (GPS OCX): Conduct 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 OUE2 -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>Title: Weapons OT&E</p> <p>Description: Plan, execute and report OT&E for Weapons OT&E</p> <p>FY 2014 Accomplishments:</p> <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): Conducted MOT&E -AIM-9X Block II: Conducted MOT&E -B-61 Life Extension Program (B-61 LEP): Conducted early influence -Hard Target Void Sensing Fuze (HTVSF): Conducted OA -Long-Range Stand-Off Weapon (LRSO): Conducted early influence 	0.602	0.664	5.191

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p>-Small Diameter Bomb II (SDB II): Conducted OA</p> <p>FY 2015 Plans:</p> <p>-AIM-120C Advanced Electronic Protection Improvement Program (AIM-120C Advanced EPIP): Plan for MOT&E</p> <p>-AIM-120C Electronic Protection Improvement Program (AIM-120C EPIP): Complete MOT&E</p> <p>-AIM-9X Block II: Complete MOT&E</p> <p>-B-61 Life Extension Program (B-61 LEP): Conduct early influence</p> <p>-Hard Target Void Sensing Fuze (HTVSF): Plan for MOT&E</p> <p>-Long-Range Stand-Off Weapon (LRSO): Conduct early influence</p> <p>-Small Diameter Bomb II (SDB II): Complete OA</p> <p>-Conduct other planning and operational testing for new weapons system programs as the requirement becomes known to AFOTEC</p> <p>FY 2016 Plans:</p> <p>-AIM-120C Advanced Electronic Protection Improvement Program (AIM-120C Advanced EPIP): Conduct MOT&E</p> <p>-B-61 Life Extension Program (B-61 LEP): Conduct early influence</p> <p>-Hard Target Void Sensing Fuze (HTVSF): Conduct MOT&E</p> <p>-Long-Range Stand-Off Weapon (LRSO): Conduct early influence</p> <p>-Small Diameter Bomb II (SDB II): Conduct MOT&E</p> <p>-Conduct other planning and operational testing for new weapons system programs as the requirement becomes known to AFOTEC</p>				
<p>Title: C4ISR OT&E</p> <p>Description: Plan, execute and report OT&E for C4ISR OT&E</p> <p>FY 2014 Accomplishments:</p> <p>-Three Dimensional Expeditionary Long Range Radar (3DELRR): Conducted early influence</p> <p>-Air Force Distributed Common Ground System SR 3.0 (DCGS SR 3.0): Planned for OUE</p> <p>-Air Force Integrated Personnel and Pay System (AF-IPPS): Conducted early influence</p> <p>-Air Operations Center (AOC WS Inc 10.2): Planned for OA</p> <p>-Battle Control System - Fixed, Release 3.2 (BCS-F R3.2.2): Conducted FOT&E</p> <p>-Command and Control Air Operations Suite/Command and Control Information Services (C2AOS-C2IS): Conducted early influence</p> <p>-Enclave Control Node (ECN): Planned for OUE1</p> <p>-Enhanced Technical Information Management System (ETIMS): Conducted OA</p>		0.974	3.828	2.396

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p>-Family of Advanced Beyond Line Of Sight Terminals (FAB T): Conducted OA -RQ-4 Global Hawk Block 30/Airborne Signals Intelligence (ASIP): Conducted early influence -RQ-4B Global Hawk Block 40: Planned for IOT&E</p> <p>FY 2015 Plans:</p> <p>-Three Dimensional Expeditionary Long Range Radar (3DELRR): Conduct early influence -Air Force Distributed Common Ground System SR 3.0 (AF DCGS SR 3.0): Conduct OUE and 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 OA -Command and Control Air Operations Suite/Command and Control Information Services (C2AOS-C2IS): Conduct early influence -Enclave Control Node (ECN): Conduct OUE1 -Enhanced Technical Information Management System (ETIMS): Conduct OUE -Family of Advanced Beyond Line Of Sight Terminals (FAB T): Plan for IOT&E -RQ-4 Global Hawk Block 30/Airborne Signals Intelligence (ASIP): Conduct early influence -RQ-4B Global Hawk Block 40: Conduct IOT&E -Conduct other planning and operational testing for new C4ISR programs as the requirement becomes known to AFOTEC</p> <p>FY 2016 Plans:</p> <p>-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): Plan for IOT&E -Air Operations Center (AOC WS Inc 10.2): Conduct IOT&E -Command and Control Air Operations Suite/Command and Control Information Services (C2AOS-C2IS): Plan for MOT&E -Enclave Control Node (ECN): Conduct OUE2 -Family of Advanced Beyond Line Of Sight Terminals (FAB T): Conduct IOT&E -RQ-4 Global Hawk Block 30/Airborne Signals Intelligence (ASIP): Plan for FOT&E -Conduct other planning and operational testing for new C4ISR programs as the requirement becomes known to AFOTEC</p>				
Title: Combat Support OT&E		0.064	0.302	0.274
Description: Plan, execute and report OT&E for Combat Support OT&E				
FY 2014 Accomplishments:				
<p>-Integrated Aircrew Ensemble (IAE): Conducted OA -Joint Mission Planning System B-2 (JMPS B-2): Conducted early influence -Joint Mission Planning System B-52 (JMPS B-52): Plan for IOT&E</p>				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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 2014	FY 2015	FY 2016
-Joint Mission Planning System E-8 (JMPS E-8): Conducted IOT&E <i>FY 2015 Plans:</i> -Integrated Aircrew Ensemble (IAE): Complete OA -Joint Mission Planning System B-2 (JMPS B-2): Plan for IOT&E -Joint Mission Planning System B-52 (JMPS B-52): Conduct IOT&E -Conduct other planning and operational testing for new combat support programs as the requirement becomes known to AFOTEC <i>FY 2016 Plans:</i> -Integrated Aircrew Ensemble (IAE): Conduct IOT&E1 -Joint Mission Planning System B-2 (JMPS B-2): Conduct IOT&E -Conduct other planning and operational testing for new combat support programs as the requirement becomes known to AFOTEC			
Accomplishments/Planned Programs Subtotals	6.972	10.266	10.476

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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	724.958	689.509	673.908	-	673.908	666.993	677.220	684.977	697.626	Continuing	Continuing
6606TG: <i>96th Test Group</i>	-	30.519	36.413	35.797	-	35.797	36.733	37.467	38.041	38.694	Continuing	Continuing
6606TS: <i>Test and Evaluation Support</i>	-	694.439	653.096	638.111	-	638.111	630.260	639.753	646.936	658.932	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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	722.658	689.509	672.427	-	672.427
Current President's Budget	724.958	689.509	673.908	-	673.908
Total Adjustments	2.300	-	1.481	-	1.481
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	2.300	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	1.481	-	1.481

Change Summary Explanation

FY14: \$2.300M increase for a below threshold reprogramming to support the Eglin Range.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015
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>	
FY16: \$1.481M overall net increase in the program due to restoration of flying hours and preventative depot maintenance funding associated with one B-1 test aircraft while simultaneous decreases in funding for flying hours for divested legacy aircraft, for civilian pay due to a reprice adjustment, for an inflation adjustment, for a manpower reduction associated with previously divested test aircraft, and for a fuel price adjustment.		

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
6606TG: <i>96th Test Group</i>	-	30.519	36.413	35.797	-	35.797	36.733	37.467	38.041	38.694	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 2014	FY 2015	FY 2016
Title: 96th Test Group	30.519	36.413	35.797
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 2014 Accomplishments:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force	Date: February 2015
---	----------------------------

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>
--	--	---

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Total consisted of utilities, contractor services, and civilian pay.			
<i>FY 2015 Plans:</i> Total consists of utilities, contractor services, and civilian pay.			
<i>FY 2016 Plans:</i> Total consists of utilities, contractor services, and civilian pay.			
Accomplishments/Planned Programs Subtotals	30.519	36.413	35.797

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• NA: NA	-	-	-	-	-	-	-	-	-	-	-

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.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
6606TS: <i>Test and Evaluation Support</i>	-	694.439	653.096	638.111	-	638.111	630.260	639.753	646.936	658.932	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 2014	FY 2015	FY 2016
Title: AEDC, 412TW, 96TW	694.439	653.096	638.111

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
<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 2014 Accomplishments: Total consisted of utilities, contractor services, civilian pay, and the test and evaluation flying hour program.</p> <p>FY 2015 Plans: 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>			
Accomplishments/Planned Programs Subtotals	694.439	653.096	638.111

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• NA: NA	-	-	-	-	-	-	-	-	-	-	-

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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	12.755	34.364	21.858	-	21.858	17.295	17.524	17.660	17.977	Continuing	Continuing
661023: <i>Rocket System Launch Program (RSLP)</i>	-	12.755	34.364	21.858	-	21.858	17.295	17.524	17.660	17.977	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.

The FY2016 funding request was reduced by \$.482 million to account for the availability of prior execution balances.

B. Program Change Summary (\$ in Millions)	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>
Previous President's Budget	12.755	34.364	25.451	-	25.451
Current President's Budget	12.755	34.364	21.858	-	21.858
Total Adjustments	-	-	-3.593	-	-3.593
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-3.593	-	-3.593

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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

The FY2016 funding request was reduced by -\$.482 million to account for the availability of prior execution balances.

FY2016 reduction due to higher DoD priorities.

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

	FY 2014	FY 2015	FY 2016
<p>Title: Storage/Refurbishment/Demil</p> <p>Description: Storage, refurbishment, inventory control, and demil/disposal of deactivated Minuteman, Peacekeeper and other missile flight test assets</p> <p>FY 2014 Accomplishments: Continued 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; successfully disposed of 475 flight control units with an innovative process which avoids high organic disposal costs. Continued support activities such as, but not limited to sustainment of support equipment, mission support, and special studies, etc.</p> <p>FY 2015 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. Replace an aging Arm/Disarm switch with a new design that reduces component count and failure modes. Fully account for all RSLP rockets and equipment via item unique identification. Continue support activities such as, but not limited to sustainment and refurbishment of support equipment, mission support, special studies, etc.</p> <p>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.</p>	6.300	14.200	11.243
<p>Title: Aging Surveillance</p> <p>Description: Perform aging surveillance-related activities on stored motors</p> <p>FY 2014 Accomplishments:</p>	0.050	4.718	4.532

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
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 such as, but not limited to mission support, special studies, etc. FY 2015 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 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.				
Title: Other Launch Support Services Description: Perform launch services activities FY 2014 Accomplishments: Continued vehicle acquisition, processing, launch services support, mission assurance, and launch operations to launch NOAA's Deep Space Climate Observatory (DSCOVR) mission. FY 2015 Plans: Continue vehicle acquisition, processing, launch services support, mission assurance, and launch operations to launch NOAA's Deep Space Climate Observatory (DSCOVR) mission. Begin launch vehicle acquisition, processing, launch services support, mission assurance, and operations to launch RDT&E payloads. FY 2016 Plans: Continue launch vehicle acquisition, processing, launch services support, mission assurance, and operations to launch RDT&E payloads.		6.405	15.446	6.083
Accomplishments/Planned Programs Subtotals		12.755	34.364	21.858
D. Other Program Funding Summary (\$ in Millions)				
N/A				
Remarks				

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force Date: February 2015

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>
---	--

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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	11.642	21.161	28.228	-	28.228	27.339	25.570	26.051	26.518	Continuing	Continuing
662617: <i>Free-Flyer Spacecraft Missions</i>	-	11.642	21.161	28.228	-	28.228	27.339	25.570	26.051	26.518	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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force				Date: February 2015	
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>			
B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	11.642	21.161	28.416	-	28.416
Current President's Budget	11.642	21.161	28.228	-	28.228
Total Adjustments	-	-	-0.188	-	-0.188
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-0.188	-	-0.188
C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015			
Title: Payload Integration	5.247	12.964	17.634		
Description: Integrate payloads onto spaceflight missions, including free-flyer payloads, hosted payloads, sounding rockets, experiments on the ISS, 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 funding line now includes what was previously referred to as program support.					
FY 2014 Accomplishments: Continued payload integration efforts onto spaceflight missions, including free-flyer payloads, hosted payloads, sounding rockets, experiments on the ISS, and commercial missions, and acquisition of associated spacecraft and integration hardware. FY14 support included mission design, spacecraft procurement and payload integration for the Space Test Program (STP) Satellite #3 (STPSat-3) which hosted six payloads including the Air Force Research Laboratory (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 Electostatic Analyzer Re-Flight (SERB #72), NASA/NOAA's Total Solar Irradiance Calibration Transfer Equipment, AFRL Joint Component Research (SERB Unranked), and the STP/AFRL De-orbit Module (enabling technology). STPSat-3, launched in 1QFY14, also included cubesats from West Point's BlackKnight-1 (SERB #29) and Naval Postgraduate School Solar Cell Array Tester (NPS-SCAT) (SERB #60). Funded the Eagle Spacecraft Platform to host a minimum of three SERB experiments requiring flight to geo-synchronous orbit including Hyper Temporal-spectrometer Imager (HTI) missile detection (SERB #1), MYCROFT (SERB #5) and Resilient Spacecraft Bus Development Experiment (ARMOR) (SERB #32). Began development of STPSat-5 to host four SERB payloads for a polar orbit launch in 2017. Provided the unique					

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016
<p>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>FY 2015 Plans: Continue payload integration efforts onto spaceflight missions, including free-flyer payloads (STPSat-4 and STPSat-5), hosted payloads, sounding rockets, experiments on the ISS, and commercial missions; including acquisition of associated spacecraft and integration hardware. 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>FY 2016 Plans: Continue payload integration efforts onto spaceflight missions, including free-flyer payloads, hosted payloads, sounding rockets, experiments on the ISS, and commercial missions; including acquisition of associated spacecraft and integration hardware. 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 2014 Accomplishments: Purchased launch services, launch vehicles, and launch vehicle support for free-flyer payloads, hosted payloads, sounding rockets, experiments on the ISS, and commercial spaceflight missions. FY14 efforts included launch of several SERB experiments on the ISS resupply mission (STP-H4) including Small Wind and Temperature Spectrometer (SWATS) (SERB #27), Global Awareness Data exfiltration International Satellite (GLADIS) (SERB #20), Active Thermal Tile (ATT) (SERB #22), Miniature Array of Radiation Sensors (MARS) (SERB #55) and Integrated Miniaturized Electrostatic Analyzer-Reflight (iMESA-R) (SERB #60). Successfully launched the Automated Navigation and Guidance Experiment for Local Space (ANGELS) (SERB #1) experiment on AFSPC-4 in July 2014. Began Kestrel Eye II mission for launch and deployment from the ISS and Charged Aerosol Release Experiment II (CARE II) sounding rocket mission.</p> <p>FY 2015 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.</p> <p>FY 2016 Plans:</p>		3.386	6.044	7.294

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 2014	FY 2015	FY 2016
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. Begin funding of the STP-2 medium launch mission. Title: On Orbit Satellite Operatons Description: Execute first-year operations and operations support for STP-sponsored missions. FY 2014 Accomplishments: Executed first-year operations and/or operations support for STP-sponsored missions, including Space Test Program Satellite-3 and completed launch and early-orbit checkout of Automated Navigation and Guidance Experiment for Local Space (ANGELS). FY 2015 Plans: Complete ANGELS first-year operations and execute first-year operations and/or operations support for STP-sponsored missions. FY 2016 Plans: Execute first-year operations and/or operations support for STP-sponsored missions.	3.009	2.153	3.300
Accomplishments/Planned Programs Subtotals			
	11.642	21.161	28.228

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDT&E: BA03: PE0603401F: <i>Advanced Spacecraft Technology</i>	13.095	10.000	-	-	-	-	-	-	-	-	-

Remarks
 STP-2 integration and mission operations continues in FY15 via existing funding in PE 0603401F Advanced Spacecraft Technology, RDT&E AF. STP-2 is a dedicated research and development launch mission that 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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	44.160	46.955	40.518	-	40.518	42.978	43.795	44.349	45.142	Continuing	Continuing
6606MC: <i>Facility Restoration and Modernization - T&E</i>	-	44.160	46.955	40.518	-	40.518	42.978	43.795	44.349	45.142	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)	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>
Previous President's Budget	44.160	46.955	40.787	-	40.787
Current President's Budget	44.160	46.955	40.518	-	40.518
Total Adjustments	-	-	-0.269	-	-0.269
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-0.269	-	-0.269

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

	FY 2014	FY 2015	FY 2016
Title: Facility restoration and modernization at the 96 TG	0.827	0.431	0.740

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p>Description: Facility restoration and modernization at the 96th TG.</p> <p>FY 2014 Accomplishments: Restored deteriorated High Speed Test Track (HSTT) building. Renovated bathrooms and installation of new windows in 1950s era building at the Central Inertial Guidance Test Facility (CIGTF). Repaired and improved road used to transport weapons from munitions facility to aircraft. Installed a backup set of slip rings for the Central Inertial and Global Positioning System Test Facility 3-Axis Tables (Axis 1 and 3 on 53Y) to meet test support requirements and to mitigate risk should the current slip rings fail during test support. Continued upgrade of the Landing Gear Test Facility (LGTF) 168i Dynamometer control and data acquisition system. The computer used for this system is obsolete (early 1990's vintage) and replacement parts cannot be easily acquired. Also replaced the LGTF 120 Dynamometer mandrel carrier control system for similar reasons. The 120 Dynamometer test system is essential to the continuation of the LGTF's aircraft tire testing mission.</p> <p>FY 2015 Plans: Upgrade and remodel calibration pit at National Radar Cross Section Test Facility (NRTF). Restore and modernize 168i Dynamometer at the Landing Gear Test Facility (LGTF). Install structures to shelter High Power Jammers at Central Inertial Guidance Test Facility (CIGTF). Upgrade 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; begin design of Radar Cross Section Advanced Measurement System Fiber Optic replacement; Replace the hydraulic package that powers the Landing Gear Test Facility (LGTF) Baldwin Load Press; Continue 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.</p>				
<p>Title: Facility restoration and modernization at the 96 TW</p> <p>Description: Facility restoration and modernization at the 96th TW.</p> <p>FY 2014 Accomplishments: Constructed concrete berms under Air Management Unit-1 (AMU-1) at Climatic Lab. Renovated Room R-139 in Guided Weapon Evaluation Facility (GWEF) to support infrared (IR) test. Installed 3-phase power to Building (Bldg) 628. Replaced wooden steps for Bldg 133. Replaced remaining Flight Motion simulator controllers at GWEF. Replaced roof at Bldg 9307. Repaired fire suppression system for Bldg 12555. Renovated facility for Bldg 961. Replaced windows, fire suppression and lightning protection</p>		2.387	1.210	2.107

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p>components throughout the Range complex. Replaced damaged/obsolete site wiring and electrical distribution systems, missing and damaged security signs and fences, corroded/rotten stairs, etc.</p> <p>FY 2015 Plans: Conduct 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>Title: Facility restoration and modernization at AEDC</p> <p>Description: Facility restoration and modernization at AEDC.</p> <p>FY 2014 Accomplishments: Continued to recertify Pressure and Hazardous Material Systems(PHMS). Procured engine test cell C-1 and C-2 digital temperature scanners. Upgraded power distribution and control for arc heater model positioning system. Replaced Von Karman Facility (VKF) cooler #HPA-HE1-VU (111) and compressor C111. Replaced throttles in engine test cells C-1, C-2, J-1, J-2, SL-2, SL-3 and T-4. Refurbished C-Plant hydraulic systems 1-6 and 9-18. Refurbished 161kV transformers. Sustained oil-filled transformer health by re-gasketing, re-furbishing controls, and painting; Replaced the C-Plant RC1 and RC2 second stage brine refrigeration systems; Continued work on replacing aging H2 (ARC) Diffuser; Replaced C1 Spacers in windtunnel 16T compressors; Restored test network computers to current computer technology levels.</p> <p>FY 2015 Plans: Continue FY14 efforts not completed or that were multiyear. Continue upgrading control systems from analog to digital in the Exhaust Test Facility. Continue planning to improve the exhaust plant cooling systems. Continue work to improve the 16T wind tunnel Foreign Object Damage (FOD) fix effort. Improve balances and calibration systems. Begin planning for AB Exhaust plant system life extension program - ensure A/B exhaust system is operational until strategic direction is executed relative to replacement; Refurbish C Plant mechanical and electrical systems; Continue effort to replace H2 diffuser; Rewind and upgrade 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>		36.640	43.566	33.302
<p>Title: Facility restoration and modernization at 412 TW</p> <p>Description: Facility restoration and modernization at the 412 TW.</p>		4.306	1.748	4.369

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015
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 2014	FY 2015	FY 2016
<p><i>FY 2014 Accomplishments:</i> Converted stairs from wood to metal, B1820; replaced 400 Hz Frequency Converters, B1020; replaced A/C chiller #2, B1030; executed Phase 1 and 2 Radar Absorbing Material (RAM) replacement, B1020; replaced 320 KW generator 480/277 volt, B1020; replaced transformers and switch gear design, B1020.</p> <p><i>FY 2015 Plans:</i> Upgrade BAF electrical hydraulics and cooling to support the B-2 program; Repair asphalt between Hangars 1207 and 1210 (Main Base Airfield); Rebuild Pad 20 (Main Base airfield); Remove 100 identified obstructions in Main Base airfield infield areas; Install lights on Ramp 9, shelter to include conduit, boring if required, all wiring and hardware to make a complete and useable system.</p> <p><i>FY 2016 Plans:</i> 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.</p>			
Accomplishments/Planned Programs Subtotals	44.160	46.955	40.518

D. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• RDTE: BA06: PE 0604256F: <i>Threat Simulator Development</i>	14.786	24.418	23.844	-	23.844	21.846	22.251	22.641	23.045	Continuing	Continuing
• RDTE: BA06: PE 0604759F: <i>Major T&E Investment</i>	31.423	47.232	68.302	-	68.302	66.845	66.142	66.436	67.679	Continuing	Continuing
• RDTE: BA06: PE 0605807F: <i>Test and Evaluation Support</i>	724.958	689.509	673.908	-	673.908	666.993	677.220	684.977	697.626	Continuing	Continuing
• RDTE: BA06: PE 0605978F: <i>Facility Sustainment - T&E Support</i>	29.743	32.965	27.895	-	27.895	28.372	28.914	29.374	29.900	Continuing	Continuing

Remarks

E. Acquisition Strategy

N/A

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015
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>	

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.

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	29.743	32.965	27.895	-	27.895	28.372	28.914	29.374	29.900	Continuing	Continuing
6606MR: <i>Facility Sustainment-T&E Support</i>	-	29.743	32.965	27.895	-	27.895	28.372	28.914	29.374	29.900	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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	27.643	32.965	28.080	-	28.080
Current President's Budget	29.743	32.965	27.895	-	27.895
Total Adjustments	2.100	-	-0.185	-	-0.185
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	2.100	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-0.185	-	-0.185

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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>		
Change Summary Explanation FY14: \$2.1M increase due to reprogramming; used to execute deferred maintenance.				
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016
<p>Title: Facility sustainment at the 96 TG.</p> <p>Description: Facility sustainment at the 96 TG.</p> <p>FY 2014 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 2015 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 2016 Plans: Sustainment projects include painting buildings, carpet replacement, heating, ventilation, and air conditioning (HVAC) repairs and roof repairs throughout the 96 TG.</p>		0.355	0.348	0.293
<p>Title: Facility sustainment at the 96 TW.</p> <p>Description: Facility sustainment at the 96 TW.</p> <p>FY 2014 Accomplishments: Completed several Direct Scheduled Work Orders (DSWs) within the test infrastructure.</p> <p>FY 2015 Plans: Continue to work 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>		0.422	0.409	0.344
<p>Title: Facility sustainment at the AEDC.</p> <p>Description: Facility sustainment at the AEDC.</p> <p>FY 2014 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,</p>		27.617	30.851	25.885

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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>		
C. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016
arc heaters, rocket test facility, space chambers, and hypersonic engine test facilities, along with associated infrastructure that supports all test operations. FY 2015 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. Plan and execute 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. 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.				
Title: Facility sustainment at the 412 TW. Description: Facility sustainment at the 412 TW. FY 2014 Accomplishments: Continued repainting hanger floors with two-part epoxy coatings and restriping floors. Continued boiler and cooling tower chemical treatments. Continued septic tank pumping. Conducted scales maintenance in Building 1030. Completed hanger door maintenance for Building 1030. Continued providing civil engineering in-house and emergency repair work. FY 2015 Plans: Continue sustainment of test unique infrastructure in 412 TW Electronic Warfare, Range, and other T&E facilities located at Edwards AFB, CA. 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.		1.349	1.357	1.373
Accomplishments/Planned Programs Subtotals		29.743	32.965	27.895

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE: BA06: PE 0604256F: <i>Threat Simulator Development</i>	14.786	24.418	23.844	-	23.844	21.846	22.251	22.641	23.045	Continuing	Continuing
• RDTE: BA06: PE 0604759F: <i>Major T&E Investment</i>	31.423	47.232	68.302	-	68.302	66.845	66.142	66.436	67.679	Continuing	Continuing
• RDTE: BA06: PE 0605807F: <i>Test & Evaluation Support</i>	724.958	689.509	673.908	-	673.908	666.993	677.220	684.977	697.626	Continuing	Continuing
• RDTE: BA06: PE 0605976F: <i>Facility Restoration and Modernization-T&E</i>	44.160	46.955	40.518	-	40.518	42.978	43.795	44.349	45.142	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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	-	16.350	16.507	-	16.507	16.759	17.001	17.275	17.539	Continuing	Continuing
666157: <i>Development Planning</i>	-	-	16.350	13.030	-	13.030	13.287	13.530	13.804	14.069	Continuing	Continuing
666158: <i>INTEGRATED SIMULATION AND ANALYSIS</i>	-	-	-	3.477	-	3.477	3.472	3.471	3.471	3.470	Continuing	Continuing

Note

In FY2016, Project 666158, Integrated Simulation and Analysis includes new start efforts to improve organic Air Force analysis and assessment capabilities.

In FY2015, PE 0604337F, Requirements Analysis and Maturation, Project 645349, Development Planning efforts were transferred to PE 0606017F, Requirements Analysis and Maturation to appropriately align activities to Budget Activity 6.

A. Mission Description and Budget Item Justification

The Requirements Analysis and Maturation (RAM) program funds development planning (DP) to include early systems engineering and pre-acquisition planning 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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	-	13.850	14.116	-	14.116
Current President's Budget	-	16.350	16.507	-	16.507
Total Adjustments	-	2.500	2.391	-	2.391
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	2.500			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	2.391	-	2.391

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

Project: 666157: *Development Planning*
 Congressional Add: *Program Increase*

	FY 2014	FY 2015
	-	2.500
Congressional Add Subtotals for Project: 666157	-	2.500
Congressional Add Totals for all Projects	-	2.500

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force **Date:** February 2015

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>
--	---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
666157: <i>Development Planning</i>	-	-	16.350	13.030	-	13.030	13.287	13.530	13.804	14.069	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note
In FY2015, PE 0604337F, Requirements Analysis and Maturation, Project 645349, Development Planning efforts were transferred to PE 0606017F, Requirements Analysis and Maturation to appropriately align activities to Budget Activity 6.

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 2014	FY 2015	FY 2016
<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 2014 Accomplishments: N/A</p> <p>FY 2015 Plans: 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 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>	-	2.216	2.085
<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 2014 Accomplishments:</p>	-	9.280	8.730

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015		
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>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016
N/A				
FY 2015 Plans: 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 2016 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.				
Title: Pre-systems Acquisition Planning		-	2.354	2.215
Description: Conduct coordinated pre-systems acquisition planning activities that address requirements, schedule, cost, technology, and acquisition strategy.				
FY 2014 Accomplishments: N/A				
FY 2015 Plans: Perform 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.				
Accomplishments/Planned Programs Subtotals		-	13.850	13.030
		FY 2014	FY 2015	
Congressional Add: Program Increase		-	2.500	
FY 2015 Plans: Conduct Congressionally-directed effort.				
Congressional Adds Subtotals		-	2.500	
C. Other Program Funding Summary (\$ in Millions)				
N/A				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015
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>

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

Remarks

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.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
666158: <i>INTEGRATED SIMULATION AND ANALYSIS</i>	-	-	-	3.477	-	3.477	3.472	3.471	3.471	3.470	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY2016, Project 666158, Integrated Simulation and Analysis includes new start efforts to improve organic Air Force analysis and assessment capabilities.

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 and related activities.

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

	FY 2014	FY 2015	FY 2016
Title: Integrated Simulation and Analysis	-	-	3.477
Description: Develop cross-domain system of systems modeling, simulation, and analysis capabilities to support development planning, capabilities assessment, and acquisition decisions.			
FY 2014 Accomplishments: N/A			
FY 2015 Plans: 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.			
Accomplishments/Planned Programs Subtotals	-	-	3.477

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force	Date: February 2015
---	----------------------------

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>
--	---	--

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u> <u>Base</u>	<u>FY 2016</u> <u>OCO</u>	<u>FY 2016</u> <u>Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• N/A: N/A	-	-	-	-	-	-	-	-	-	-	-

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.

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	-	19.512	18.997	-	18.997	19.167	19.504	19.912	20.264	Continuing	Continuing
666156: <i>SPACE TEST AND TRAINING RANGE DEVELOPMENT</i>	-	-	19.512	18.997	-	18.997	19.167	19.504	19.912	20.264	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

This project supports the development of Space Test and Training Range (STTR) capabilities required to support developmental and operational test, training, exercises and tactics development for Space Control systems and related architecture. This 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. The objective of the STTR is to provide 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 supports the development of test range assets required to support developmental and operational test, exercises, training, and tactics development for Air Force and Joint-service space control systems/units. Included are both the fixed node Space Range Operation Center (SROC) at Schriever AFB and a deployable capability to support complex Joint and AF exercises. A space range Family of Systems (FoS) called Big Top is being developed to accomplish the STTR mission. The Big Top objective is integration into a Distributed Mission Architecture, tying into both the Information Operations (IO) and Air ranges for increased realism and complexity. 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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force				Date: February 2015		
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>				
B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	
Previous President's Budget	-	19.512	19.873	-	19.873	
Current President's Budget	-	19.512	18.997	-	18.997	
Total Adjustments	-	-	-0.876	-	-0.876	
• Congressional General Reductions	-	-				
• Congressional Directed Reductions	-	-				
• Congressional Rescissions	-	-				
• Congressional Adds	-	-				
• Congressional Directed Transfers	-	-				
• Reprogrammings	-	-				
• SBIR/STTR Transfer	-	-				
• Other Adjustments	-	-	-0.876	-	-0.876	
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2014	FY 2015	FY 2016
Title: Range Control				-	19.012	17.618
Description: Development and acquisition of mobile, transportable, and fixed range monitoring and communications capabilities for the space range.						
FY 2014 Accomplishments: N/A						
FY 2015 Plans: Complete SROC technical refresh activities for Spiral 0. Continue development and complete initial deliveries of advanced live, virtual and constructive environment and closed loop training capabilities and advanced software simulation tools.						
FY 2016 Plans: SROC technical activities for Spiral 1. Continue development and deliveries of advanced live, virtual and constructive environment and closed loop training and advanced software simulation tools.						
Title: Bandwidth Support				-	0.500	1.379
Description: Provides for leased SATCOM bandwidth for STTR operations.						
FY 2014 Accomplishments: N/A						
FY 2015 Plans:						

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
Provide required space range satellite communications bandwidth for exercise, testing and training of both offensive and defensive space control systems on the space range.			
<i>FY 2016 Plans:</i> Provide required space range satellite communications bandwidth for exercise, testing and training of both offensive and defensive space control systems on the space range. FY16 additional satellite communications bandwidth will be added.			
Accomplishments/Planned Programs Subtotals	-	19.512	18.997

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

<u>Line Item</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• RDTE: BA04: PE 0603438F: <i>Space Control Technology</i>	17.328	-	-	-	-	-	-	-	-	-	-

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.

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0606323F / <i>Multi-Service Systems Engineering Initiative</i>
--	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	6.682	-	-	-	-	-	-	-	-	-	6.682
668101: <i>MSSE and JIAMD Capability Initiative</i>	-	6.682	-	-	-	-	-	-	-	-	-	6.682
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Note
 In FY 2015, Project 668101, MSSE and JIAMD Capability Initiative, was terminated. Per the Ballistic Missile Defense System (BMDS) Acquisition Decision Memorandum (ADM) of 8 May 2013, the Missile Defense Agency (MDA) assumed technical authority responsibility of air and missile defense integration activities.

A. Mission Description and Budget Item Justification

The Joint System Engineering Team (JSET) serves as a joint acquisition effort to build the framework for future work towards achieving near-term Joint Track Management Capability (JTMC) and long-term Joint Integrated Air and Missile Defense (JIAMD) capabilities. It performs systems engineering activities in collaboration with the Services, Joint Staff, and OSD. The JSET reviews Service Program of Records (PoRs) and MDA systems based upon operationally validated JIAMD requirements and Prioritized Capabilities List (PCL) needs. It recommends engineering changes (e.g., Interface Control Documents (ICDs), common standards, and/or specifications) that can provide incremental improvements in joint war fighting capability, as described in the Joint Requirements Oversight Council (JROC)-validated Joint IAMD operational requirements, information exchange requirements, as well as other war fighter-approved requirements. The JSET scope encompasses the collaborative efforts to provide the war fighter the ability to effectively and efficiently utilize all available resources to counter the complete air, cruise missile, and ballistic missile threats. Activities included studies and analysis that support both current program planning and execution, as well as future program planning.

The objective of the JSET is to recommend incremental improvements in fielded capabilities within the construct of Service PoRs and MDA systems. The following list includes several, priority Family of Systems (FOS) engineering tasks:

- Conduct the engineering activity to develop coordinated Joint IAMD Department of Defense (DoD) Architecture Framework (DODAF) products (e.g., System Views) while maintaining and deriving common standards.
- Develop, recommend, and document as necessary overarching JIAMD technical/performance requirements.
- Perform Joint IAMD FOS engineering and related analyses, and develop recommendations for incrementally implementing Joint IAMD capabilities.
- Develop Joint IAMD FOS engineering and Capability Validation Plans and strategies.
- Recommend updates to the Joint Staff IAMD Operational Views as necessary.
- Ensure that Joint engineering tasks are conducted in a logical sequence and in a timely manner to provide the Services and MDA the most benefit and adequate time to consider engineering recommendations derived by the JSET.

BA 6 - 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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0606323F / <i>Multi-Service Systems Engineering Initiative</i>
--	---

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	6.908	-	-	-	-
Current President's Budget	6.682	-	-	-	-
Total Adjustments	-0.226	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.226	-			
• Other Adjustments	-	-	-	-	-

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
<p>Title: Requirements Development</p> <p>Description: Multi-Service Systems Engineering (MSSE) Requirements Development</p> <p>FY 2014 Accomplishments: Developed, recommended, and documented as necessary overarching JIAMD technical/performance requirements.</p> <p>FY 2015 Plans: N/A</p> <p>FY 2016 Base Plans: N/A</p> <p>FY 2016 OCO Plans: N/A</p>	0.500	-	-	-	-
<p>Title: Architecture Development</p> <p>Description: Multi-Service Systems Engineering (MSSE) Architecture Development</p> <p>FY 2014 Accomplishments: - Conducted engineering activities to develop coordinated Joint IAMD architecture products (e.g., System Views) while maintaining and deriving common standards.</p>	2.557	-	-	-	-

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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 0606323F / <i>Multi-Service Systems Engineering Initiative</i>
---	---

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
- Recommended updates to the Joint Staff IAMD Operational Views as necessary. FY 2015 Plans: N/A FY 2016 Base Plans: N/A FY 2016 OCO Plans: N/A					
Title: Engineering Description: Joint Systems Engineering Team (JSET) - Systems Engineering FY 2014 Accomplishments: - Performed Joint IAMD FOS engineering and related analyses, and developed recommendations for incrementally implemented Joint IAMD capabilities. - Developed Joint IAMD FOS engineering and Capability Validation Plans and strategies. FY 2015 Plans: N/A FY 2016 Base Plans: N/A FY 2016 OCO Plans: N/A	3.625	-	-	-	-
Accomplishments/Planned Programs Subtotals	6.682	-	-	-	-

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

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015
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 0606323F / <i>Multi-Service Systems Engineering Initiative</i>	
E. Acquisition Strategy Multi-Service Systems Engineering (MSSE) supported subject matter experts in the Joint Systems Engineering Team (JSET) working groups through Military Interdepartmental Purchase Requests in accordance with the JIAMD Joint Enterprise Architecture Plan (JEAP). This was accomplished in a collaborative fashion with the Services, Joint Staff, and Office of Secretary of Defense. All contracts were awarded full and open.		
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.		

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>							
COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	172.257	176.727	185.305	-	185.305	188.028	191.397	195.155	199.322	Continuing	Continuing
664280: <i>SMC Civilian Pay</i>	-	172.257	176.727	185.305	-	185.305	188.028	191.397	195.155	199.322	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 \$8B 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 1,560 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 Acquisition Workforce Improvement Initiatives.

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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	172.661	181.727	185.842	-	185.842
Current President's Budget	172.257	176.727	185.305	-	185.305
Total Adjustments	-0.404	-5.000	-0.537	-	-0.537
• Congressional General Reductions	-	-	-	-	-
• Congressional Directed Reductions	-	-5.000	-	-	-
• Congressional Rescissions	-	-	-	-	-
• Congressional Adds	-	-	-	-	-
• Congressional Directed Transfers	-	-	-	-	-
• Reprogrammings	-	-	-	-	-
• SBIR/STTR Transfer	-	-	-	-	-
• Other Adjustments	-0.404	-	-0.537	-	-0.537

Change Summary Explanation

FY2015 Congressional Directed Reduction of \$5M due to optimistic hiring forecast.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
---	--

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
<p>Title: SMC Acquisition Workforce</p> <p>Description: Provide professional government civilian acquisition workforce in support of all Space and Missile Systems Center programs.</p> <p>FY 2014 Accomplishments: Provided professional government civilian acquisition workforce in support of all Space and Missile Systems Center programs.</p> <p>FY 2015 Plans: Provide professional government civilian acquisition workforce in support of all Space and Missile Systems Center programs.</p> <p>FY 2016 Plans: Provide professional government civilian acquisition workforce in support of all Space and Missile Systems Center programs.</p>	172.257	176.727	185.305
Accomplishments/Planned Programs Subtotals	172.257	176.727	185.305

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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	-	4.938	4.841	-	4.841	4.838	-	-	-	-	14.617
66ACSI: <i>ACQ and Command Support Integration</i>	-	-	4.938	4.841	-	4.841	4.838	-	-	-	-	14.617
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

Note

In FY2015, PE 0303141F, Global Combat Support Systems (GCSS), Project 675046, Systems Engineering & Integration, efforts were transferred to PE 0308602F, Enterprise Information Services (EIS), Project 66ACSI, Acquisition and Command Support (ACSI), in order to provide better visibility of costs associated with evolution to a Cloud Computing Environment (CCE) now called Common Computing Environment (CCE).

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 CCE.

CCE develops a standard framework, platform configurations, data center migration strategy and security services for hosting AF mission applications. This initiative is critical for the target hosting environment effort leveraging DoD Joint Information Environment (JIE) Core Data Centers (CDCs) and DISA-brokered cloud capabilities in compliance with the Air Force Information Technology (AF IT) baselines. This initiative also includes an Air Force Managed Service Office (MSO) which provides AF approved application rationalization processes to the target hosting environment architecture and an enterprise IT lifecycle capability for integration test of CCE services. Effort previously documented in GCSS-AF program element 0303141F

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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
--	---

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	-	4.938	4.874	-	4.874
Current President's Budget	-	4.938	4.841	-	4.841
Total Adjustments	-	-	-0.033	-	-0.033
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-0.033	-	-0.033

Change Summary Explanation

Funding previously reflected in PE 0303141F.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Platform Provisioning / TB Aligned Platform Configuration	-	2.000	1.500	-	1.500
Description: This task provides funds to build out the initial Common Computing Environment platforms in a DISA MilCloud environment. This task also includes the integration of the automated tools to provision the platforms within the Infrastructure as a Service environments.					
FY 2014 Accomplishments: N/A					
FY 2015 Plans: - Build out the initial Common Computing Environment platforms in a DISA MilCloud environment. - Integrate the automated tools to provision the platforms within the Infrastructure as a Service environments.					
FY 2016 Base Plans: Develop and acquire certification for standard platform offerings for new and emerging applications being deployed to JIE virtual infrastructure in the AFs target hosting environment leveraging JIE Core Data Center (CDCs) and DISA-brokered commercial cloud capabilities using standardized infrastructure.					
FY 2016 OCO Plans:					

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force				Date: February 2015	
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)					
N/A					
Title: Managed Service Office (MSO) / Information Technology Lifecycle Center (ITLC) / Implementation Baseline Process Stand-up					
Description: This task will develop the process flows for engaging with mission application program offices, gathering requirements and determining best hosting platforms for those capabilities. Also includes the development of a Configuration Control Board to manage platform environments from an enterprise perspective.					
FY 2014 Accomplishments: N/A					
FY 2015 Plans: - Develop the process flows for engaging with mission application program offices, gathering requirements and determining best hosting platforms for those capabilities. - Develop a Configuration Control Board to manage platform environments from an enterprise perspective.					
FY 2016 Base Plans: N/A					
FY 2016 OCO Plans: N/A					
Title: Enterprise services extended to the commercial cloud					
Description: The effort develops and deploys AF enterprise common services to be utilized by applications migrating to JIE virtual infrastructure and reduces the cost of individual development. These enterprise common services are required for the AFs target hosting environment leveraging JIE Core Data Center (CDCs) and DISA-brokered commercial cloud capabilities using standardized infrastructure.					
FY 2014 Accomplishments: N/A					
FY 2015 Plans:					
	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
	-	2.938	-	-	-
	-	-	1.967	-	1.967

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
N/A					
<i>FY 2016 Base Plans:</i> Develop and deploy AF enterprise common services to be utilized by applications migrating to JIE virtual infrastructure and reduces the cost of individual development. These enterprise common services are required for the AFs target hosting environment leveraging JIE Core Data Center (CDCs) and DISA-brokered commercial cloud capabilities using standardized infrastructure.					
<i>FY 2016 OCO Plans:</i> N/A					
<i>Title:</i> Common tools development <i>Description:</i> The effort develops and deploys AF enterprise common tools to be utilized by applications migrating to JIE virtual infrastructure and reduces the cost of individual development. These enterprise common services are required for the AFs target hosting environment leveraging JIE Core Data Center (CDCs) and DISA-brokered commercial cloud capabilities using standardized infrastructure.	-	-	1.374	-	1.374
<i>FY 2014 Accomplishments:</i> N/A					
<i>FY 2015 Plans:</i> N/A					
<i>FY 2016 Base Plans:</i> Develop and deploy AF enterprise common tools to be utilized by applications migrating to JIE virtual infrastructure and reduces the cost of individual development. These enterprise common services are required for the AFs target hosting environment leveraging JIE Core Data Center (CDCs) and DISA-brokered commercial cloud capabilities using standardized infrastructure.					
<i>FY 2016 OCO Plans:</i> N/A					
Accomplishments/Planned Programs Subtotals	-	4.938	4.841	-	4.841

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

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
---	---

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

Remarks

E. Acquisition Strategy

Common Computing Environment will provide enterprise services across multiple hosting environments using an evolutionary acquisition strategy and phased development methodology. Development will emphasize Commercial Off the Shelf products and commercial technology to achieve requirements.

F. Performance Metrics

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

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
--	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	20.525	18.644	15.357	-	15.357	19.466	22.771	22.579	22.986	Continuing	Continuing
662906: <i>ELECTRONIC ACQUISITION SERV ENVIRONMENT(EASE)</i>	-	2.451	2.090	1.910	-	1.910	-	-	-	-	-	6.451
66ACSI: <i>ACQ and Command Support Integration</i>	-	18.074	16.554	13.447	-	13.447	19.466	22.771	22.579	22.986	Continuing	Continuing

Note

In FY 2016, PE 0702806F Acquisition and Management Support, Project 662906 Electronic Acquisition Service Environment (EASE) for CON-IT.

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 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.

In FY 2016, PE 0702806F Acquisition and Management Support, Project 662906 Electronic Acquisition Service Environment (EASE) includes a new start effort for CON-IT.

The FY2016 funding request was reduced by \$1.535 million to account for the availability of prior execution balances.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
---	---

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	21.221	18.644	23.132	-	23.132
Current President's Budget	20.525	18.644	15.357	-	15.357
Total Adjustments	-0.696	-	-7.775	-	-7.775
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.696	-			
• Other Adjustments	-	-	-7.775	-	-7.775

Change Summary Explanation

The FY2016 funding request was reduced by \$1.535 million to account for the availability of prior execution balances.

FY2016 reductions due to higher Air Force priorities.

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
662906: <i>ELECTRONIC ACQUISITION SERV ENVIRONMENT(EASE)</i>	-	2.451	2.090	1.910	-	1.910	-	-	-	-	-	6.451
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2016, PE 0702806F Acquisition and Management Support, Project 662906 Electronic Acquisition Service Environment (EASE) includes a new start effort for CON-IT.

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 2014	FY 2015	FY 2016
<p>Title: EASE</p> <p>Description: Develop a single contract writing solution, EASE, to support AF contracting professionals.</p> <p>FY 2014 Accomplishments: Continued development of information technology framework and production of prototype development.</p> <p>FY 2015 Plans: Continue development of information technology framework and production of prototype development.</p> <p>FY 2016 Plans: N/A</p>	2.451	2.090	-
<p>Title: CON-IT</p> <p>Description: Develop a comprehensive electronic contracting capability to include contract preparation, records management, electronic filing, electronic ordering and other capabilities</p> <p>FY 2014 Accomplishments: N/A</p> <p>FY 2015 Plans:</p>	-	-	1.910

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015		
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>		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2014	FY 2015	FY 2016
N/A				
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		2.451	2.090	1.910
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.				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force										Date: February 2015		
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 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
66ACSI: <i>ACQ and Command Support Integration</i>	-	18.074	16.554	13.447	-	13.447	19.466	22.771	22.579	22.986	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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 2014	FY 2015	FY 2016
<p>Title: Acquisition Mandates</p> <p>Description: Supports Congressional, SECDEF, and SECAF mandates that are directed to improve the overall acquisition process.</p> <p>FY 2014 Accomplishments: Continued program management and resources management oversight.</p> <p>FY 2015 Plans: Continue program management and resources management oversight.</p> <p>FY 2016 Plans: Continue program management and resources management oversight.</p>	6.719	3.401	1.698
<p>Title: Performance Measurements</p> <p>Description: Supports performance measures for capability-based planning and execution constructs. Efforts include: Technical and analytical support for program planning/execution, schedule and technical performance risk; and economic, statistical, and engineering analyses of acquisition programs. Develop and implement a capability to provide continuous process improvement that will make USAF acquisition processes more effective and efficient. This effort consists of three components (1) establishing a foundational process definition, (2) leveraging the existing improvement techniques including but not limited to Lean, Six-Sigma</p>	2.416	2.200	1.950

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
and Business process reengineering and (3) investing in enabling technologies that enhance process performance and are interoperable within the overall environment.				
FY 2014 Accomplishments: Developed and analyzed acquisition processes to provide process improvements and efficiencies.				
FY 2015 Plans: Develop and analyze acquisition processes to provide process improvements and efficiencies.				
FY 2016 Plans: Develop and analyze acquisition processes to provide process improvements and efficiencies.				
Title: Technical and Analytical Support		1.487	1.355	1.500
<p>Description: Supports technical and analytical tools through information technology infrastructure development to provide economic, statistical, and engineering analyses of acquisition programs. Efforts include:</p> <ul style="list-style-type: none"> - A foundational integrated environment that supports the portfolio of acquisition business systems hardware and software, and implements standards for data management and service-oriented design methodology to facilitate efficiency and interoperability - Existing technologies and data are leveraged to standardize on proven capabilities, and to make existing data stores more accessible and useful across the acquisition domain roles - Focused investments in specific capabilities address critical gaps supporting the efficient operation of the Acquisition Domain, in areas such as: <ul style="list-style-type: none"> -- Planning and executing on-time acquisition milestone readiness -- Adopting commercial enterprise concept of Product Lifecycle Management for the production of traceable requirements -- Planning and execution of technology development and transition -- Standardizing risk management -- Managing access to scientific and technical information -- Increasing industrial base decision-support information 				
FY 2014 Accomplishments: Developed acquisition management information technology (IT). Efforts included:				
<ul style="list-style-type: none"> -- Exposing core business services currently existing in multiple tools and subsequently retiring duplicative capabilities -- Reducing training on multiple acquisitions systems by providing all core functionality through a single common interface -- Consolidating infrastructure to reduce hosting and infrastructure sustainment costs 				
FY 2015 Plans: Develop acquisition management IT Efforts include:				

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p>-- Exposing core business services currently existing in multiple tools and subsequently retiring duplicative capabilities</p> <p>-- Reducing training on multiple acquisitions systems by providing all core functionality through a single common interface</p> <p>-- Consolidating infrastructure to reduce hosting and infrastructure sustainment costs</p> <p>FY 2016 Plans: Continuation of the automation of key Life Cycle Management Center (LCMC) and Space and Missile Systems Center (SMC) acquisition processes. Includes analytical support, process work, governance, requirements definition, analysis, test & evaluation and configuration control.</p>				
<p>Title: System Metric and Reporting Tool (SMART)</p> <p>Description: Upgrade enterprise tool 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 programs lifecycle</p> <p>FY 2014 Accomplishments: Completed deployment of Logistics Health Assessment with Weapon System Hierarchy and enterprise workflow service in Defense Enterprise Portal Service. Enabled SMART services in DISA with identity management.</p> <p>FY 2015 Plans: Upgrade capability for event-driven reporting with OSD. Provide acquisition document management for all programs.</p> <p>FY 2016 Plans: Complete the transformation to an Acquisition Workbench. Includes creation of a integrated IT operational environment for the standard Acquisition Program Office and associated development required to make key Enterprise Acquisition data available to AF and OSD leadership.</p>		4.370	4.744	4.008
<p>Title: PMRT (Project Management Resource Tools)</p> <p>Description: Upgrade enterprise tool that provides program/project resource management tool to support the Acquisition community.</p> <p>FY 2014 Accomplishments: Conducted infrastructure study. Completed study of enhancement of processes supporting budget submission, program oversight and program control. Began implementation of identified enhancements.</p> <p>FY 2015 Plans: Implementation of identified enhancement to budget submission, program oversight and program control processes.</p> <p>FY 2016 Plans:</p>		1.020	2.083	1.987

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
Development of the capability required to provide enhanced visibility of acquisition financial information for all AF Acquisition investment programs. Expansion of the functionality of the AF Acquisition Dashboard to complete the transition from a data-reporting to a data-access paradigm.				
<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 2014 Accomplishments: Continued work on 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 2015 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 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>		1.793	1.771	1.804
<p>Title: Development & Retention</p> <p>Description: Supports activities to develop, manage, and retain the acquisition workforce.</p> <p>FY 2014 Accomplishments: Performed 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 2015 Plans: Perform 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>		0.269	1.000	0.500

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2016 Air Force	Date: February 2015
---	----------------------------

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 2014	FY 2015	FY 2016
Perform 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.			
Accomplishments/Planned Programs Subtotals	18.074	16.554	13.447

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.

UNCLASSIFIED

THIS PAGE INTENTIONALLY LEFT BLANK

UNCLASSIFIED

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	0.304	1.425	1.315	-	1.315	1.418	1.444	1.472	1.498	Continuing	Continuing
665297: <i>Technical Training Information Systems</i>	-	0.304	1.425	1.315	-	1.315	1.418	1.444	1.472	1.498	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)	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>
Previous President's Budget	0.315	1.425	1.323	-	1.323
Current President's Budget	0.304	1.425	1.315	-	1.315
Total Adjustments	-0.011	-	-0.008	-	-0.008
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.011	-			
• Other Adjustments	-	-	-0.008	-	-0.008

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

	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Technical Training Management System (TTMS)	0.304	1.425	1.315	-	1.315

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
---	---

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
<p>Description: Provide TTMS productivity enhancements and higher degree of efficiency to AETC (i.e., Military Training Leader and Basic Training Management System).</p> <p>FY 2014 Accomplishments: Enhanced TTMS productivity focusing on Military Training Leader and Basic Training Management capabilities.</p> <p>FY 2015 Plans: Continue to enhance TTMS productivity focusing on Military Training Leader and Basic Training Management capabilities.</p> <p>FY 2016 Base Plans: Continue to enhance TTMS productivity focusing on Military Training Leader and Basic Training Management Capabilities.</p> <p>FY 2016 OCO Plans: N/A</p>					
Accomplishments/Planned Programs Subtotals	0.304	1.425	1.315	-	1.315

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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	--

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	0.527	-	-	-	-	-	-	-	-	Continuing	Continuing
664277: <i>Financing for Canceled Account Adj</i>	-	0.527	-	-	-	-	-	-	-	-	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 2014</u>	<u>FY 2015</u>	<u>FY 2016 Base</u>	<u>FY 2016 OCO</u>	<u>FY 2016 Total</u>
Previous President's Budget	-	-	-	-	-
Current President's Budget	0.527	-	-	-	-
Total Adjustments	0.527	-	-	-	-
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.527	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-	-	-

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

	FY 2014	FY 2015	FY 2016
Title: Cancelled year bill adjustments	0.527	-	-
Description: Cancelled year bill adjustments			
FY 2014 Accomplishments: Cancelled year bill adjustments			
FY 2015 Plans: N/A			
FY 2016 Plans:			

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force	Date: February 2015
--	----------------------------

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>
---	--

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
N/A			
Accomplishments/Planned Programs Subtotals	0.527	-	-

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.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

COST (\$ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
Total Program Element	-	3.785	3.790	2.315	-	2.315	4.831	4.600	4.064	4.137	Continuing	Continuing
664645: <i>International Cooperative Research & Development</i>	-	3.785	3.790	2.315	-	2.315	4.831	4.600	4.064	4.137	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, implement, manage, and conclude 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 program are air, space, and cyber international armaments cooperation; technology assessment; specialized working groups; Air Senior National Representative (ASNR) activities; IAC program and project reviews; bilateral and multilateral staff talks; activities associated with air, space, and cyber IAs; Engineering and Scientist Exchange Program (ESEP); and Administrative and Professional Exchange Program (APEP). These funds are not to be used for civilian salaries or the construction of permanent facilities.

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.

The FY2016 funding request was reduced by \$1.541 million to account for the availability of prior execution balances.

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force **Date:** February 2015

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>
---	---

B. Program Change Summary (\$ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	3.785	3.790	3.872	-	3.872
Current President's Budget	3.785	3.790	2.315	-	2.315
Total Adjustments	-	-	-1.557	-	-1.557
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments	-	-	-1.557	-	-1.557

Change Summary Explanation

The FY 2016 funding request was reduced by \$1.541 million to account for the availability of prior year execution balances.

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2014	FY 2015	FY 2016
---	----------------	----------------	----------------

<p>Title: Engineer and Scientist Exchange Program/Administrative and Professional Exchange Program (ESEP/APEP)</p> <p>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.</p> <p>FY 2014 Accomplishments: Continued USAF execution and management oversight of the ESEP and APEP programs and personnel.</p> <p>FY 2015 Plans: Continue USAF execution and management oversight of the ESEP and APEP programs and personnel.</p> <p>FY 2016 Plans: Will continue USAF execution and management oversight of the ESEP and APEP programs and personnel.</p>	0.300	0.300	0.200
<p>Title: International Partnership Activities</p> <p>Description: Funds USAF management, support, and oversight of international armament cooperation (IAC) goals and objectives to build global partnerships in support of national security objectives. Funds USAF participation in NATO fora to promote harmonization and interoperability. Funds USAF support and participation in OSD bilateral IAC forums. Funds Secretary of the Air Force/International Affairs (SAF/IA) overseas liaison office. Funds technical assessments and discussions that support</p>	1.975	1.905	1.540

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p>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 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 2014 Accomplishments: Continued USAF 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. FY15 efforts will have an enhanced focus on mutually beneficial partnerships within Asia.</p> <p>FY 2015 Plans: Continue USAF 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 2016 Plans: Will continue USAF 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. FY16 efforts will have an enhanced focus on mutually beneficial partnerships that support the U.S. and allies to meet operational requirements and increase capabilities.</p>				
<p>Title: International Armaments Cooperation (IAC) Agreement Activities</p> <p>Description: Funds the USAF's ability to identify, develop, process, negotiate, implement, manage, and conclude the increasing number bilateral and multilateral IAC Agreements that meet the goals, objectives, and mission of the USAF and DoD. 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>		0.750	0.750	0.300

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
<p><i>FY 2014 Accomplishments:</i> Continued funding for USAF to identify, develop, process, negotiate, implement, manage, and conclude numerous bilateral and multilateral IAs that meet the goals, objectives, and mission of the USAF and DoD. Negotiations will continue on IAs developed but not concluded during FY13. The estimated number of IAC Agreements currently in development is 115.</p> <p><i>FY 2015 Plans:</i> Continue funding for USAF to identify, develop, process, negotiate, implement, and manage the increasing number of bilateral and multilateral IAs that meet the goals, objectives, and mission of the USAF and DoD. Development and negotiation will continue on IAs not concluded during FY14. New agreements and amendments will be initiated.</p> <p><i>FY 2016 Plans:</i> Will continue funding for USAF to identify, develop, process, negotiate, implement, and manage the increasing number of bilateral and multilateral IAs that meet the goals, objectives, and mission of the USAF and DoD. Development and negotiation will continue on IAs not concluded during FY15. New agreements and amendments will be initiated.</p>				
<p><i>Title:</i> Air Force Materiel Command (AFMC)</p> <p><i>Description:</i> Funds AFMC's ability to support international armaments cooperation (IAC) research, development, test, and evaluation (RDT&E) activities which directly promote interoperability and international collaboration. Funds field level technical assessments and discussions that support technology identification and development activities in support of interoperability.</p> <p><i>FY 2014 Accomplishments:</i> Continued 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.</p> <p><i>FY 2015 Plans:</i> 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.</p> <p><i>FY 2016 Plans:</i> 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.</p>		0.150	0.150	0.075
<p><i>Title:</i> International Space Cooperation</p> <p><i>Description:</i> Funds USAF's 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</p>		0.190	0.190	0.100

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015		
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 2014	FY 2015	FY 2016
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.				
FY 2014 Accomplishments: Continued funding for USAF to identify, develop, process, negotiate, implement, manage, and conclude an escalating number of bilateral and multilateral international agreements (IAs) that meet the goals, objectives, and mission of the USAF's space guidance. Negotiations will continue on space related IAs developed but not concluded during FY13. The estimated number of space cooperation agreements in development is 14.				
FY 2015 Plans: Continue funding for USAF to identify, develop, process, negotiate, implement, manage and conclude the increasing number of bilateral and multilateral space related IAs that meet the goals, objectives, and mission of the USAF and DoD. Development and negotiation will continue on IAs not concluded during FY14. New agreements and amendments will be initiated.				
FY 2016 Plans: Will continue funding for USAF to identify, develop, process, negotiate, implement, manage and conclude the increasing number of bilateral and multilateral space related IAs that meet the goals, objectives, and mission of the USAF and DoD. Development and negotiation will continue on IAs not concluded during FY15. New agreements and amendments will be initiated.				
Title: Cyberspace Cooperation				
Description: Funds USAF's ability to establish cooperative relationships with allies in cyberspace missions to ensure interoperability, sharing of information on threats, and developing new capabilities to defeat threats to our critical information systems. Supports integration of air, space, and cyberspace capabilities to create global effects. Cyberspace requires significant research and development efforts and responsiveness to avoid technological surprise.				
FY 2014 Accomplishments: Continued USAF efforts to establish cooperative relationships with allies in cyberspace missions initiated in FY13.				
FY 2015 Plans: Continue USAF efforts to establish cooperative relationships with allies in cyberspace missions initiated in FY14.				
FY 2016 Plans: Will continue USAF efforts to establish cooperative relationships with allies in cyberspace missions initiated in FY15.				
Accomplishments/Planned Programs Subtotals		0.420	0.495	0.100
		3.785	3.790	2.315

UNCLASSIFIED

Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Air Force		Date: February 2015
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>	
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, implement, manage, and conclude international armaments cooperation (IAC) opportunities to: (a) acquire, develop, upgrade, sustain, and support common or interoperable equipment with our allies; (b) leverage USAF resources with our allies through cost sharing and economies of scale; (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. Once international agreements (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.		